



Publications on multimorbidity

(Updated on February 08, 2023)

INDEX

- Publications by subject

1. THEORETICAL & REVIEW ARTICLES AND PROTOCOLS (Page 1)

2. DEFINITION / CONCEPTUALISATION (Page 32)

3. CLINICAL AND EPIDEMIOLOGICAL STUDIES (Page 36)

3.1. Prevalence (Page 36)

3.2. Aetiology (Page 53)

3.3. Correlation with biological markers (Page 54)

3.4. Interactions and patterns (Page 57)

3.5. Socio-demographic, socio-economic, and psychosocial variables. Lifestyle factors (Page 72)

3.6. Variables related to hospitalisation or institutionalization or outcomes (Page 85)

3.7. Resource Utilisation (Page 96)

3.8. Quality of life and functional level (Page 104)

3.9. Psychological distress, depression, cognition, mental illnesses (Page 121)

3.10. Medication (Page 134)

3.11. Social support (Page 148)

3.12. Other clinical variables (Page 151)

3.13. Generalisation of clinical trials / Guidelines (Page 161)

3.14. Other subjects (Page 164)

4. ECONOMIC STUDIES (Page 191)

5. METHODS TO MEASURE MULTIMORBIDITY AND COMORBIDITY (Page 195)

6. EDITORIALS / OPINION ARTICLES (Page 206)

7. QUALITATIVE RESEARCH (Page 229)

8. INTERVENTION IDEAS (Page 252)

9. OTHERS (Page 265)

9.1. Physical activity (Page 265)

9.2. Continuity of care (Page 269)

9.3. Self-care (Page 271)

List of Publications on Multimorbidity
International Research Community on Multimorbidity

9.4. [Medical errors / Medical education](#) (Page 275)

9.5. [COVID-19](#) (Page 275)

1. THEORETICAL & REVIEW ARTICLES AND PROTOCOLS

Wagner, C., Carmeli, C., Chiolerio, A. and Cullati, S. (2022). Life Course Socioeconomic Conditions and Multimorbidity in Old Age – A Scoping Review. *Ageing Research Reviews*, p.101630. doi:10.1016/j.arr.2022.101630.

Aramrat, C., Choksomngam, Y., Jiraporncharoen, W., Wiwatkunupakarn, N., Pinyopornpanish, K., Mallinson, P.A.C., Kinra, S. and Angkurawaranon, C. (2022). Advancing multimorbidity management in primary care: a narrative review. *Primary Health Care Research & Development*, 23. doi:10.1017/s1463423622000238.

Sinha, A., Kerketta, S., Ghosal, S., Kanungo, S. and Pati, S. (2022). Multimorbidity Among Urban Poor in India: Findings From LASI, Wave-1. *Frontiers in Public Health*, [online] 10, p.881967. doi:10.3389/fpubh.2022.881967.

Correction: Prevalence and predictors of medication non-adherence among people living with multimorbidity: a systematic review and meta-analysis. (2022). *BMJ Open*, 12(7), p.e044987corr1. doi:10.1136/bmjopen-2020-044987corr1.

Dinh TS, Brueckle MS, Gonzalez-Gonzalez AI, Fessler J, Marschall U, Schubert-Zsilavesz M, et al. Evidence-Based Decision Support for a Structured Care Program on Polypharmacy in Multimorbidity: A Guideline Upgrade Based on a Realist Synthesis. *J Pers Med* 2022;12(1). doi: jpm12010069 [pii] 10.3390/jpm12010069

Llop-Medina L, Fu Y, Garces-Ferrer J, Donate-Martinez A. Palliative Care in Older People with Multimorbidities: A Scoping Review on the Palliative Care Needs of Patients, Carers, and Health Professionals. *Int J Environ Res Public Health* 2022;19(6). doi: ijerph19063195 [pii] 10.3390/ijerph19063195

Yang C, Zhu S, Lee DTF, Chair SY. Interventions for improving medication adherence in community-dwelling older people with multimorbidity: A systematic review and meta-analysis. *Int J Nurs Stud* 2022;126:104154. doi: S0020-7489(21)00299-6 [pii] 10.1016/j.ijnurstu.2021.104154

Goncalves I, Mendes DA, Caldeira S, Jesus E, Nunes E. Nurse-led care management models for patients with multimorbidity in hospital settings: a scoping review. *J Nurs Manag* 2022. doi: 10.1111/jonm.13621

Barbato A, D'Avanzo B, Cinquini M, Fittipaldo AV, Nobili A, Amato L, et al. Effects of goal-oriented care for adults with multimorbidity: A systematic review and meta-analysis. *J Eval Clin Pract* 2022;28(3):371-81. doi: 10.1111/jep.13674

O'Shea J, Ledwidge M, Gallagher J, Keenan C, Ryan C. Pharmacogenetic interventions to improve outcomes in patients with multimorbidity or prescribed polypharmacy: a systematic review. *Pharmacogenomics J* 2022;22(2):89-99. doi:10.1038/s41397-021-00260-610.1038/s41397-021-00260-6 [pii]

Bricca A, Jager M, Johnston M, Zangger G, Harris LK, Midtgaard J, et al. Effect of In-Person Delivered Behavioural Interventions in People with Multimorbidity: Systematic Review and Meta-analysis. *Int J Behav Med* 2022. doi: 10.1007/s12529-022-10092-8

10.1007/s12529-022-100

Boehnke JR, Rana RZ, Kirkham JJ, Rose L, Agarwal G, Barbui C, et al. Development of a core outcome set for multimorbidity trials in low/middle-income countries (COSMOS): study protocol. *BMJ Open* 2022;12(2):e051810. doi: bmjopen-2021- 051810 [pii]10.1136/bmjopen-2021-051810

Cicek M, Hayhoe B, Otis M, Nicholls D, Majeed A, Greenfield G. Depression and unplanned secondary healthcare use in patients with multimorbidity: A systematic review. *PLoS One* 2022;17(4):e0266605. doi: 10.1371/journal.pone.0266605 PONE-D-21-35312 [pii]

Boeykens D, Boeckxstaens P, De Sutter A, Lahousse L, Pype P, De Vriendt P, et al. Goal oriented care for patients with chronic conditions or multimorbidity in primary care: A scoping review and concept analysis. *PLoS One* 2022;17(2):e0262843. doi: 10.1371/journal.pone.0262843 PONE-D-20-30664 [pii]

Simard M, Rahme E, Calfat AC, Sirois C. Multimorbidity measures from health administrative data using ICD system codes: A systematic review. *Pharmacoepidemiol Drug Saf* 2022;31(1):1-12. doi: 10.1002/pds.5368

Ho IS, Azcoaga-Lorenzo A, Akbari A, Davies J, Hodgins P, Khunti K, et al. Variation in the estimated prevalence of multimorbidity: systematic review and meta-analysis of 193 international studies. *BMJ Open* 2022;12(4):e057017. doi: bmjopen-2021- 057017 [pii] 10.1136/bmjopen-2021-057017

Lin J, Islam K, Leeder S, Huo Z, Hung CT, Yeoh EK, et al. Integrated Care for Multimorbidity Population in Asian Countries: A Scoping Review. *Int J Integr Care* 2022;22(1):22. doi: 10.5334/ijic.6009

Wagner C, Carmeli C, Chiolerio A, Cullati S. Life course socioeconomic conditions and multimorbidity in old age - A scoping review. *Ageing Res Rev* 2022;78:101630. doi: S1568-1637(22)00072-1 [pii]10.1016/j.arr.2022.101630

Fleitas Alfonzo L, King T, You E, Contreras-Suarez D, Zulkelfi S, Singh A. Theoretical explanations for socioeconomic inequalities in multimorbidity: a scoping review. *BMJ Open* 2022;12(2):e055264. doi: bmjopen-2021-055264 [pii]10.1136/bmjopen-2021-055264

Mira R, Newton T, Sabbah W. Inequalities in the progress of multiple chronic conditions: A systematic review of longitudinal studies. *PLoS One* 2022;17(2):e0263357. doi: 10.1371/journal.pone.0263357 PONE-D-21-34388 [pii]

Asogwa OA, Boateng D, Marza-Florensa A, Peters S, Levitt N, van Olmen J, et al. Multimorbidity of non-communicable diseases in low-income and middle-income countries: a systematic review and meta-analysis. *BMJ Open* 2022;12(1):e049133. doi: bmjopen-2021-049133 [pii]10.1136/bmjopen-2021-049133

Longhini J, Canzan F, Mezzalana E, et al. Organisational models in primary health care to

manage chronic conditions: A scoping review. *Health Soc Care Community* 2021 doi: 10.1111/hsc.13611

Hounkpatin HO, Roderick P, Morris JE, et al. Change in treatment burden among people with multimorbidity: Protocol of a follow up survey and development of efficient measurement tools for primary care. *PLoS One* 2021;16(11):e0260228. doi: 10.1371/journal.pone.0260228

Smith SM, Wallace E, Clyne B, et al. Interventions for improving outcomes in patients with multimorbidity in primary care and community setting: a systematic review. *Syst Rev* 2021;10(1):271. doi: 10.1186/s13643-021-01817-z

Kappelin C, Carlsson AC, Wachtler C. Specific content for collaborative care: a systematic review of collaborative care interventions for patients with multimorbidity involving depression and/or anxiety in primary care. *Fam Pract* 2021 doi: 10.1093/fampra/cmab079

Sogaard MB, Andresen K, Kristiansen M. Systematic review of patient-engagement interventions: potentials for enhancing person-centred care for older patients with multimorbidity. *BMJ Open* 2021;11(12):e048558. doi: 10.1136/bmjopen-2020-048558

Magnan E, Gosdin M, Tancredi D, et al. Pilot randomized controlled trial Protocol: Life context-informed pre-visit planning to improve care plans for primary care patients with multiple chronic conditions including diabetes. *J Comorb* 2021;11:26335565211062387. doi: 10.1177/26335565211062387

Dinsmore J, Hannigan C, Smith S, et al. A Digital Health Platform for Integrated and Proactive Patient-Centered Multimorbidity Self-management and Care (ProACT): Protocol for an Action Research Proof-of-Concept Trial. *JMIR research protocols* 2021;10(12):e22125. doi: 10.2196/22125

Larsson SC, Burgess S. Causal role of high body mass index in multiple chronic diseases: a systematic review and meta-analysis of Mendelian randomization studies. *BMC Med* 2021;19(1):320. doi: 10.1186/s12916-021-02188-x

Cezard G, McHale CT, Sullivan F, et al. Studying trajectories of multimorbidity: a systematic scoping review of longitudinal approaches and evidence. *BMJ Open* 2021;11(11):e048485. doi: 10.1136/bmjopen-2020-048485

Gonzalez-Gonzalez AI, Brunn R, Nothacker J, et al. Everyday lives of middle-aged persons living with multimorbidity: protocol of a mixed-methods systematic review. *BMJ Open* 2021;11(12):e050990. doi: 10.1136/bmjopen-2021-050990

Foley L, Larkin J, Lombard-Vance R, et al. Prevalence and predictors of medication non-adherence among people living with multimorbidity: a systematic review and meta-analysis. *BMJ Open* 2021;11(9):e044987. doi: 10.1136/bmjopen-2020-044987

Lun P, Law F, Ho E, et al. Optimising prescribing practices in older adults with multimorbidity: a scoping review of guidelines. *BMJ Open* 2021;11(12):e049072. doi: 10.1136/bmjopen-2021-049072

Roomaney RA, van Wyk B, Turawa EB, et al. Multimorbidity in South Africa: a systematic

review of prevalence studies. *BMJ Open* 2021;11(10):e048676. doi: 10.1136/bmjopen-2021-048676

Yang C, Zhu S, Lee DTF, et al. Interventions for improving medication adherence in community-dwelling older people with multimorbidity: A systematic review and meta-analysis. *Int J Nurs Stud* 2022;126:104154. doi: 10.1016/j.ijnurstu.2021.104154

Vick JB, Wolff JL. A scoping review of person and family engagement in the context of multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:990-1005. doi: 10.1111/1475-6773.13857

Kurczewska-Michalak M, Lewek P, Jankowska-Polanska B, et al. Polypharmacy Management in the Older Adults: A Scoping Review of Available Interventions. *Front Pharmacol* 2021;12:734045. doi: 10.3389/fphar.2021.734045

Feng X, Kelly M, Sarma H. The association between educational level and multimorbidity among adults in Southeast Asia: A systematic review. *PLoS One* 2021;16(12):e0261584. doi: 10.1371/journal.pone.0261584

Simard M, Rahme E, Calfat AC, et al. Multimorbidity measures from health administrative data using ICD system codes: A systematic review. *Pharmacoepidemiol Drug Saf* 2022;31(1):1-12. doi: 10.1002/pds.5368

Whitehead L, Palamara P, Allen J, et al. Nurses' perceptions and beliefs related to the care of adults living with multimorbidity: A systematic qualitative review. *J Clin Nurs* 2021 doi: 10.1111/jocn.16146

Eyowas FA, Schneider M, Alemu S, et al. Multimorbidity of chronic non-communicable diseases: burden, care provision and outcomes over time among patients attending chronic outpatient medical care in Bahir Dar, Ethiopia-a mixed methods study protocol. *BMJ Open* 2021;11(9):e051107. doi: 10.1136/bmjopen-2021-051107

Savitz LA, Bayliss EA. Emerging models of care for individuals with multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:980-89. doi: 10.1111/1475-6773.13774

Hayanga B, Stafford M, Becares L. Ethnic Inequalities in Healthcare Use and Care Quality among People with Multiple Long-Term Health Conditions Living in the United Kingdom: A Systematic Review and Narrative Synthesis. *Int J Environ Res Public Health* 2021;18(23) doi: 10.3390/ijerph182312599

Dambha-Miller H, Simpson G, Hobson L, et al. Integrated primary care and social services for older adults with multimorbidity in England: a scoping review. *BMC Geriatr* 2021;21(1):674. doi: 10.1186/s12877-021-02618-8

Gonzalez-Gonzalez AI, Brunn R, Nothacker J, et al. Everyday Lives of Middle-Aged Persons with Multimorbidity: A Mixed Methods Systematic Review. *Int J Environ Res Public Health* 2021;19(1) doi: 10.3390/ijerph19010006

Spiers G, Boulton E, Corner L, et al. What matters to people with multiple long-term conditions and their carers? *Postgrad Med J* 2021 doi: 10.1136/postgradmedj-2021-140825

Samal L, Fu HN, Camara DS, et al. Health information technology to improve care for people with multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:1006-36. doi: 10.1111/1475-6773.13860

Zhou X, Zhang D. Multimorbidity in the Elderly: A Systematic Bibliometric Analysis of Research Output. *Int J Environ Res Public Health* 2021;19(1) doi: 10.3390/ijerph19010353

Laberge M, Sirois C, Lunghi C, et al. Economic Evaluations of Interventions to Optimize Medication Use in Older Adults with Polypharmacy and Multimorbidity: A Systematic Review. *Clinical interventions in aging* 2021;16:767-79. doi: 10.2147/CIA.S304074

Jones I, Cocker F, Jose MD, et al. Methods of analyzing patterns of multimorbidity using network analysis: a scoping review protocol. *JBIEvid Synth* 2021;19(10):2857-62. doi: 10.11124/JBIES-20-00498

Gastens V, Del Giovane C, Anker D, et al. Development and validation of a life expectancy estimator for multimorbid older adults: a cohort study protocol. *BMJ Open* 2021;11(8):e048168. doi: 10.1136/bmjopen-2020-048168

Goncalves I, Mendes DA, Caldeira S, et al. Nurse-led care management models for patients with multimorbidity in hospital settings: a scoping review protocol. *JBIEvid Synth* 2021;19(8):1934-40. doi: 10.11124/JBIES-20-00222

Harris LK, Skou ST, Juhl CB, et al. Recruitment and retention rates in randomised controlled trials of exercise therapy in people with multimorbidity: a systematic review and meta-analysis. *Trials* 2021;22(1):396. doi: 10.1186/s13063-021-05346-x

Hasan Ibrahim AS, Barry HE, Hughes CM. A systematic review of general practice-based pharmacists' services to optimize medicines management in older people with multimorbidity and polypharmacy. *Fam Pract* 2021;38(4):509-23. doi: 10.1093/fampra/cmaa146

Lee ES, Koh HL, Ho EQ, et al. Systematic review on the instruments used for measuring the association of the level of multimorbidity and clinically important outcomes. *BMJ Open* 2021;11(5):e041219. doi: 10.1136/bmjopen-2020-041219

Rodrigues LP, Rezende ATO, Moura L, et al. What is the impact of multimorbidity on the risk of hospitalisation in older adults? A systematic review study protocol. *BMJ Open* 2021;11(6):e049974. doi: 10.1136/bmjopen-2021-049974

Salive ME, Suls J, Farhat T, et al. National Institutes of Health Advancing Multimorbidity Research. *Med Care* 2021;59(7):622-24. doi: 10.1097/MLR.0000000000001565

Ho IS, Azcoaga-Lorenzo A, Akbari A, et al. Examining variation in the measurement of multimorbidity in research: a systematic review of 566 studies. *Lancet Public Health* 2021;6(8):e587-e97. doi: 10.1016/S2468-2667(21)00107-9

Vick JB, Wolff JL. A scoping review of person and family engagement in the context of multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:990-1005. doi: 10.1111/1475-6773.13857

Romano I, Buchan C, Baiocco-Romano L, et al. Physical-mental multimorbidity in children and youth: a scoping review. *BMJ Open* 2021;11(5):e043124. doi: 10.1136/bmjopen-2020-043124

Cheng C, Bai J. Coping with Multiple Chronic Conditions in the Family Context: A Meta-Synthesis. *West J Nurs Res* 2021;1939459211041171. doi: 10.1177/01939459211041171

Huaquia-Diaz AM, Chalan-Davila TS, Carrillo-Larco RM, et al. Multimorbidity in Latin America and the Caribbean: a systematic review and meta-analysis. *BMJ Open* 2021;11(7):e050409. doi: 10.1136/bmjopen-2021-050409

Savitz LA, Bayliss EA. Emerging models of care for individuals with multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:980-89. doi: 10.1111/1475-6773.13774

Rajoo SS, Wee ZJ, Lee PSS, et al. A Systematic Review of the Patterns of Associative Multimorbidity in Asia. *Biomed Res Int* 2021;2021:6621785. doi: 10.1155/2021/6621785

Kudesia P, Salimarouny B, Stanley M, et al. The incidence of multimorbidity and patterns in accumulation of chronic conditions: A systematic review. *J Comorb* 2021;11:26335565211032880. doi: 10.1177/26335565211032880

McKenzie KJ, Fletcher SL, Pierce D, et al. Moving from "let's fix them" to "actually listen": the development of a primary care intervention for mental-physical multimorbidity. *BMC Health Serv Res* 2021;21(1):301. doi: 10.1186/s12913-021-06307-5

Yang C, Hui Z, Zeng D, et al. A community-based nurse-led medication self-management intervention in the improvement of medication adherence in older patients with multimorbidity: protocol for a randomised controlled trial. *BMC Geriatr* 2021;21(1):152. doi: 10.1186/s12877-021-02097-x

Looman W, Struckmann V, Koppen J, et al. Drivers of successful implementation of integrated care for multi-morbidity: Mechanisms identified in 17 case studies from 8 European countries. *Soc Sci Med* 2021;277:113728. doi: 10.1016/j.socscimed.2021.113728

Hasan Ibrahim AS, Barry HE, Hughes CM. A systematic review of general practice-based pharmacists' services to optimize medicines management in older people with multimorbidity and polypharmacy. *Fam Pract* 2021 doi: 10.1093/fampra/cmaa146

Tew GA, Bissell L, Corbacho B, et al. Yoga for older adults with multimorbidity (the Gentle Years Yoga Trial): study protocol for a randomised controlled trial. *Trials* 2021;22(1):269. doi: 10.1186/s13063-021-05217-5

Kastner M, Makarski J, Hayden L, et al. Effectiveness of an eHealth self-management tool for older adults with multimorbidity (KeepWell): protocol for a hybrid effectiveness-implementation randomised controlled trial. *BMJ Open* 2021;11(2):e048350. doi: 10.1136/bmjopen-2020-048350

Kordowicz M, Hack-Polay D. Community assets and multimorbidity: A qualitative scoping study. *PLoS One* 2021;16(2):e0246856. doi: 10.1371/journal.pone.0246856

Kiely B, Clyne B, Boland F, et al. Link workers providing social prescribing and health and social care coordination for people with multimorbidity in socially deprived areas (the LinkMM trial): protocol for a pragmatic randomised controlled trial. *BMJ Open* 2021;11(2):e041809. doi: 10.1136/bmjopen-2020-041809

Pellet J, Weiss M, Zuniga F, et al. Implementation and preliminary testing of a theory-guided nursing discharge teaching intervention for adult inpatients aged 50 and over with

multimorbidity: a pragmatic feasibility study protocol. *Pilot Feasibility Stud* 2021;7(1):71. doi: 10.1186/s40814-021-00812-4

Audetat MC, Cairo Notari S, Sader J, et al. Understanding the clinical reasoning processes involved in the management of multimorbidity in an ambulatory setting: study protocol of a stimulated recall research. *BMC Med Educ* 2021;21(1):31. doi: 10.1186/s12909-020-02459-w

Cairo Notari S, Sader J, Caire Fon N, et al. Understanding GPs' clinical reasoning processes involved in managing patients suffering from multimorbidity: A systematic review of qualitative and quantitative research. *Int J Clin Pract* 2021:e14187. doi: 10.1111/ijcp.14187

Pel-Littel RE, Snaterse M, Teppich NM, et al. Barriers and facilitators for shared decision making in older patients with multiple chronic conditions: a systematic review. *BMC Geriatr* 2021;21(1):112. doi: 10.1186/s12877-021-02050-y

Crocker AM, Kessler R, van Eeghen C, et al. Integrating Behavioral Health and Primary Care (IBH-PC) to improve patient-centered outcomes in adults with multiple chronic medical and behavioral health conditions: study protocol for a pragmatic cluster-randomized control trial. *Trials* 2021;22(1):200. doi: 10.1186/s13063-021-05133-8

Smith SM, Wallace E, O'Dowd T, et al. Interventions for improving outcomes in patients with multimorbidity in primary care and community settings. *Cochrane Database Syst Rev* (2):CD003638 2021;1:CD006560. doi: 10.1002/14651858.CD006560.pub4

Gustafson DH, Sr., Mares ML, Johnston DC, et al. A Web-Based eHealth Intervention to Improve the Quality of Life of Older Adults With Multiple Chronic Conditions: Protocol for a Randomized Controlled Trial. *JMIR research protocols* 2021;10(2):e25175. doi: 10.2196/25175

Mariani N, Borsini A, Cecil CAM, et al. Identifying causative mechanisms linking early-life stress to psycho-cardio-metabolic multi-morbidity: The EarlyCause project. *PLoS One* 2021;16(1):e0245475. doi: 10.1371/journal.pone.0245475

Lyons J, Akbari A, Agrawal U, et al. Protocol for the development of the Wales Multimorbidity e-Cohort (WMC): data sources and methods to construct a population-based research platform to investigate multimorbidity. *BMJ Open* 2021;11(1):e047101. doi: 10.1136/bmjopen-2020-047101

Foley L, Larkin J, Lombard-Vance R, et al. Prevalence and predictors of medication non-adherence among patients with multimorbidity: A systematic review protocol. *HRB Open Res* 2019;2:29. doi: 10.12688/hrbopenres.12961.2

Chua YP, Xie Y, Lee PSS, et al. Definitions and Prevalence of Multimorbidity in Large Database Studies: A Scoping Review. *Int J Environ Res Public Health* 2021;18(4) doi: 10.3390/ijerph18041673

Larkin J, Foley L, Smith SM, et al. The experience of financial burden for people with multimorbidity: A systematic review of qualitative research. *Health Expect* 2021;24(2):282-95. doi: 10.1111/hex.13166

Rodrigues M, Wiener JC, Stranges S, et al. The risk of physical multimorbidity in people with psychotic disorders: A systematic review and meta-analysis. *J Psychosom Res* 2021;140:110315. doi: 10.1016/j.jpsychores.2020.110315

Soley-Bori M, Ashworth M, Bisquera A, et al. Impact of multimorbidity on healthcare

costs and utilisation: a systematic review of the UK literature. *Br J Gen Pract* 2021;71(702):e39-e46. doi: 10.3399/bjgp20X713897

Ingram E, Ledden S, Beardon S, et al. Household and area-level social determinants of multimorbidity: a systematic review. *J Epidemiol Community Health* 2021;75(3):232-41. doi: 10.1136/jech-2020-214691

Lee ES, Muthulingam G, Chew EAL, et al. Experiences of older primary care patients with multimorbidity and their caregivers in navigating the healthcare system: A qualitative study protocol. *J Comorb* 2020;10:2235042X20984064. doi: 10.1177/2235042X20984064

Measuring multimorbidity beyond counting diseases: systematic review of community and population studies and guide to index choice. *BMJ* 2020;370:m3668. doi: 10.1136/bmj.m3668

Butterworth J, Richards S, Warren F, et al. Randomised feasibility trial and embedded qualitative process evaluation of a new intervention to facilitate the involvement of older patients with multimorbidity in decision-making about their healthcare during general practice consultations: the VOLITION study protocol. *Pilot Feasibility Stud* 2020;6:161. doi: 10.1186/s40814-020-00699-7

Miller JJ, Pozehl BJ, Alonso W, et al. Intervention Components Targeting Self-Management in Individuals with Multiple Chronic Conditions: An Integrative Review. *West J Nurs Res* 2020;42(11):948-62. doi: 10.1177/0193945920902146

Hurst JR, Agarwal G, van Boven JFM, et al. Critical review of multimorbidity outcome measures suitable for low-income and middle-income country settings: perspectives from the Global Alliance for Chronic Diseases (GACD) researchers. *BMJ Open* 2020;10(9):e037079. doi: 10.1136/bmjopen-2020-037079

Butterworth JE, Hays R, McDonagh STJ, et al. Involving older people with multimorbidity in decision-making about their primary healthcare: A Cochrane systematic review of interventions (abridged). *Patient Educ Couns* 2020;103(10):2078-94. doi: 10.1016/j.pec.2020.04.008

Larkin J, Foley L, Smith SM, et al. The experience of financial burden for people with multimorbidity: A systematic review of qualitative research. *Health Expect* 2020 doi: 10.1111/hex.13166

Gonzalez-Gonzalez AI, Schmucker C, Nothacker J, et al. End-of-Life Care Preferences of Older Patients with Multimorbidity: A Mixed Methods Systematic Review. *J Clin Med* 2020;10(1) doi: 10.3390/jcm10010091

McCauley M, Zafar S, van den Broek N. Maternal multimorbidity during pregnancy and after childbirth in women in low- and middle-income countries: a systematic literature review. *BMC Pregnancy Childbirth* 2020;20(1):637. doi: 10.1186/s12884-020-03303-1

Filipic IS, Bajic Z, Filipic I. The onset and accumulation of physical multimorbidity in severe and common mental disorders. *Curr Opin Psychiatry* 2020;33(5):484-90. doi: 10.1097/YCO.0000000000000635

Kraef C, van der Meirschen M, Free C. Digital telemedicine interventions for patients with multimorbidity: a systematic review and meta-analysis. *BMJ Open* 2020;10(10):e036904. doi: 10.1136/bmjopen-2020-036904

Mofina A, Miller J, Tranmer J, et al. Home care rehabilitation therapy services for

individuals with multimorbidity: A rapid review. *J Comorb* 2020;10:2235042X20976282. doi: 10.1177/2235042X20976282

Triolo F, Harber-Aschan L, Belvederi Murri M, et al. The complex interplay between depression and multimorbidity in late life: risks and pathways. *Mech Ageing Dev* 2020;192:111383. doi: 10.1016/j.mad.2020.111383

Abebe F, Schneider M, Asrat B, et al. Multimorbidity of chronic non-communicable diseases in low- and middle-income countries: A scoping review. *J Comorb* 2020;10:2235042X20961919. doi: 10.1177/2235042X20961919

Soley-Bori M, Ashworth M, Bisquera A, et al. Impact of multimorbidity on healthcare costs and utilisation: a systematic review of the UK literature. *Br J Gen Pract* 2021;71(702):e39-e46. doi: 10.3399/bjgp20X713897

Roomaney RA, van Wyk B, Turawa EB, et al. Prevalence of multimorbidity in South Africa: a systematic review protocol. *BMJ Open* 2020;10(12):e042889. doi: 10.1136/bmjopen-2020-042889

Bricca A, Harris LK, Jager M, et al. Benefits and harms of exercise therapy in people with multimorbidity: A systematic review and meta-analysis of randomised controlled trials. *Ageing Res Rev* 2020;63:101166. doi: 10.1016/j.arr.2020.101166

Hajek A, Kretzler B, Konig HH. Multimorbidity, Loneliness, and Social Isolation. A Systematic Review. *Int J Environ Res Public Health* 2020;17(22) doi: 10.3390/ijerph17228688

Ahmed MAA, Almirall J, Ngangue P, et al. A bibliometric analysis of multimorbidity from 2005 to 2019. *J Comorb* 2020;10:2235042X20965283. doi: 10.1177/2235042X20965283

Rodrigues M, Wiener JC, Stranges S, et al. The risk of physical multimorbidity in people with psychotic disorders: A systematic review and meta-analysis. *J Psychosom Res* 2021;140:110315. doi: 10.1016/j.jpsychores.2020.110315

Ingram E, Ledden S, Beardson S, et al. Household and area-level social determinants of multimorbidity: a systematic review. *J Epidemiol Community Health* 2020 doi: 10.1136/jech-2020-214691

Cheng C, Inder K, Chan SW. Coping with multiple chronic conditions: An integrative review. *Nurs Health Sci* 2020;22(3):486-97. doi: 10.1111/nhs.12695

Xiong F, Wang L, Shen L, et al. The relationship between multimorbidity and suicidal ideation: A meta-analysis. *J Psychosom Res* 2020;138:110257. doi: 10.1016/j.jpsychores.2020.110257

Frost R, Rait G, Wheatley A, et al. What works in managing complex conditions in older people in primary and community care? A state-of-the-art review. *Health Soc Care Community* 2020 doi: 10.1111/hsc.13085

Schweda S, Krauss I. Physical activity promotion for multimorbid patients in primary care settings: a protocol for a systematic review evaluating health benefits and harms. *Syst Rev* 2020;9(1):110. doi: 10.1186/s13643-020-01379-6

Damarell RA, Morgan DD, Tieman JJ. General practitioner strategies for managing patients with multimorbidity: a systematic review and thematic synthesis of qualitative research. *BMC Fam Pract* 2020;21(1):131. doi: 10.1186/s12875-020-01197-8

Lee JQ, Ying K, Lun P, et al. Intervention elements to reduce inappropriate prescribing for older adults with multimorbidity receiving outpatient care: a scoping review. *BMJ Open* 2020;10(8):e039543. doi: 10.1136/bmjopen-2020-039543

Smith T, Patel T, Akpan A, et al. A scoping review of community holistic interventions for older people with multimorbidity. *Br J Gen Pract* 2020;70(suppl 1) doi: 10.3399/bjgp20X711509

Markle-Reid M, McAiney C, Ganann R, et al. Study protocol for a hospital-to-home transitional care intervention for older adults with multiple chronic conditions and depressive symptoms: a pragmatic effectiveness-implementation trial. *BMC Geriatr* 2020;20(1):240. doi: 10.1186/s12877-020-01638-0

Tadeu ACR, IRC ESC, de Figueiredo IJ, et al. Multimorbidity and consultation time: a systematic review. *BMC Fam Pract* 2020;21(1):152. doi: 10.1186/s12875-020-01219-5

Peart A, Barton C, Lewis V, et al. A state-of-the-art review of the experience of care coordination interventions for people living with multimorbidity. *J Clin Nurs* 2020;29(9-10):1445-56. doi: 10.1111/jocn.15206

Gonzalez-Gonzalez AI, Schmucker C, Nothacker J, et al. End-of-life care preferences of older patients with multimorbidity: protocol of a mixed-methods systematic review. *BMJ Open* 2020;10(7):e038682. doi: 10.1136/bmjopen-2020-038682

Wetterling T. Pathogenesis of multimorbidity-what is known? *Z Gerontol Geriatr*. 2021 Oct;54(6):590-596. doi: 10.1007/s00391-020-01752-z

Lee HJ, Lee M, Ha JH, et al. Effects of healthcare interventions on psychosocial factors of patients with multimorbidity: A systematic review and meta-analysis. *Arch Gerontol Geriatr* 2020;91:104241. doi: 10.1016/j.archger.2020.104241

Yang C, Hui Z, Zeng D, et al. Examining and adapting the information-motivation-behavioural skills model of medication adherence among community-dwelling olderpatients with multimorbidity: protocol for a cross-sectional study. *BMJ Open* 2020;10(3):e033431. doi: 10.1136/bmjopen-2019-033431

Miller JJ, Pozehl BJ, Alonso W, et al. Intervention Components Targeting Self-Management in Individuals with Multiple Chronic Conditions: An Integrative Review. *West J Nurs Res* 2020;193945920902146. doi: 10.1177/0193945920902146

Peart A, Barton C, Lewis V, et al. A state-of-the-art review of the experience of care coordination interventions for people living with multimorbidity. *J Clin Nurs* 2020;29(9-10):1445-56. doi: 10.1111/jocn.15206

Davies LE, Spiers G, Kingston A, et al. Adverse Outcomes of Polypharmacy in Older People: Systematic Review of Reviews. *J Am Med Dir Assoc* 2020;21(2):181-87. doi: 10.1016/j.jamda.2019.10.022

Richter S, Demirer I, Choi KE, et al. People with multimorbidity in outpatient care: patient-focused and needs-oriented healthcare management (MamBo) - protocol for a multiperspective evaluation study. *BMC Health Serv Res* 2020;20(1):296. doi: 10.1186/s12913-020-05178-6

Sathanapally H, Sidhu M, Fahami R, et al. Priorities of patients with multimorbidity and of clinicians regarding treatment and health outcomes: a systematic mixed studies review. *BMJ Open* 2020;10(2):e033445. doi: 10.1136/bmjopen-2019-033445

Crowley EK, Sallevelt B, Huibers CJA, et al. Intervention protocol: OPTimising thERapy to prevent avoidable hospital Admission in the Multi-morbid elderly (OPERAM): a structured medication review with support of a computerised decision support system. *BMC Health Serv Res* 2020;**20**(1):220. doi: 10.1186/s12913-020-5056-3

Cheng C, Inder K, Chan SW. Coping with multiple chronic conditions: An integrative review. *Nurs Health Sci* 2020 doi: 10.1111/nhs.12695

Price ML, Surr CA, Gough B, et al. Experiences and support needs of informal caregivers of people with multimorbidity: a scoping literature review. *Psychol Health* 2020;**35**(1):36-69. doi: 10.1080/08870446.2019.1626125

Bare M, Herranz S, Jordana R, et al. Multimorbidity patterns in chronic older patients, potentially inappropriate prescribing and adverse drug reactions: protocol of the multicentre prospective cohort study MoPIM. *BMJ Open* 2020;**10**(1):e033322. doi: 10.1136/bmjopen-2019-033322

Webkamigad S, Rowe R, Peltier S, et al. Identifying and understanding the health and social care needs of Indigenous older adults with multiple chronic conditions and their caregivers: a scoping review. *BMC Geriatr* 2020;**20**(1):145. doi: 10.1186/s12877-020-01552-5

Maffoni M, Traversoni S, Costa E, et al. Medication adherence in the older adults with chronic multimorbidity: a systematic review of qualitative studies on patient's experience. *Eur Geriatr Med* 2020 doi: 10.1007/s41999-020-00313-2

Glattacker M, Kanat M, Schaefer J, et al. Availability and Quality of Assessment Instruments on Patient-Centredness in the Multimorbid Elderly (AQuA-PCE): a study protocol of a systematic review. *BMJ Open* 2020;**10**(2):e033273. doi: 10.1136/bmjopen-2019-033273

Butterworth JE, Hays R, McDonagh STJ, et al. Involving older people with multimorbidity in decision-making about their primary healthcare: A Cochrane systematic review of interventions (abridged). *Patient Educ Couns* 2020 doi: 10.1016/j.pec.2020.04.008

Gallo LC, Fortmann AL, Bravin JI, et al. My Bridge (Mi Puente), a care transitions intervention for Hispanics/Latinos with multimorbidity and behavioral health concerns: protocol for a randomized controlled trial. *Trials* 2020;**21**(1):174. doi: 10.1186/s13063-019-3722-8

Moller A, Bissenbakker KH, Arreskov AB, et al. Specific Measures of Quality of Life in Patients with Multimorbidity in Primary Healthcare: A Systematic Review on Patient-Reported Outcome Measures' Adequacy of Measurement. *Patient Relat Outcome Meas* 2020;**11**:1-10. doi: 10.2147/PROM.S226576

Daniel O, Dest A, Munson A, et al. Interventions to Enhance Patient and Family Engagement Among Adults With Multiple Chronic Conditions: A Systematic Scoping Review. *Med Care* 2020;**58**(4):407-16. doi: 10.1097/MLR.0000000000001274

Stirland LE, Gonzalez-Saavedra L, Mullin DS, et al. Measuring multimorbidity beyond counting diseases: systematic review of community and population studies and guide to index choice. *BMJ* 2020;**368**:m160. doi: 10.1136/bmj.m160

Garnett A, Ploeg J, Markle-Reid M, et al. Self-Report Tools for Assessing Physical Activity in Community-Living Older Adults with Multiple Chronic Conditions: A Systematic Review

of Psychometric Properties and Feasibility. *Can J Aging* 2020;**39**(1):12-30. doi: 10.1017/S0714980819000357

Gonzalez AG, Schmucker C, Nothacker J, et al. Health-related preferences of older patients with multimorbidity: an evidence map. *BMJ Open* 2019;**9**(12):e034485. doi: 10.1136/bmjopen-2019-034485

Butterworth JE, Hays R, McDonagh ST, et al. Interventions for involving older patients with multi-morbidity in decision-making during primary care consultations. *Cochrane Database Syst Rev* (2):CD003638 2019;2019(10) doi: 10.1002/14651858.CD013124.pub2

Gonzalez-Gonzalez AG, Schmucker C, Blom J, et al. Health-related preferences of older patients with multimorbidity: the protocol for an evidence map. *BMJ Open* 2019;**9**(9):e029724. doi: 10.1136/bmjopen-2019-029724

Pereira F, Roux P, Santiago-Delefosse M, et al. Optimising medication management for polymedicated home-dwelling older adults with multiple chronic conditions: a mixed-methods study protocol. *BMJ Open* 2019;**9**(10):e030030. doi: 10.1136/bmjopen-2019-030030

Boye LK, Mogensen CB, Mechlenborg T, et al. Older multimorbid patients' experiences on integration of services: a systematic review. *BMC Health Serv Res* 2019;**19**(1):795. doi: 10.1186/s12913-019-4644-6

Ferro MA, Lipman EL, Van Lieshout RJ, et al. Multimorbidity in Children and Youth Across the Life-course (MY LIFE): protocol of a Canadian prospective study. *BMJ Open* 2019;**9**(11):e034544. doi: 10.1136/bmjopen-2019-034544

Davis KM, Eckert MC, Shakib S, et al. Development and Implementation of a Nurse-Led Model of Care Coordination to Provide Health-Sector Continuity of Care for People With Multimorbidity: Protocol for a Mixed Methods Study. *JMIR research protocols* 2019;**8**(12):e15006. doi: 10.2196/15006

Busija L, Lim K, Szoeki C, et al. Do replicable profiles of multimorbidity exist? Systematic review and synthesis. *Eur J Epidemiol* 2019;**34**(11):1025-53. doi: 10.1007/s10654-019-00568-5

Cabral GG, Dantas de Souza AC, Barbosa IR, et al. Multimorbidity and Its Impact on Workers: A Review of Longitudinal Studies. *Saf Health Work* 2019;**10**(4):393-99. doi: 10.1016/j.shaw.2019.08.004

Peart A, Lewis V, Barton C, et al. Providing person-centred care for people with multiple chronic conditions: protocol for a qualitative study incorporating client and staff perspectives. *BMJ Open* 2019;**9**(10):e030581. doi: 10.1136/bmjopen-2019-030581

Eyowas FA, Schneider M, Yirdaw BA, et al. Multimorbidity of chronic non-communicable diseases and its models of care in low- and middle-income countries: a scoping review protocol. *BMJ Open* 2019;**9**(10):e033320. doi: 10.1136/bmjopen-2019-033320

Pereira F, Roux P, Rosselet Amoussou J, et al. Medication Management Models for Polymedicated Home-Dwelling Older Adults With Multiple Chronic Conditions: Protocol of a Systematic Review. *JMIR research protocols* 2019;**8**(5):e13582. doi: 10.2196/13582

Vetrano DL, Palmer K, Marengoni A, et al. Frailty and Multimorbidity: A Systematic Review and Meta-analysis. *J Gerontol A Biol Sci Med Sci* 2019;**74**(5):659-66. doi:

10.1093/gerona/gly110

Ofori-Asenso R, Chin KL, Curtis AJ, et al. Recent Patterns of Multimorbidity Among Older Adults in High-Income Countries. *Popul Health Manag* 2019;**22**(2):127-37. doi: 10.1089/pop.2018.0069

Boyd C, Smith CD, Masoudi FA, et al. Decision Making for Older Adults With Multiple Chronic Conditions: Executive Summary for the American Geriatrics Society Guiding Principles on the Care of Older Adults With Multimorbidity. *J Am Geriatr Soc* 2019;**67**(4):665-73. doi: 10.1111/jgs.15809

Silverio Rodrigues D, Sousa PF, Basilio N, et al. Primary care physicians' decision-making processes in the context of multimorbidity: protocol of a systematic review and thematic synthesis of qualitative research. *BMJ Open* 2019;**9**(4):e023832. doi: 10.1136/bmjopen-2018-023832

Kastner M, Hayden L, Wong G, et al. Underlying mechanisms of complex interventions addressing the care of older adults with multimorbidity: a realist review. *BMJ Open* 2019;**9**(4):e025009. doi: 10.1136/bmjopen-2018-025009

Birk JL, Kronish IM, Moise N, et al. Depression and multimorbidity: Considering temporal characteristics of the associations between depression and multiple chronic diseases. *Health Psychol* 2019;**38**(9):802-11. doi: 10.1037/hea0000737

Berntsen G, Strisland F, Malm-Nicolaisen K, et al. The Evidence Base for an Ideal Care Pathway for Frail Multimorbid Elderly: Combined Scoping and Systematic Intervention Review. *J Med Internet Res* 2019;**21**(4):e12517. doi: 10.2196/12517

Stoll CRT, Izadi S, Fowler S, et al. Multimorbidity in randomized controlled trials of behavioral interventions: A systematic review. *Health Psychol* 2019;**38**(9):831-39. doi: 10.1037/hea0000726

Goehner A, Kricheldorf C, Bitzer EM. Trained volunteers to support chronically ill, multimorbid elderly between hospital and domesticity - a systematic review of one-on-one-intervention types, effects, and underlying training concepts. *BMC Geriatr* 2019;**19**(1):126. doi: 10.1186/s12877-019-1130-2

Makovski TT, Schmitz S, Zeegers MP, et al. Multimorbidity and quality of life: Systematic literature review and meta-analysis. *Ageing Res Rev* 2019;**53**:100903. doi: 10.1016/j.arr.2019.04.005

Adam L, Moutzouri E, Baumgartner C, et al. Rationale and design of OPTimising thERapy to prevent Avoidable hospital admissions in Multimorbid older people (OPERAM): a cluster randomised controlled trial. *BMJ Open* 2019;**9**(6):e026769. doi: 10.1136/bmjopen-2018-026769 (Protocol)

Price ML, Surr CA, Gough B, et al. Experiences and support needs of informal caregivers of people with multimorbidity: a scoping literature review. *Psychol Health* 2019:1-34. doi: 10.1080/08870446.2019.1626125

Friedman E, Shorey C. Inflammation in multimorbidity and disability: An integrative review. *Health Psychol* 2019;**38**(9):791-801. doi: 10.1037/hea0000749

Swinglehurst D, Fudge N. Addressing the polypharmacy challenge in older people with multimorbidity (APOLLO-MM): study protocol for an in-depth ethnographic case study in primary care. *BMJ Open* 2019;**9**(8):e031601. doi: 10.1136/bmjopen-2019-031601

- Sirois C, Domingues NS, Laroche ML, et al. Polypharmacy Definitions for Multimorbid Older Adults Need Stronger Foundations to Guide Research, Clinical Practice and Public Health. *Pharmacy (Basel)* 2019;**7**(3) doi: 10.3390/pharmacy7030126
- Gonzalez-Gonzalez AG, Schmucker C, Blom J, et al. Health-related preferences of older patients with multimorbidity: the protocol for an evidence map. *BMJ Open* 2019;**9**(9):e029724. doi: 10.1136/bmjopen-2019-029724
- Jungo KT, Rozsnyai Z, Mantelli S, et al. 'Optimising Pharmacotherapy In the multimorbid elderly in primary CARE' (OPTICA) to improve medication appropriateness: study protocol of a cluster randomised controlled trial. *BMJ Open* 2019;**9**(9):e031080. doi: 10.1136/bmjopen-2019-031080
- Nguyen H, Manolova G, Daskalopoulou C, et al. Prevalence of multimorbidity in community settings: A systematic review and meta-analysis of observational studies. *J Comorb* 2019;**9**:2235042X19870934. doi: 10.1177/2235042X19870934
- Nicholson K, Almirall J, Fortin M. The measurement of multimorbidity. *Health Psychol* 2019;**38**(9):783-90. doi: 10.1037/hea0000739
- Johnston MC, Crilly M, Black C, et al. Defining and measuring multimorbidity: a systematic review of systematic reviews. *Eur J Public Health* 2019;**29**(1):182-89. doi: 10.1093/eurpub/cky098
- Ofori-Asenso R, Chin KL, Curtis AJ, et al. Recent Patterns of Multimorbidity Among Older Adults in High-Income Countries. *Popul Health Manag* 2019;**22**(2):127-37. doi: 10.1089/pop.2018.0069
- Nicholson K, Makovski TT, Griffith LE, et al. Multimorbidity and comorbidity revisited: refining the concepts for international health research. *J Clin Epidemiol* 2019;**105**:142-46. doi: 10.1016/j.jclinepi.2018.09.008
- Muth C, Blom JW, Smith SM, et al. Evidence supporting the best clinical management of patients with multimorbidity and polypharmacy: a systematic guideline review and expert consensus. *J Intern Med* 2019;**285**(3):272-88. doi: 10.1111/joim.12842
- Calderon-Larranaga A, Vetrano DL, Ferrucci L, et al. Multimorbidity and functional impairment-bidirectional interplay, synergistic effects and common pathways. *J Intern Med* 2019;**285**(3):255-71. doi: 10.1111/joim.12843
- Kadam UT, Roberts I, White S, et al. Conceptualizing multiple drug use in patients with comorbidity and multimorbidity: proposal for standard definitions beyond the term polypharmacy. *J Clin Epidemiol* 2019;**106**:98-107. doi: 10.1016/j.jclinepi.2018.10.014
- Ulley J, Harrop D, Ali A, et al. Deprescribing interventions and their impact on medication adherence in community-dwelling older adults with polypharmacy: a systematic review. *BMC Geriatr* 2019;**19**(1):15. doi: 10.1186/s12877-019-1031-4
- Boyd C, Smith CD, Masoudi FA, et al. Decision Making for Older Adults With Multiple Chronic Conditions: Executive Summary for the American Geriatrics Society Guiding Principles on the Care of Older Adults With Multimorbidity. *J Am Geriatr Soc* 2019;**67**(4):665-73. doi: 10.1111/jgs.15809
- Valderas JM, Gangannagaripalli J, Nolte E, et al. Quality of care assessment for people with multimorbidity. *J Intern Med* 2019;**285**(3):289-300. doi: 10.1111/joim.12881

Monreal-Bartolome A, Barcelo-Soler A, Castro A, et al. Efficacy of a blended low-intensity internet-delivered psychological programme in patients with multimorbidity in primary care: study protocol for a randomized controlled trial. *BMC Psychiatry* 2019;**19**(1):66. doi: 10.1186/s12888-019-2037-3

Frank F, Bjerregaard F, Bengel J, et al. Local, collaborative, stepped and personalised care management for older people with chronic diseases (LoChro): study protocol of a randomised comparative effectiveness trial. *BMC Geriatr* 2019;**19**(1):64. doi: 10.1186/s12877-019-1088-0

Silverio Rodrigues D, Sousa PF, Basilio N, et al. Primary care physicians' decision-making processes in the context of multimorbidity: protocol of a systematic review and thematic synthesis of qualitative research. *BMJ Open* 2019;**9**(4):e023832. doi: 10.1136/bmjopen-2018-023832

Kastner M, Hayden L, Wong G, et al. Underlying mechanisms of complex interventions addressing the care of older adults with multimorbidity: a realist review. *BMJ Open* 2019;**9**(4):e025009. doi: 10.1136/bmjopen-2018-025009

Makovski TT, Schmitz S, Zeegers MP, et al. Multimorbidity and quality of life: systematic literature review and meta-analysis. *Ageing Res Rev* 2019 doi: 10.1016/j.arr.2019.04.005

Zhang W, Radhakrishnan K. Evidence on selection, optimization, and compensation strategies to optimize aging with multiple chronic conditions: A literature review. *Geriatr Nurs* 2018;**39**(5):534-42. doi: 10.1016/j.gerinurse.2018.02.013

Ng SK, Tawiah R, Sawyer M, et al. Patterns of multimorbid health conditions: a systematic review of analytical methods and comparison analysis. *Int J Epidemiol* 2018;**47**(5):1687-704. doi: 10.1093/ije/dyy134

De Maria M, Vellone E, Ausili D, et al. Self-care of patient and caregiver DyAds in multiple chronic conditions: A LongITudinal studY (SODALITY) protocol. *J Adv Nurs* 2019;**75**(2):461-71. doi: 10.1111/jan.13834

Mannucci PM, Nobili A, Pasina L, et al. Polypharmacy in older people: lessons from 10 years of experience with the REPOSI register. *Intern Emerg Med* 2018;**13**(8):1191-200. doi: 10.1007/s11739-018-1941-8

McGilton KS, Vellani S, Yeung L, et al. Identifying and understanding the health and social care needs of older adults with multiple chronic conditions and their caregivers: a scoping review. *BMC Geriatr* 2018;**18**(1):231. doi: 10.1186/s12877-018-0925-x

Bilici E, Despotou G, Arvanitis TN. The use of computer-interpretable clinical guidelines to manage care complexities of patients with multimorbid conditions: A review. *Digit Health* 2018;**4**:2055207618804927. doi: 10.1177/2055207618804927

Muth C, Blom JW, Smith SM, et al. Evidence supporting the best clinical management of patients with multimorbidity and polypharmacy: a systematic guideline review and expert consensus. *J Intern Med* 2018 doi: 10.1111/joim.12842

Calderon-Larranaga A, Vetrano DL, Ferrucci L, et al. Multimorbidity and functional impairment: bidirectional interplay, synergistic effects and common pathways. *J Intern Med* 2018 doi: 10.1111/joim.12843

Ferreira GD, Simoes JA, Senaratna C, et al. Physiological markers and multimorbidity: A systematic review. *J Comorb* 2018;**8**(1):2235042X18806986. doi: 10.1177/2235042X18806986

Hajat C, Stein E. The global burden of multiple chronic conditions: A narrative review. *Prev Med Rep* 2018;**12**:284-93. doi: 10.1016/j.pmedr.2018.10.008

Kinchin I, Jacups S, Mann J, et al. Efficacy and cost-effectiveness of a community-based model of care for older patients with complex needs: a study protocol for a multicentre randomised controlled trial using a stepped wedge cluster design. *Trials* 2018;**19**(1):668. doi: 10.1186/s13063-018-3038-0

Grischott T, Zechmann S, Rachamin Y, et al. Improving inappropriate medication and information transfer at hospital discharge: study protocol for a cluster RCT. *Implement Sci* 2018;**13**(1):155. doi: 10.1186/s13012-018-0839-1

Ko D, Bratzke LC, Roberts T. Self-management assessment in multiple chronic conditions: A narrative review of literature. *Int J Nurs Stud* 2018;**83**:83-90. doi: 10.1016/j.ijnurstu.2018.04.009.

Iglesias FH, Celada CA, Navarro CB, et al. Complex Care Needs in Multiple Chronic Conditions: Population Prevalence and Characterization in Primary Care. A Study Protocol. *Int J Integr Care* 2018;**18**(2):16. doi: 10.5334/ijic.3292.

Kastner M, Cardoso R, Lai Y, et al. Effectiveness of interventions for managing multiple high-burden chronic diseases in older adults: a systematic review and meta-analysis. *CMAJ* 2018;**190**(34):E1004-E12. doi: 10.1503/cmaj.171391.

Bunn F, Goodman C, Russell B, et al. Supporting shared decision making for older people with multiple health and social care needs: a realist synthesis. *BMC Geriatr* 2018;**18**(1):165. doi: 10.1186/s12877-018-0853-9.

Markle-Reid M, Ploeg J, Valaitis R, et al. Protocol for a program of research from the Aging, Community and Health Research Unit: Promoting optimal aging at home for older adults with multimorbidity. *J Comorb* 2018;**8**(1):2235042X18789508. doi: 10.1177/2235042X18789508.

Romano I, Buchan MC, Ferro MA. Multimorbidity in children and youth: a scoping review protocol. *BMJ Open* 2018;**8**(5):e022413. doi: 10.1136/bmjopen-2018-022413.

Johnston MC, Crilly M, Black C, et al. Defining and measuring multimorbidity: a systematic review of systematic reviews. *Eur J Public Health* 2018 doi: 10.1093/eurpub/cky098.

Amer Nordin A, Mohd Hairi F, Choo WY, et al. Care Recipient Multimorbidity and Health Impacts on Informal Caregivers: A Systematic Review. *Gerontologist* 2018 doi: 10.1093/geront/gny072.

Vetrano DL, Palmer K, Marengoni A, et al. Frailty and multimorbidity: a systematic review and meta-analysis. *J Gerontol A Biol Sci Med Sci* 2018 doi: 10.1093/gerona/gly110.

Poitras ME, Maltais ME, Bestard-Denomme L, et al. What are the effective elements in patient-centered and multimorbidity care? A scoping review. *BMC Health Serv Res* 2018;**18**(1):446. doi: 10.1186/s12913-018-3213-8.

Leijten FRM, Struckmann V, van Ginneken E, et al. The SELFIE framework for integrated care for multi-morbidity: Development and description. *Health Policy* 2018;**122**(1):12-22. doi: 10.1016/j.healthpol.2017.06.002.

Northwood M, Ploeg J, Markle-Reid M, et al. Integrative review of the social determinants of health in older adults with multimorbidity. *J Adv Nurs* 2018;**74**(1):45-60. doi: 10.1111/jan.13408.

Wang L, Si L, Cocker F, et al. A Systematic Review of Cost-of-Illness Studies of Multimorbidity. *Appl Health Econ Health Policy* 2018;**16**(1):15-29. doi: 10.1007/s40258-017-0346-6.

Struckmann V, Leijten FRM, van Ginneken E, et al. Relevant models and elements of integrated care for multi-morbidity: Results of a scoping review. *Health Policy* 2018;**122**(1):23-35. doi: 10.1016/j.healthpol.2017.08.008

Catala-Lopez F, Alonso-Arroyo A, Page MJ, et al. Mapping of global scientific research in comorbidity and multimorbidity: A cross-sectional analysis. *PLoS One* 2018;**13**(1):e0189091. doi: 10.1371/journal.pone.0189091.

Baker JM, Grant RW, Gopalan A. A systematic review of care management interventions targeting multimorbidity and high care utilization. *BMC Health Serv Res* 2018;**18**(1):65. doi: 10.1186/s12913-018-2881-8.

Boehmer KR, Abu Dabrh AM, Gionfriddo MR, et al. Does the chronic care model meet the emerging needs of people living with multimorbidity? A systematic review and thematic synthesis. *PLoS One* 2018;**13**(2):e0190852. doi: 10.1371/journal.pone.0190852.

Beuscart JB, Knol W, Cullinan S, et al. International core outcome set for clinical trials of medication review in multi-morbid older patients with polypharmacy. *BMC Med* 2018;**16**(1):21. doi: 10.1186/s12916-018-1007-9.

Pathirana TI, Jackson CA. Socioeconomic status and multimorbidity: a systematic review and meta-analysis. *Aust N Z J Public Health* 2018;**42**(2):186-94. doi: 10.1111/1753-6405.12762.

Kanesarajah J, Waller M, Whitty JA, et al. Multimorbidity and quality of life at mid-life: A systematic review of general population studies. *Maturitas* 2018;**109**:53-62. doi: 10.1016/j.maturitas.2017.12.004.

Sum G, Hone T, Atun R, et al. Multimorbidity and out-of-pocket expenditure on medicines: a systematic review. *BMJ Glob Health* 2018;**3**(1):e000505. doi: 10.1136/bmjgh-2017-000505.

LeBlanc RG, Jacelon CS. Self-care among older people living with chronic conditions. *Int J Older People Nurs* 2018:e12191. doi: 10.1111/opn.12191.

.Wallis KA, Elley CR, Lee A, et al. Safer Prescribing and Care for the Elderly (SPACE): Protocol of a Cluster Randomized Controlled Trial in Primary Care. *JMIR research protocols* 2018;**7**(4):e109. doi: 10.2196/resprot.9839.

Ko D, Bratzke LC, Roberts T. Self-management assessment in multiple chronic conditions: A narrative review of literature. *Int J Nurs Stud* 2018;**83**:83-90. doi: 10.1016/j.ijnurstu.2018.04.009.

Backman R, Weber P, Turner AM, Lee M, Litchfield I. Assessing the extent of drug

- interactions among patients with multimorbidity in primary and secondary care in the West Midlands (UK): a study protocol for the Mixed Methods Multimorbidity Study (MiMMS). *BMJ Open*. 2017;**7**(9):e016713.
- Masnoon N, Shakib S, Kalisch-Ellett L, Caughey GE. What is polypharmacy? A systematic review of definitions. *BMC Geriatr*. 2017;**17**(1):230.
- Read JR, Sharpe L, Modini M, Dear BF. Multimorbidity and depression: A systematic review and meta-analysis. *J Affect Disord*. 2017;**221**:36-46.
- Martinez YV, Renom-Guiteras A, Reeves D, et al. A set of systematic reviews to help reduce inappropriate prescribing to older people: study protocol. *BMC Geriatr*. 2017;**17**(Suppl 1):231.
- Bujold M, Pluye P, Legare F, et al. Decisional needs assessment of patients with complex care needs in primary care: a participatory systematic mixed studies review protocol. *BMJ Open*. 2017;**7**(11):e016400.
- Commisso E, McGilton KS, Ayala AP, et al. Identifying and understanding the health and social care needs of older adults with multiple chronic conditions and their caregivers: a protocol for a scoping review. *BMJ Open*. 2017;**7**(12):e018247.
- Northwood M, Ploeg J, Markle-Reid M, Sherifali D. Integrative review of the social determinants of health in older adults with multimorbidity. *J Adv Nurs*. 2018;**74**(1):45-60.
- Sasseville M, Chouinard MC, Fortin M. Patient-reported outcomes in multimorbidity intervention research: A scoping review. *Int J Nurs Stud*. 2018;**77**:145-153.
- Struckmann V, Leijten FRM, van Ginneken E, et al. Relevant models and elements of integrated care for multi-morbidity: Results of a scoping review. *Health Policy*. 2018;**122**(1):23-35.
- Fitzgerald SP, Bean NG, Ruberu RP. A method of decision analysis quantifying the effects of age and comorbidities on the probability of deriving significant benefit from medical treatments. *Journal of Comorbidity* 2017;**7**:50-63
- Stewart M, Fortin M, Patient-Centred Innovations for Persons with Multimorbidity T. Patient-Centred Innovations for Persons with Multimorbidity: funded evaluation protocol. *CMAJ Open*. 2017;**5**(2):E365-E372. doi: 10.9778/cmajo.20160097.
- Sirois C, Laroche ML, Guenette L, Kroger E, Cooper D, Emond V. Polypharmacy in multimorbid older adults: protocol for a systematic review. *Syst Rev*. 2017;**6**(1):104. doi: 10.1186/s13643-017-0492-9.
- Rodriguez-Perez A, Alfaro-Lara ER, Albinana-Perez S, et al. Novel tool for deprescribing in chronic patients with multimorbidity: List of Evidence-Based Deprescribing for Chronic Patients criteria. *Geriatr Gerontol Int*. 2017. doi: 10.1111/ggi.13062.
- Xu X, Mishra GD, Jones M. Mapping the global research landscape and knowledge gaps on multimorbidity: a bibliometric study. *J Glob Health*. 2017;**7**(1):010414. doi: 10.7189/jogh.07.010414.
- Aguilar D, Pinart M, Koppelman GH, et al. Computational analysis of multimorbidity between asthma, eczema and rhinitis. *PLoS One*. 2017;**12**(6):e0179125. doi: 10.1371/journal.pone.0179125.

Tisminetzky M, Bayliss EA, Magaziner JS, et al. Research Priorities to Advance the Health and Health Care of Older Adults with Multiple Chronic Conditions. *J Am Geriatr Soc*. 2017;**65**(7):1549-1553. doi: 10.1111/jgs.14943.

Corazza GR, Klersy C, Formagnana P, Lenti MV, Padula D, Consensus P. A consensus for the development of a vector model to assess clinical complexity. *Intern Emerg Med*. 2017. doi: 10.1007/s11739-017-1709-6.

Vermunt N, Harmsen M, Westert GP, Olde Rikkert MGM, Faber MJ. Collaborative goal setting with elderly patients with chronic disease or multimorbidity: a systematic review. *BMC Geriatr*. 2017;**17**(1):167. doi: 10.1186/s12877-017-0534-0.

Xu X, Mishra GD, Jones M. Evidence on multimorbidity from definition to intervention: An overview of systematic reviews. *Ageing Res Rev*. 2017;**37**:53-68. doi: 10.1016/j.arr.2017.05.003.

Northwood M, Ploeg J, Markle-Reid M, Sherifali D. Integrative review of the social determinants of health in older adults with multimorbidity. *J Adv Nurs*. 2017. doi: 10.1111/jan.13408.

Wang L, Si L, Cocker F, Palmer AJ, Sanderson K. A Systematic Review of Cost-of-Illness Studies of Multimorbidity. *Appl Health Econ Health Policy*. 2017. doi: 10.1007/s40258-017-0346-6.

Read JR, Sharpe L, Modini M, Dear BF. Multimorbidity and depression: A systematic review and meta-analysis. *J Affect Disord*. 2017;**221**:36-46. doi: 10.1016/j.jad.2017.06.009.

van der Aa MJ, van den Broeke JR, Stronks K, Plochg T. Patients with multimorbidity and their experiences with the healthcare process: a scoping review. *Journal of Comorbidity*. 2017;**7**:11-21.

Mercer SW, Fitzpatrick B, Grant L, et al. The Glasgow 'Deep End' Links Worker Study Protocol: a quasi-experimental evaluation of a social prescribing intervention for patients with complex needs in areas of high socioeconomic deprivation. *Journal of Comorbidity*. 2017;**7**:1-10.

Bunn F, Goodman C, Manthorpe J, et al. Supporting shared decision-making for older people with multiple health and social care needs: a protocol for a realist synthesis to inform integrated care models. *BMJ Open*. 2017;**7**(2):e014026.

Rohleder N. Translating biobehavioral research advances into improvements in health care-a "network of networks" approach to multimorbidity. *J Eval Clin Pract*. 2017;**23**(1):230-232.

Holzer BM, Siebenhuener K, Bopp M, Minder CE. Evidence-based design recommendations for prevalence studies on multimorbidity: improving comparability of estimates. *Popul Health Metr*. 2017;**15**(1):9.

Aron DC. Multimorbidity: an endocrinologist looks at multi-level network disruption and at what gets diabetes? *J Eval Clin Pract*. 2017;**23**(1):225-229.

Watt J, Tricco AC, Vyas M, et al. Outcomes associated with prescribed medications in older adults with multimorbidity: protocol for a scoping review. *BMJ Open*. 2017;**7**(2):e014529.

Trivedi D. Cochrane Review Summary: Interventions for improving outcomes in patients

with multimorbidity in primary care and community settings. *Prim Health Care Res Dev.* 2017;**18**(2):109-111.

Bircher J, Hahn EG. "Multimorbidity" as the manifestation of network disturbances. From nosology to the Meikirch model. *J Eval Clin Pract.* 2017;**23**(1):222-224.

Stewart D, Mair A, Wilson M, et al. Guidance to manage inappropriate polypharmacy in older people: systematic review and future developments. *Expert Opin Drug Saf.* 2017;**16**(2):203-213.

Marcum JA. Multimorbidity, P4 medicine and holism. *J Eval Clin Pract.* 2017;**23**(1):213-215.

Prados-Torres A, Del Cura-Gonzalez I, Prados-Torres D, et al. Effectiveness of an intervention for improving drug prescription in primary care patients with multimorbidity and polypharmacy: study protocol of a cluster randomized clinical trial (Multi-PAP project). *Implement Sci.* 2017;**12**(1):54.

Miles A, Asbridge JE. Multimorbidity-A manifestation of network disturbances? How to investigate? How to treat? *J Eval Clin Pract.* 2017;**23**(1):193-198.

Sturmberg JP, Bennett JM, Martin CM, Picard M. 'Multimorbidity' as the manifestation of network disturbances. *J Eval Clin Pract.* 2017;**23**(1):199-208.

Walker C, Peterson CL. Multimorbidity: a sociological perspective of systems. *J Eval Clin Pract.* 2017;**23**(1):209-212.

Cohn J. Advanced serious illness, multimorbidity, and multibeneficence: The role of communication. *J Eval Clin Pract.* 2017.

Young CE, Boyle FM, Mutch AJ. Are care plans suitable for the management of multiple conditions? *Journal of Comorbidity.* 2016;**6**:103-113.

Crowe M, Jordan J, Burrell B, et al. Clinical effectiveness of transdiagnostic health management interventions for older people with multimorbidity: a quantitative systematic review. *J Adv Nurs.* 2016;**72**(10):2315-2329.

Nunes BP, Flores TR, Mielke GI, Thume E, Facchini LA. Multimorbidity and mortality in older adults: A systematic review and meta-analysis. *Arch Gerontol Geriatr.* 2016;**67**:130-138.

Trivedi D. Cochrane Review Summary: Interventions for improving outcomes in patients with multimorbidity in primary care and community settings. *Prim Health Care Res Dev.* 2016:1-3.

Wilson MG, Lavis JN, Gauvin FP. Designing Integrated Approaches to Support People with Multimorbidity: Key Messages from Systematic Reviews, Health System Leaders and Citizens. *Healthc Policy.* 2016;**12**(2):91-104.

Figueira I, Fernandes A, Mladenovic Djordjevic A, et al. Interventions for age-related diseases: Shifting the paradigm. *Mech Ageing Dev.* 2016;**160**:69-92.

Brown TT, Guaraldi G. Multimorbidity and Burden of Disease. *Interdiscip Top Gerontol Geriatr.* 2017;**42**:59-73.

Lewis C, Wallace E, Kyne L, Cullen W, Smith SM. Training doctors to manage patients with multimorbidity: a systematic review. *Journal of Comorbidity.* 2016;**6**:85-94.

Hopman P, de Bruin SR, Forjaz MJ, et al. Effectiveness of comprehensive care programs for patients with multiple chronic conditions or frailty: A systematic literature review. *Health Policy*. 2016;**120**:818-32.

Boehmer KR, Gionfriddo MR, Rodriguez-Gutierrez R, et al. Patient capacity and constraints in the experience of chronic disease: a qualitative systematic review and thematic synthesis. *BMC Fam Pract*. 2016;**17**:127.

Pitkala KH, Suominen MH, Bell JS, Strandberg TE. Herbal medications and other dietary supplements. A clinical review for physicians caring for older people. *Annals of medicine*. 2016:1-17.

McPhail SM. Multimorbidity in chronic disease: impact on health care resources and costs. *Risk Manag Healthc Policy*. 2016;**9**:143-56.

Buffel du Vaure C, Dechartres A, Battin C, Ravaud P, Boutron I. Exclusion of patients with concomitant chronic conditions in ongoing randomised controlled trials targeting 10 common chronic conditions and registered at ClinicalTrials.gov: a systematic review of registration details. *BMJ Open*. 2016;**6**:e012265.

Figueira I, Fernandes A, Mladenovic A, et al. Interventions for age-related diseases: Shifting the paradigm. *Mech Ageing Dev*. 2016.

Navickas R, Petric V-K, Feigl AB, Seychell M. Multimorbidity: What do we know? What should we do? *Journal of Comorbidity*. 2016;**6**:4-11.

Albrecht T, Dyakova M, Schellevis F, Van den Broucke S. Many diseases, one model of care? *Journal of Comorbidity*. 2016;**6**:12-20.

Colombo F, García-Goñi M, Schwierz C. Addressing multimorbidity to improve healthcare and economic sustainability. *Journal of Comorbidity*. 2016;**6**:21-2.

Hasardzhiev S, Mendão L, Nolte W, Aben B, Karin Kadenbach K. Managing multimorbidity: how can the patient experience be improved? *Journal of Comorbidity*. 2016;**6**:28-32.

Tinetti ME, Esterson J, Ferris R, Posner P, Blaum CS. Patient Priority-Directed Decision Making and Care for Older Adults with Multiple Chronic Conditions. *Clin Geriatr Med*. 2016;**32**:261-75.

Zullig LL, Whitson HE, Hastings SN, et al. A Systematic Review of Conceptual Frameworks of Medical Complexity and New Model Development. *J Gen Intern Med*. 2016;**31**:329-37.

Suls J, Green PA, Davidson KW. A Behavioral Framework to Address the Emerging Challenge of Multimorbidity. *Psychosom Med*. 2016;**78**:281-9.

Willadsen TG, Bebe A, Koster-Rasmussen R, et al. The role of diseases, risk factors and symptoms in the definition of multimorbidity - a systematic review. *Scand J Prim Health Care*. 2016;**34**:112-21.

Smith SM, Wallace E, O'Dowd T, Fortin M. Interventions for improving outcomes in patients with multimorbidity in primary care and community settings. *Cochrane Database Syst Rev* (2):CD003638. 2016;**3**:CD006560.

[No authors listed]. Multimorbidity draft rules published for consultation. *Nurs Stand.* 2016;**30**:10.

Wister AV, Coatta KL, Schuurman N, Lear SA, Rosin M, MacKey D. A Lifecourse Model of Multimorbidity Resilience: Theoretical and Research Developments. *Int J Aging Hum Dev.* 2016;**82**:290-313.

Man MS, Chaplin K, Mann C, et al. Improving the management of multimorbidity in general practice: protocol of a cluster randomised controlled trial (The 3D Study). *BMJ Open.* 2016;**6**:e011261.

Mann C, Shaw A, Guthrie B, et al. Protocol for a process evaluation of a cluster randomised controlled trial to improve management of multimorbidity in general practice: the 3D study. *BMJ Open.* 2016;**6**:e011260.

Grudniewicz A, Nelson M, Kuluski K, et al. Treatment goal setting for complex patients: protocol for a scoping review. *BMJ Open.* 2016;**6**:e011869.

Mangin D, Stephen G, Bismah V, Risdon C. Making patient values visible in healthcare: a systematic review of tools to assess patient treatment priorities and preferences in the context of multimorbidity. *BMJ Open.* 2016;**6**:e010903.

Marcum JA. Multimorbidity, P4 medicine and holism. *J Eval Clin Pract.* 2016.

Lavan AH, Gallagher PF, O'Mahony D. Methods to reduce prescribing errors in elderly patients with multimorbidity. *Clinical interventions in aging.* 2016;**11**:857-66.

Lefevre T, d'Ivernois JF, De Andrade V, Crozet C, Lombrail P, Gagnayre R: What do we mean by multimorbidity? An analysis of the literature on multimorbidity measures, associated factors, and impact on health services organization. *Rev Epidemiol Sante Publique.* 2014;**62**(5):305-314.

Deccache C, Albano MG, de Andrade V, Crozet C: Therapeutic patient education for patients with multimorbidity: a recent literature review. *Education Thérapeutique du Patient-Therapeutic Patient Education.* 2014;**6**(2):20105.

Nicholson K, Terry AL, Fortin M, Williamson T, Bauer M, Thind A. Examining the prevalence and patterns of multimorbidity in Canadian primary healthcare: a methodologic protocol using a national electronic medical record database. *Journal of Comorbidity* 2015;**5**(1):150-161.

Healey EL, Jinks C, Tan VA, Chew-Graham CA, Lawton SA, Nicholls E, Finney AG, Porcheret M, Cooper V, Lewis M, Dziedzic KS, Wathall S, Mallen CD. Improving the care of people with long-term conditions in primary care: protocol for the ENHANCE pilot trial. *Journal of Comorbidity* 2015;**5**(1):135-149.

McKenzie KJ, Pierce D, Gunn JM. A systematic review of motivational interviewing in healthcare: the potential of motivational interviewing to address the lifestyle factors relevant to multimorbidity. *Journal of Comorbidity* 2015;**5**(1):162-174.

Oni T, Unwin N: Why the communicable/non-communicable disease dichotomy is problematic for public health control strategies: implications of multimorbidity for health systems in an era of health transition. *Int Health.* 2015;**7**(6):390-399.

Pati S, Swain S, Hussain MA, van den Akker M, Metsemakers J, Knottnerus JA *et al*: Prevalence and outcomes of multimorbidity in South Asia: a systematic review. *BMJ*

Open. 2015;**5**(10):e007235.

Ryan A, Wallace E, O'Hara P, Smith SM: Multimorbidity and functional decline in community-dwelling adults: a systematic review. *Health Qual Life Outcomes*. 2015;**13**:168.

Deruaz-Luyet A, N'Goran AA, Tandjung R, Frey P, Zeller A, Haller DM *et al*: Multimorbidity in primary care: protocol of a national cross-sectional study in Switzerland. *BMJ Open*. 2015;**5**(10):e009165.

Villalba-Moreno AM, Alfaro-Lara ER, Perez-Guerrero MC, Nieto-Martin MD, Santos-Ramos B: Systematic review on the use of anticholinergic scales in poly pathological patients. *Arch Gerontol Geriatr*. 2016;**62**:1-8.

Coventry PA, Small N, Panagioti M, Adeyemi I, Bee P: Living with complexity; marshalling resources: a systematic review and qualitative meta-synthesis of lived experience of mental and physical multimorbidity. *BMC Fam Pract*. 2015;**16**(1):171.

Stawicki SP, Kalra S, Jones C, Justiniano CF, Papadimos TJ, Galwankar SC *et al*: Comorbidity polypharmacy score and its clinical utility: A pragmatic practitioner's perspective. *J Emerg Trauma Shock*. 2015;**8**(4):224-231.

Berntsen GK, Gammon D, Steinsbekk A, Salamonsen A, Foss N, Ruland C *et al*: How do we deal with multiple goals for care within an individual patient trajectory? A document content analysis of health service research papers on goals for care. *BMJ Open*. 2015;**5**(12):e009403.

Sonnichsen A, Trampisch US, Rieckert A, Piccoliori G, Vogele A, Flamm M *et al*: Polypharmacy in chronic diseases-Reduction of Inappropriate Medication and Adverse drug events in older populations by electronic Decision Support (PRIMA-eDS): study protocol for a randomized controlled trial. *Trials*. 2016;**17**(1):57.

Koch G, Wakefield BJ, Wakefield DS. Barriers and facilitators to managing multiple chronic conditions: a systematic literature review. *West J Nurs Res*. Apr 2015;**37**(4):498-516.

Ricci-Cabello I, Violan C, Foguet-Boreu Q, Mounce LT, Valderas JM. Impact of multimorbidity on quality of healthcare and its implications for health policy, research and clinical practice. A scoping review. *Eur J Gen Pract*. Sep 2015;**21**(3):192-202.

Jellinger KA, Attems J. Challenges of multimorbidity of the aging brain: a critical update. *J Neural Transm*. Apr 2015;**122**(4):505-521.

Alonso-Moran E, Nuno-Solinis R, Onder G, Tonnara G. Multimorbidity in risk stratification tools to predict negative outcomes in adult population. *Eur J Intern Med*. Apr 2015;**26**(3):182-189.

Damery S, Flanagan S, Combes G. The effectiveness of interventions to achieve co-ordinated multidisciplinary care and reduce hospital use for people with chronic diseases: study protocol for a systematic review of reviews. *Syst Rev*. 2015;**4**:64.

Hasler S, Senn O, Rosemann T, Neuner-Jehle S. Effect of a patient-centered drug review on polypharmacy in primary care patients: study protocol for a cluster-randomized controlled trial. *Trials*. 2015;**16**(1):380.

- Panagioti M, Stokes J, Esmail A, et al. Multimorbidity and Patient Safety Incidents in Primary Care: A Systematic Review and Meta-Analysis. *PLoS One*. 2015;**10**(8):e0135947.
- Nelson MLA, Kelloway L, Dawson D, et al. Stroke rehabilitation and patients with multimorbidity: a scoping review protocol. *Journal of Comorbidity*. 2015;**5**:1–10.
- Doessing A, Burau V. Care coordination of multimorbidity: a scoping study. *Journal of Comorbidity*. 2015;**5**:15–28.
- Bratzke LC, Muehrer RJ, Kehl KA, Lee KS, Ward EC, Kwekkeboom KL. Self-management priority setting and decision-making in adults with multimorbidity: a narrative review of literature. *Int J Nurs Stud*. Mar 2015;**52**(3):744-755.
- Barnes PJ. Mechanisms of development of multimorbidity in the elderly. *Eur Respir J*. Mar 2015;**45**(3):790-806.
- Alonso-Moran E, Nuno-Solinis R, Onder G, Tonnara G. Multimorbidity in risk stratification tools to predict negative outcomes in adult population. *Eur J Intern Med*. Apr 2015;**26**(3):182-189.
- Hu X, Huang J, Lv Y, Li G, Peng X. Status of prevalence study on multimorbidity of chronic disease in China: systematic review. *Geriatr Gerontol Int*. Jan 2015;**15**(1):1-10.
- Doos L, Roberts EO, Corp N, Kadam UT. Multi-drug therapy in chronic condition multimorbidity: a systematic review. *Fam Pract*. Dec 2014;**31**(6):654-663.
- Shiner A, Ford J, Steel N, Salisbury C, Howe A. Managing multimorbidity in primary care. *InnovAiT*. 2014;**7**:691-700.
- Fried TR, O'Leary J, Towle V, Goldstein MK, Trentelange M, Martin DK. The effects of comorbidity on the benefits and harms of treatment for chronic disease: a systematic review. *PLoS One*. 2014;**9**(11):e112593.
- Yurkovich M, Avina-Zubieta JA, Thomas J, Gorenchtein M, Lacaille D. A systematic review identifies valid comorbidity indices derived from administrative health data. *J Clin Epidemiol*. Jan 2015;**68**(1):3-14.
- Liddy C, Blazkho V, Mill K. Challenges of self-management when living with multiple chronic conditions: systematic review of the qualitative literature. *Can Fam Physician*. Dec 2014;**60**(12):1123-1133.
- Guaraldi G, Silva AR, Stentarelli C. Multimorbidity and functional status assessment. *Curr Opin HIV AIDS*. 2014;**9**(4):386-397.
- Boyd CM, Lucas GM. Patient-centered care for people living with multimorbidity. *Curr Opin HIV AIDS*. 2014;**9**(4):419-427.
- Violan C, Foguet-Boreu Q, Flores-Mateo G, Salisbury C, Blom J, Freitag M, Glynn L, Muth C, Valderas JM. Prevalence, determinants and patterns of multimorbidity in primary care: a systematic review of observational studies. *PLoS One*. 2014;**9**(7):e102149.
- Holzer BM, Siebenhuener K, Bopp M, Minder CE. Overcoming cut-off restrictions in multimorbidity prevalence estimates. *BMC Public Health*. 2014;**14**:780.
- Wyatt KD, Stuart LM, Brito JP, Carranza Leon B, Domecq JP, Prutsky GJ, Egginton JS, Calvin AD, Shah ND, Murad MH, Montori VM. Out of context: clinical practice guidelines

and patients with multiple chronic conditions: a systematic review. *Med Care*. Mar 2014;**52** Suppl 3:S92-S100.

Grembowski D, Schaefer J, Johnson KE, Fischer H, Moore SL, Tai-Seale M, Ricciardi R, Fraser JR, Miller D, LeRoy L. A conceptual model of the role of complexity in the care of patients with multiple chronic conditions. *Med Care*. Mar 2014;**52** Suppl 3:S7-S14.

Ong BN, Richardson JC, Porter T, Grime J. Exploring the relationship between multi-morbidity, resilience and social connectedness across the lifecourse. *Health (London)*. May 2014;**18**(3):302-318.

Zulman DM, Asch SM, Martins SB, Kerr EA, Hoffman BB, Goldstein MK. Quality of care for patients with multiple chronic conditions: the role of comorbidity interrelatedness. *J Gen Intern Med*. Mar 2014;**29**(3):529-537.

Prados-Torres A, Calderon-Larranaga A, Hanco-Saavedra J, Poblador-Plou B, van den Akker M. Multimorbidity patterns: a systematic review. *J Clin Epidemiol*. Mar 2014;**67**(3):254-266.

Haibach JP, Beehler GP, Dollar KM, Finnell DS. Moving toward integrated behavioral intervention for treating multimorbidity among chronic pain, depression, and substance-use disorders in primary care. *Med Care*. Apr 2014;**52**(4):322-327.

Pillay M, Dennis S, Harris MF. Quality of care measures in multimorbidity. *Aust Fam Physician*. Mar 2014;**43**(3):132-136.

Genuis SJ, Tymchak MG. Approach to patients with unexplained multimorbidity with sensitivities. *Can Fam Physician*. Jun 2014;**60**(6):533-538.

Quiñones AR, Richardson J, Freeman M, Fu R, O'Neil ME, Motu'apuaka M, Kansagara D. Educational group visits for the management of chronic health conditions: A systematic review. *Patient Educ Couns*. Jan 13 2014.

Vos R, Aarts S, van Mulligen E, Metsemakers J, van Boxtel MP, Verhey F, van den Akker M. Finding potentially new multimorbidity patterns of psychiatric and somatic diseases: exploring the use of literature-based discovery in primary care research. *J Am Med Inform Assoc*. Jan-Feb 2014;**21**(1):139-145.

Haibach JP, Beehler GP, Dollar KM, Finnell DS. Moving Toward Integrated Behavioral Intervention for Treating Multimorbidity Among Chronic Pain, Depression, and Substance-use Disorders in Primary Care. *Med Care*. Feb 19 2014.

de Decker L, Annweiler C, Launay C, Fantino B, Beauchet O. Do not resuscitate orders and aging: impact of multimorbidity on the decision-making process. *J Nutr Health Aging*. 2014;**18**(3):330-335.

Akner G. Frailty and Multimorbidity in Elderly People: A Shift in Management Approach. *Clinical Geriatrics*. 2013;**21**(<http://www.clinicalgeriatrics.com/article/frailty-multimorbidity-elderly-shift-management-approach>)

Boutayeb A, Boutayeb S, Boutayeb W. Multi-morbidity of non communicable diseases and Equity in WHO Eastern Mediterranean countries. *Int J Equity Health*. Aug 20 2013;**12**(1):60.

Salive ME. Multimorbidity in Older Adults. *Epidemiol Rev*. Jan 31 2013.

Attems J, Jellinger K. Neuropathological Correlates of Cerebral Multimorbidity. *Curr Alzheimer Res*. Apr 29 2013.

Kernick D. A theoretical framework for multimorbidity: from complicated to chaotic. *Br J Gen Pract.* Sep 2012;**62**(602):e659-662.

van den Brink AM, Gerritsen DL, Voshaar RC, Koopmans RT. Residents with mental-physical multimorbidity living in long-term care facilities: prevalence and characteristics. A systematic review. *Int Psychogeriatr.* Dec 4 2012:1-18.

Boyd CM, Vollenweider D, Puhon MA. Informing evidence-based decision-making for patients with comorbidity: availability of necessary information in clinical trials for chronic diseases. *PLoS One.* 2012;**7**(8):e41601.

de Bruin SR, Versnel N, Lemmens LC, et al. Comprehensive care programs for patients with multiple chronic conditions: A systematic literature review. *Health Policy.* Oct 2012;**107**(2-3):108-145.

Huntley AL, Johnson R, Purdy S, Valderas JM, Salisbury C. Measures of multimorbidity and morbidity burden for use in primary care and community settings: a systematic review and guide. *Ann Fam Med.* Mar-Apr 2012;**10**(2):134-141.

Fortin M, Stewart M, Poitras M-E, Almirall J, Maddocks H. A Systematic Review of Prevalence Studies on Multimorbidity: Toward a More Uniform Methodology. *Ann Fam Med.* 2012;**10**:142-151.

Smith SM, Soubhi H, Fortin M, Hudon C, O'Dowd T. Interventions for improving outcomes in patients with multimorbidity in primary care and community settings. *Cochrane Database Syst Rev* (2):CD003638. 2012;**4**:CD006560.

France EF, Wyke S, Gunn JM, Mair FS, McLean G, Mercer SW. Multimorbidity in primary care: a systematic review of prospective cohort studies. *Br J Gen Pract.* Apr 2012;**62**(597):297-307.

Nobili A, Garattini S, Mannucci PM. Multiple diseases and polypharmacy in the elderly: challenges for the internist of the third millennium. *Journal of Comorbidity.* 2011;**1**:28-44.

Esper AM, Martin GS. The impact of comorbid conditions on critical illness. *Crit Care Med.* 2011;**39**:2728-35.

Lehnert T, Heider D, Leicht H, Heinrich S, Corrieri S, Lupp M, Riedel-Heller S, König HH. Review: health care utilization and costs of elderly persons with multiple chronic conditions. *Med Care Res Rev.* 2011;**68**(4):387-420.

Marengoni A, Angleman S, Melis R, et al. Aging with multimorbidity: A systematic review of the literature. *Ageing Res Rev* 2011;**10**(4):430-9.

Lupari M, Coates V, Adamson G, Crealey GE. We're just not getting it right!--how should we provide care to the older person with multi-morbid chronic conditions? *J Clin Nurs* 2011;20.

Jakovljević M et al. Comorbidity, multimorbidity and personalized psychosomatic medicine: epigenetics rolling on the horizon. *Psychiatr Danub.* 2010. **22**(2):184-9.

Wehling M. Multimorbidity and polypharmacy: which betablocker to use in relation to the pharmacokinetic profile and interaction potential. *Arzneimittelforschung.* 2010. **60**(2):57-63.

Junius-Walker U et al. Health and treatment priorities in patients with multimorbidity: report on a workshop from the European General Practice Network meeting 'Research on multimorbidity in general practice'. *Eur J Gen Pract.* 2010. **16**(1):51-4.

Iezzoni LI. Multiple Chronic Conditions and Disabilities: Implications for Health Services Research and Data Demands. *Health Serv Res.* 2010;**45**(5 Pt 2):1523-40.

Singer SJ et al. Defining and Measuring Integrated Patient Care: Promoting the Next Frontier in Health Care Delivery. *Med Care Res Rev.* 2011;**68**(1):112-27.

Michel JP, Pautex S, Aapro M, Zulian G. Frail old patients as a target population for cancer trials. *J Nutr Health Aging.* 2009. **13**(1):31-3.

Smith GC. From consultation-liaison psychiatry to integrated care for multiple and complex needs. *Aust N Z J Psychiatry.* 2009. **43**(1):1-12.

Luck, J., P. Parkerton, et al. "What is the business case for improving care for patients with complex conditions?" *Journal of General Internal Medicine* 2007. **22** Suppl 3: 396-402.

Safford, M. M., J. J. Allison, et al. "Patient complexity: more than comorbidity. the vector model of complexity." *Journal of General Internal Medicine* 2007. **22** Suppl 3: 382-90.

Vogeli, C., A. E. Shields, et al.. "Multiple chronic conditions: prevalence, health consequences, and implications for quality, care management, and costs." *Journal of General Internal Medicine* 2007. **22** Suppl 3: 391-5.

Vitry AI, Zhang Y. Quality of Australian clinical guidelines and relevance to the care of older people with multiple comorbid conditions. *Med J Aust.* 2008. **189**(7):360-5.

Williams A, Manias E, Walker R. Interventions to improve medication adherence in people with multiple chronic conditions: a systematic review. *J Adv Nurs.* 2008. **63**(2):132-43.

Baumeister, H., K. Balke, and M. Harter, Psychiatric and somatic comorbidities are negatively associated with quality of life in physically ill patients. *Journal of Clinical Epidemiology*, 2005. **58**(11): p. 1090-100.

Bennahum, D.A., et al., Life expectancy, comorbidity, and quality of life. A framework of reference for medical decisions. *Clinics in Geriatric Medicine.*, 1997. **13**(1): p. 33-53.

Extermann, M., Measurement and impact of comorbidity in older cancer patients. *Crit Rev Oncol Hematol*, 2000. **35**: p. 181-200.

Gijssen, R., et al., Causes and consequences of comorbidity: a review. *Journal of Clinical Epidemiology.*, 2001. **54**: p.661-74.

de Groot, V., et al., How to measure comorbidity. a critical review of available methods. *J Clin Epidemiol*, 2003. **56**: p. 221-9.

Guralnik, J.M., Assessing the impact of comorbidity in the older population. *Ann Epidemiol*, 1996. **6**(5): p. 376-80.

Harboun, M. and J. Ankri, [Comorbidity indexes: review of the literature and application to studies of elderly population][French]. *Rev Epidemiol Sante Publique*, 2001. **49**(3): p. 287-98.

Rosen, A.K., et al., Applying a risk-adjustment framework to primary care: Can we improve on existing measures? *Ann Fam Med*, 2003. **1**: p. 44-51.

Schneeweiss, S. and M. Maclure, Use of comorbidity scores for control of confounding in studies using administrative databases. *International Journal of Epidemiology.*, 2000. **29**(5): p. 891-8.

Stuck, A.E., et al., Risk factors for functional status decline in community-living elderly people: a systematic literature review.[see comment]. *Social Science & Medicine.*, 1999. **48**(4): p. 445-69.

van den Akker, M., F. Buntinx, and J.A. Knottnerus, Comorbidity or multimorbidity: what's in a name? A review of literature. *The European Journal of General Practice*, 1996. **2**: p. 65-70.

Williams, A. and M. Botti, Issues concerning the on-going care of patients with comorbidities in acute care and post-discharge in Australia: a literature review. *Journal of Advanced Nursing.*, 2002. **40**(2): p. 131-40.

2. DEFINITION / CONCEPTUALISATION

Jain S, Rosenbaum PR, Reiter JG, Ramadan OI, Hill AS, Hashemi S, et al. Defining Multimorbidity in Older Patients Hospitalized with Medical Conditions. *J Gen Intern Med.* 2022.

Prasad B, Bjourson AJ, Shukla P. Data-driven patient stratification of UK Biobank cohort suggests five endotypes of multimorbidity. *Brief Bioinform.* 2022;23(6).

Tyagi S, Koh V, Koh GC, Low LL, Lee ES. Defining and measuring multimorbidity in primary care in Singapore: Results of an online Delphi study. *PLoS One.* 2022;17(12):e0278559.

van den Akker, M., Dieckelmann, M., Hussain, M.A., Bond-Smith, D., Muth, C., Pati, S., Saxena, S., Silva, D., Skoss, R., Straker, L., Thompson, S.C. and Katzenellenbogen, J.M. (2022). Children and adolescents are not small adults: toward a better understanding of multimorbidity in younger populations. *Journal of Clinical Epidemiology*, [online] pp.S0895-4356(22)001767. doi:10.1016/j.jclinepi.2022.07.003.

Hafezparast N, Turner EB, Dunbar-Rees R, et al. Adapting the definition of multimorbidity - development of a locality-based consensus for selecting included Long Term Conditions. *BMC Fam Pract* 2021;22(1):124. doi: 10.1186/s12875-021-01477-x

Planell-Morell P, Bajekal M, Denaxas S, et al. Trajectories of Disease Accumulation Using Electronic Health Records. *Stud Health Technol Inform* 2020;270:469-73. doi: 10.3233/SHTI20020

Tripp-Reimer T, Williams JK, Gardner SE, et al. An integrated model of multimorbidity and symptom science. *Nurs Outlook* 2020;68(4):430-39. doi: 10.1016/j.outlook.2020.03.003

Murali KP, Merriman JD, Yu G, et al. An Adapted Conceptual Model Integrating Palliative Care in Serious Illness and Multiple Chronic Conditions. *Am J Hosp Palliat Care* 2020;37(12):1086-95. doi: 10.1177/1049909120928353

Nicholson K, Makovski TT, Griffith LE, et al. Multimorbidity and comorbidity revisited: refining the concepts for international health research. *J Clin Epidemiol* 2019;105:142-46. doi: 10.1016/j.jclinepi.2018.09.008

Drye EE, Altaf FK, Lipska KJ, et al. Defining Multiple Chronic Conditions for Quality Measurement. *Med Care* 2018;56(2):193-201. doi: 10.1097/MLR.0000000000000853

N'Goran AA, Blaser J, Deruaz-Luyet A, et al. From chronic conditions to relevance in multimorbidity: a four-step study in family medicine. *Fam Pract.* 2016;33:439-44.

Le Reste JY, Nabbe P, Lazic D, et al. How do general practitioners recognize the definition of multimorbidity? A European qualitative study. *Eur J Gen Pract.* 2016;22:159-68.

Le Reste JY, Nabbe P, Lingner H, Kasuba Lazic D, Assenova R, Munoz M *et al*: What research agenda could be generated from the European General Practice Research Network concept of Multimorbidity in Family Practice? *BMC Fam Pract.* 2015;16(1):125.

Prazeres F, Santiago LM, Simoes JA: Defining Multimorbidity: From English to Portuguese Using a Delphi Technique. *Biomed Res Int.* 2015;2015:965025.

Le Reste JY, Nabbe P, Rivet C, et al. The European general practice research network presents the translations of its comprehensive definition of multimorbidity in family

- medicine in ten European languages. *PLoS One*. 2015;**10**(1):e0115796.
- Oni T, McGrath N, BeLue R, Roderick P, Colagiuri S, May CR, Levitt NS. Chronic diseases and multi-morbidity - a conceptual modification to the WHO ICC model for countries in health transition. *BMC Public Health*. 2014;**14**:575.
- Almirall J, Fortin M. The coexistence of terms to describe the presence of multiple concurrent diseases. *Journal of Comorbidity*. 2013;**3**(1):4-9.
- Le Reste JY, Nabbe P, Lygidakis C, et al. A research group from the European General Practice Research Network (EGPRN) explores the concept of multimorbidity for further research into long term care. *J Am Med Dir Assoc*. Feb 2013;**14**(2):132-133.
- Goodman RA, Posner SF, Huang ES, Parekh AK, Koh HK. Defining and measuring chronic conditions: imperatives for research, policy, program, and practice. *Prev Chronic Dis*. 2013;**10**:E66.
- Le Reste JY, Nabbe P, Lygidakis C, et al. A research group from the European General Practice Research Network (EGPRN) explores the concept of multimorbidity for further research into long term care. *J Am Med Dir Assoc*. Feb 2013;**14**(2):132-133.
- Valderas JM, Starfield B, Sibbald B, Salisbury C, Roland M. Defining comorbidity: implications for understanding health and health services. *Ann Fam Med*. 2009;**7**(4):357-63.
- Karlamangla, A., M. Tinetti, et al. "Comorbidity in older adults: nosology of impairment, diseases, and conditions." *Journals of Gerontology Series A-Biological Sciences & Medical Sciences* 2007. **62**(3): 296-300.
- de Groot, V., et al., How to measure comorbidity. a critical review of available methods. *J Clin Epidemiol*, 2003. **56**: p. 221-9.
- Feinstein, A.R., The pre-therapeutic classification of co-morbidity in chronic diseases. *J Chronic Diseases*, 1970. **23**: p. 455-469.
- Fried, L.P., et al., Untangling the concepts of disability, frailty, and comorbidity: implications for improved targeting and care. *Journals of Gerontology Series A Biological Sciences & Medical Sciences*, 2004. **59**: p. 255-63.
- Gijssen, R., et al., Causes and consequences of comorbidity: a review. *Journal of Clinical Epidemiology*, 2001. **54**: p. 661-74.
- Gray, L.K., et al., Heterogeneity in older people: examining physiologic failure, age, and comorbidity. *Journal of the American Geriatrics Society*, 2002. **50**(12): p. 1955-61.
- John, R., D.S. Kerby, and C.H. Hennessy, Patterns and impact of comorbidity and multimorbidity among community-resident American Indian elders. *Gerontologist*, 2003. **43**: p. 649-60.
- Kaplan, M.H. and A.R. Feinstein, The importance of classifying initial co-morbidity in evaluating the outcome of diabetes mellitus. *J Chron Dis*, 1974. **27**: p. 387-404.
- Kraemer, H.C., Statistical issues in assessing comorbidity. *Stat Med*, 1995. **14**(8): p. 721-33.
- Krishnan, K.R., et al., Comorbidity of depression with other medical diseases in the elderly. *Biological Psychiatry*, 2002. **52**(6): p. 559-88.
- van den Akker, M., et al., Problems in determining occurrence rates of multimorbidity. *J Clin Epidemiol*, 2001. **54**: p. 675-9.

van den Akker, M., F. Buntinx, and J.A. Knottnerus, Comorbidity or multimorbidity: what's in a name? A review of literature. *The European Journal of General Practice*, 1996. **2**: p. 65-70.

CLINICAL AND EPIDEMIOLOGICAL STUDIES

3.1 Prevalence

Carman W, Ishida M, Trounson JS, Mercer SW, Anindya K, Sum G, et al. Epidemiology of physical-mental multimorbidity and its impact among Aboriginal and Torres Strait Islander in Australia: a cross-sectional analysis of a nationally representative sample. *BMJ Open*. 2022;12(10):e054999.

Hvidberg MF, Frølich A, Lundstrøm SL, Kamstrup-Larsen N. Catalogue of multimorbidity mean based severity and associational prevalence rates between 199+ chronic conditions-A nationwide register-based population study. *PLoS One*. 2022;17(9):e0273850.

Quiñones AR, Valenzuela SH, Huguet N, Ukhanova M, Marino M, Lucas JA, et al. Prevalent Multimorbidity Combinations Among Middle-Aged and Older Adults Seen in Community Health Centers. *J Gen Intern Med*. 2022;37(14):3545-53.

Schiltz NK. Prevalence of multimorbidity combinations and their association with medical costs and poor health: A population-based study of U.S. adults. *Front Public Health*. 2022;10:953886.

Singh K, Alomari A, Lenjawi B. Prevalence of Multimorbidity in the Middle East: A Systematic Review of Observational Studies. *Int J Environ Res Public Health*. 2022;19(24).

Stagg AL, Hatch S, Fear NT, Dorrington S, Madan I, Stevelink SAM. Long-term health conditions in UK working-age adults: a cross-sectional analysis of associations with demographic, socioeconomic, psychosocial and health-related factors in an inner-city population. *BMJ Open*. 2022;12(11):e062115.

Stannard S, Holland E, Crozier SR, Hoyle R, Boniface M, Ahmed M, et al. Early-onset burdensome multimorbidity: an exploratory analysis of sentinel conditions, condition accrual sequence and duration of three long-term conditions using the 1970 British Cohort Study. *BMJ Open*. 2022;12(10):e059587.

Sugiyama Y, Mutai R, Aoki T, Matsushima M. Multimorbidity and complex multimorbidity, their prevalence, and associated factors on a remote island in Japan: a cross-sectional study. *BMC Prim Care*. 2022;23(1):258.

Taloyan M, Alinaghizadeh H, Wettermark B, Jan Hasselström JH, Bertilson BC. Physical-mental multimorbidity in a large primary health care population in Stockholm County, Sweden. *Asian J Psychiatr*. 2023;79:103354.

Tan MMC, Prina AM, Muniz-Terrera G, Mohan D, Ismail R, Assefa E, et al. Prevalence of and factors associated with multimorbidity among 18 101 adults in the South East Asia Community Observatory Health and Demographic Surveillance System in Malaysia: a population-based, cross-sectional study of the MUTUAL consortium. *BMJ Open*. 2022;12(12):e068172.

Zhang X, Padhi A, Wei T, Xiong S, Yu J, Ye P, et al. Community prevalence and dyad disease pattern of multimorbidity in China and India: a systematic review. *BMJ Glob Health*. 2022;7(9).

Ansari, A.A., Mahmood, S.B.Z., Afzal, A., Yasmin, A., Tariq, M. and Almas, A. (2022). Rise in Multimorbidity in Internal Medicine Patients: a Longitudinal Study from a Tertiary Care Center in Karachi, Pakistan. *Journal of General Internal Medicine*. doi:10.1007/s11606-021-07386-0.

Lenti, M.V., Klersy, C., Brera, A.S., Ballesio, A., Croce, G., Padovini, L., Ciccocioppo, R., Bertolino, G., Di Sabatino, A. and Corazza, G.R. (2022). Aging underlies heterogeneity between comorbidity and multimorbidity frameworks. *Internal and Emergency Medicine*. doi:10.1007/s11739-021-02899-2.

Puri, P., Singh, S.K. and Pati, S. (2022). Identifying non-communicable disease multimorbidity patterns and associated factors: a latent class analysis approach. *BMJ open*, [online] 12(7), p.e053981. doi:10.1136/bmjopen-2021-053981.

Roomaney, R.A., van Wyk, B., Cois, A. and Pillay-van Wyk, V. (2022). One in five South Africans are multimorbid: An analysis of the 2016 demographic and health survey. *PLOS ONE*, 17(5), p.e0269081. doi:10.1371/journal.pone.0269081.

Oliveira, F.E.G., Griep, R.H., Chor, D., Giatti, L., Machado, L.A.C., Barreto, S.M., da Costa Pereira, A., Fonseca, M. de J.M. da and Bastos, L.S. (2022). Racial inequalities in multimorbidity: baseline of the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). *BMC public health*, [online] 22(1), p.1319. doi:10.1186/s12889-022-13715-7.

Ferro, M.A., Qureshi, S., Van Lieshout, R.J., Lipman, E.L., Georgiades, K., Gorter, J.W., Timmons, B.W. and Shanahan, L. (2022). Prevalence and Correlates of Physical-mental Multimorbidity in Outpatient Children From a Pediatric Hospital in Canada. *Canadian Journal of Psychiatry. Revue Canadienne De Psychiatrie*, [online] 67(8), pp.626–637. doi:10.1177/07067437221074430.

Ismail, S., Stanley, A. and Jeemon, P. (2022). Prevalence of multimorbidity and associated treatment burden in primary care settings in Kerala: a cross-sectional study in Malappuram District, Kerala, India. *Wellcome Open Research*, [online] 7, p.67. doi:10.12688/wellcomeopenres.17674.2.

Lin, W.-Q., Yuan, L.-X., Sun, M.-Y., Wang, C., Liang, E.-M., Li, Y.-H., Liu, L., Yang, Y.-O., Wu, D., Lin, G.-Z. and Liu, H. (2022). Prevalence and patterns of multimorbidity in chronic diseases in Guangzhou, China: a data mining study in the residents' health records system among 31 708 community-dwelling elderly people. *BMJ open*, [online] 12(5), p.e056135. doi:10.1136/bmjopen-2021-056135.

Zhang, Q., Han, X., Zhao, X. and Wang, Y. (2022). Multimorbidity patterns and associated factors in older Chinese: results from the China health and retirement longitudinal study. *BMC geriatrics*, [online] 22(1), p.470. doi:10.1186/s12877-022-03154-9.

Jones, R.E., Tasnim, L. and Cunningham, S.A. (2022). The Prevalence of Multimorbidity among Foreign-born Adults in the United States. *Ethnicity & Disease*, [online] 32(3), pp.213–222. doi:10.18865/ed.32.3.213.

Sturmer, J., Franken, D.L., Ternus, D.L., Henn, R.L., Soares Dias-da-Costa, J., Anselmo Olinto, M.T. and Vieira Paniz, V.M. (2022). Dietary patterns and prevalence of multimorbidity in women in southern Brazil. *Menopause (New York, N.Y.)*, [online] 29(9), pp.1047–1054. doi:10.1097/GME.0000000000002023.

Keomma, K., Bousquat, A. and César, C.L.G. (2022). Prevalence of multi morbidity in older adults in Sao Paulo, Brazil: a study with ISA-capital, 56, p.69. doi:10.11606/s1518-8787.2022056004252.

Han, B.H. and Palamar, J.J. (2021). Multimorbidity Among US Adults Who Use Methamphetamine, 2015–2019. *Journal of General Internal Medicine*. doi:10.1007/s11606-021-06910-6.

Cheng X, Ma T, Ouyang F, Zhang G, Bai Y. Trends in the Prevalence of Cardiometabolic Multimorbidity in the United States, 1999-2018. *Int J Environ Res Public Health* 2022;19(8). doi: ijerph19084726 [pii]10.3390/ijerph19084726

Ferry FR, Rosato MG, Curran EJ, O'Reilly D, Leavey G. Multimorbidity among persons aged 25-64 years: a population-based study of social determinants and all-cause mortality. *J Public Health (Oxf)* 2022;44(1):e59-e67. doi: 6043292 [pii]10.1093/pubmed/fdaa209

Reddy MM, Zaman K, Yadav R, Yadav P, Kumar K, Kant R. Prevalence, Associated Factors, and Health Expenditures of Noncommunicable Disease Multimorbidity- Findings From Gorakhpur Health and Demographic Surveillance System. *Front Public Health* 2022;10:842561. doi: 10.3389/fpubh.2022.842561 Hauswaldt J, Schmalstieg-Bahr K,

Himmel W. Different definitions of multimorbidity and their effect on prevalence rates: a retrospective study in German general practices. *Prim Health Care Res Dev* 2022;23:e25. doi: S146342362200010X [pii]10.1017/S146342362200010X

Caraballo C, Herrin J, Mahajan S, Massey D, Lu Y, Ndumele CD, et al. Temporal Trends in Racial and Ethnic Disparities in Multimorbidity Prevalence in the United States, 1999-2018. *Am J Med* 2022. doi: S0002-9343(22)00330-8 [pii]10.1016/j.amjmed.2022.04.010

Chauhan S, Patel R, Kumar S. Prevalence, factors and inequalities in chronic disease multimorbidity among older adults in India: analysis of cross-sectional data from the nationally representative Longitudinal Aging Study in India (LASI). *BMJ Open* 2022;12(3):e053953. doi: bmjopen-2021-053953 [pii]10.1136/bmjopen-2021-053953

Eyowas FA, Schneider M, Alemu S, Pati S, Getahun FA. Magnitude, pattern and correlates of multimorbidity among patients attending chronic outpatient medical care in Bahir Dar, northwest Ethiopia: The application of latent class analysis model. *PLoS One* 2022;17(4):e0267208. doi: 10.1371/journal.pone.0267208 PONE-D-21-32202 [pii]

Chen S, Wang S, Jia W, Han K, Song Y, Liu S, et al. Spatiotemporal Analysis of the Prevalence and Pattern of Multimorbidity in Older Chinese Adults. *Front Med (Lausanne)* 2021;8:806616. doi: 10.3389/fmed.2021.806616

Ferro MA, Qureshi S, Van Lieshout RJ, Lipman EL, Georgiades K, Gorter JW, et al. Prevalence and Correlates of Physical-mental Multimorbidity in Outpatient Children From a Pediatric Hospital in Canada. *Can J Psychiatry* 2022;7067437221074430. doi: 10.1177/07067437221074430

Zou S, Wang Z, Bhura M, Zhang G, Tang K. Prevalence and associated socioeconomic factors of multimorbidity in 10 regions of China: an analysis of 0.5 million adults. *J Public Health (Oxf)* 2022;44(1):36-50. doi: 6029406 [pii]10.1093/pubmed/fdaa20

Linden M, Linden U, Goretzko D, Gensichen J. Prevalence and pattern of acute and chronic multimorbidity across all body systems and age groups in primary health care. *Sci Rep* 2022;12(1):272. doi: 10.1038/s41598-021-04256-x 10.1038/s41598-021-04256-x [pii]

Bloeser K, Lipkowitz-Eaton J. Disproportionate multimorbidity among veterans in middle age. *J Public Health (Oxf)* 2022;44(1):28-35. doi: 6288549 [pii]10.1093/pubmed/fdab149

Ntiyani N, Letamo G, Keetile M. Prevalence of and factors associated with hypertension, diabetes, stroke and heart attack multimorbidity in Botswana: Evidence from STEPS 2014 survey. *PLoS One* 2022;17(3):e0265722. doi:10.1371/journal.pone.0265722 PONE-D-21-16193 [pii]

Wilk P, Stranges S, Bellocco R, et al. Multimorbidity in large Canadian urban centres: A multilevel analysis of pooled 2015-2018 cross-sectional cycles of the Canadian Community Health Survey. *J Comorb* 2021;11:26335565211058037. doi: 10.1177/26335565211058037

Shariff Ghazali S, Seman Z, Zainuddin NH, et al. Prevalence and factors associated with multimorbidity among older adults in Malaysia: a population-based cross-sectional study. *BMJ Open* 2021;11(10):e052126. doi: 10.1136/bmjopen-2021-052126

Sigurdardottir ST, Jonasson K, Clausen M, et al. Prevalence and early-life risk factors of school-age allergic multimorbidity: The EuroPrevall-iFAAM birth cohort. *Allergy* 2021;76(9):2855-65. doi: 10.1111/all.14857

Ledwaba-Chapman L, Bisquera A, Gulliford M, et al. Applying resolved and remission codes reduced prevalence of multimorbidity in an urban multi-ethnic population. *J Clin Epidemiol* 2021;140:135-48. doi: 10.1016/j.jclinepi.2021.09.005

Delpino FM, Wendt A, Crespo PA, et al. Occurrence and inequalities by education in multimorbidity in Brazilian adults between 2013 and 2019: evidence from the National Health Survey. *Rev Bras Epidemiol* 2021;24(suppl 2):e210016. doi: 10.1590/1980-549720210016.supl.2

Marza-Florensa A, Boateng D, Agyemang C, et al. Multimorbidity Among Migrant and Non-Migrant Ghanaians: The RODAM Study. *Int J Public Health* 2021;66:1604056. doi: 10.3389/ijph.2021.1604056

Shi X, Lima S, Mota CMM, et al. Prevalence of Multimorbidity of Chronic Noncommunicable Diseases in Brazil: Population-Based Study. *JMIR Public Health Surveill* 2021;7(11):e29693. doi: 10.2196/29693

Jurisson M, Pisarev H, Uuskula A, et al. Prevalence of chronic conditions and multimorbidity in Estonia: a population-based cross-sectional study. *BMJ Open* 2021;11(10):e049045. doi: 10.1136/bmjopen-2021-049045

Brijoux T, Woopen C, Zank S. Multimorbidity in old age and its impact on life results. *Z Gerontol Geriatr* 2021;54(Suppl 2):108-13. doi: 10.1007/s00391-021-01920-9

Mohideen FS, Rajkumar Honest PC, Syed MA, et al. Prevalence of multimorbidity among adults attending primary health care centres in Qatar: A retrospective cross-sectional study. *J Family Med Prim Care* 2021;10(5):1823-28. doi: 10.4103/jfmpc.jfmpc_2446_20

Ferro MA, Lipman EL, Van Lieshout RJ, et al. Cohort Profile: Multimorbidity in Children and Youth Across the Life-course (MY LIFE) Study. *J Can Acad Child Adolesc Psychiatry* 2021;30(2):104-15.

Sigurdardottir ST, Jonasson K, Clausen M, et al. Prevalence and early-life risk factors of school-age allergic multimorbidity: The EuroPrevall-iFAAM birth cohort. *Allergy* 2021;76(9):2855-65. doi: 10.1111/all.14857

- Gondek D, Bann D, Brown M, et al. Prevalence and early-life determinants of mid-life multimorbidity: evidence from the 1970 British birth cohort. *BMC Public Health* 2021;21(1):1319. doi: 10.1186/s12889-021-11291-w
- Wong EB, Olivier S, Gunda R, et al. Convergence of infectious and non-communicable disease epidemics in rural South Africa: a cross-sectional, population-based multimorbidity study. *Lancet Glob Health* 2021;9(7):e967-e76. doi: 10.1016/S2214-109X(21)00176-5
- Dhungana RR, Karki KB, Bista B, et al. Prevalence, pattern and determinants of chronic disease multimorbidity in Nepal: secondary analysis of a national survey. *BMJ Open* 2021;11(7):e047665. doi: 10.1136/bmjopen-2020-047665
- Hunter ML, Knuiman MW, Musk BAW, et al. Prevalence and patterns of multimorbidity in Australian baby boomers: the Busselton healthy ageing study. *BMC Public Health* 2021;21(1):1539. doi: 10.1186/s12889-021-11578-y
- Brijoux T, Woopen C, Zank S. Multimorbidity in old age and its impact on life results. *Z Gerontol Geriatr* 2021 doi: 10.1007/s00391-021-01920-9
- Zhao Y, Zhang P, Lee JT, et al. The Prevalence of Metabolic Disease Multimorbidity and Its Associations With Spending and Health Outcomes in Middle-Aged and Elderly Chinese Adults. *Front Public Health* 2021;9:658706. doi: 10.3389/fpubh.2021.658706
- Lee ES, Lee PSS, Xie Y, et al. The prevalence of multimorbidity in primary care: a comparison of two definitions of multimorbidity with two different lists of chronic conditions in Singapore. *BMC Public Health* 2021;21(1):1409. doi: 10.1186/s12889-021-11464-7
- de Souza ACD, Barbosa IR, de Souza DLB. Prevalence of multimorbidity and associated factors in the Brazilian working population. *Rev Bras Med Trab* 2021;18(3):302-11. doi: 10.47626/1679-4435-2020-568
- Bezerra de Souza DL, Oliveras-Fabregas A, Espelt A, et al. Multimorbidity and its associated factors among adults aged 50 and over: A cross-sectional study in 17 European countries. *PLoS One* 2021;16(2):e0246623. doi: 10.1371/journal.pone.0246623
- St John PD, Menec V, Tyas SL, et al. Multimorbidity in Canadians living in the community: Results from the Canadian Longitudinal Study of Aging. *Can Fam Physician* 2021;67(3):187-97. doi: 10.46747/cfp.6703187
- Souza DLB, Oliveras-Fabregas A, Minobes-Molina E, et al. Trends of multimorbidity in 15 European countries: a population-based study in community-dwelling adults aged 50 and over. *BMC Public Health* 2021;21(1):76. doi: 10.1186/s12889-020-10084-x
- Geda NR, Janzen B, Pahwa P. Chronic disease multimorbidity among the Canadian population: prevalence and associated lifestyle factors. *Arch Public Health* 2021;79(1):60. doi: 10.1186/s13690-021-00583-7
- Yadav UN, Ghimire S, Mistry SK, et al. Prevalence of non-communicable chronic conditions, multimorbidity and its correlates among older adults in rural Nepal: a cross-sectional study. *BMJ Open* 2021;11(2):e041728. doi: 10.1136/bmjopen-2020-041728
- Steffler M, Li Y, Weir S, et al. Trends in prevalence of chronic disease and multimorbidity in Ontario, Canada. *CMAJ* 2021;193(8):E270-E77. doi: 10.1503/cmaj.201473
- Mohamed SF, Haregu TN, Uthman OA, et al. Multimorbidity from Chronic Conditions among Adults in Urban Slums: The AWI-Gen Nairobi Site Study Findings. *Glob Heart* 2021;16(1):6. doi: 10.5334/gh.771

Boersma P, Cohen RA, Zelaya CE, et al. Multiple Chronic Conditions Among Veterans and Nonveterans: United States, 2015-2018. *Natl Health Stat Report* 2021(153):1-13.

Zhang L, Sun F, Li Y, et al. Multimorbidity in Community-Dwelling Older Adults in Beijing: Prevalence and Trends, 2004-2017. *J Nutr Health Aging* 2021;25(1):116-19. doi: 10.1007/s12603-020-1467-4

Lee YAJ, Xie Y, Lee PSS, et al. Comparing the prevalence of multimorbidity using different operational definitions in primary care in Singapore based on a cross-sectional study using retrospective, large administrative data. *BMJ Open* 2020;10(12):e039440. doi: 10.1136/bmjopen-2020-039440

Kshatri JS, Palo SK, Bhoi T, et al. Prevalence and Patterns of Multimorbidity Among Rural Elderly: Findings of the AHSETS Study. *Front Public Health* 2020;8:582663. doi: 10.3389/fpubh.2020.582663

Corrao G, Rea F, Carle F, et al. Measuring multimorbidity inequality across Italy through the multisource comorbidity score: a nationwide study. *Eur J Public Health* 2020;30(5):916-21. doi: 10.1093/eurpub/ckaa063

Yao SS, Cao GY, Han L, et al. Prevalence and Patterns of Multimorbidity in a Nationally Representative Sample of Older Chinese: Results From the China Health and Retirement Longitudinal Study. *J Gerontol A Biol Sci Med Sci* 2020;75(10):1974-80. doi: 10.1093/gerona/glz185

Ma X, He Y, Xu J. Urban-rural disparity in prevalence of multimorbidity in China: a cross-sectional nationally representative study. *BMJ Open* 2020;10(11):e038404. doi: 10.1136/bmjopen-2020-038404

Zhang Y, Zhou L, Liu S, et al. Prevalence, correlates and outcomes of multimorbidity among the middle-aged and elderly: Findings from the China Health and Retirement Longitudinal Study. *Arch Gerontol Geriatr* 2020;90:104135. doi: 10.1016/j.archger.2020.104135

C R, Jeemon P. Prevalence and patterns of multi-morbidity in the productive age group of 30-69 years: A cross-sectional study in Pathanamthitta District, Kerala. *Wellcome Open Res* 2020;5:233. doi: 10.12688/wellcomeopenres.16326.2

Zou S, Wang Z, Bhura M, et al. Prevalence and associated socioeconomic factors of multimorbidity in 10 regions of China: an analysis of 0.5 million adults. *J Public Health (Oxf)* 2020 doi: 10.1093/pubmed/fdaa204

Melo LA, Lima KC. Prevalence and factors associated with multimorbidities in Brazilian older adults. *Cien Saude Colet* 2020;25(10):3869-77. doi: 10.1590/1413-812320202510.34492018

Kyprianidou M, Panagiotakos D, Faka A, et al. Prevalence of multimorbidity in the Cypriot population; A cross-sectional study (2018-2019). *PLoS One* 2020;15(10):e0239835. doi: 10.1371/journal.pone.0239835

Prathapan S, Fernando G, Matthias AT, et al. The rising complexity and burden of multimorbidity in a middle-income country. *PLoS One* 2020;15(12):e0243614. doi: 10.1371/journal.pone.0243614

Boersma P, Black LI, Ward BW. Prevalence of Multiple Chronic Conditions Among US Adults, 2018. *Prev Chronic Dis* 2020;17:E106. doi: 10.5888/pcd17.200130

Keetile M, Navaneetham K, Letamo G. Prevalence and correlates of multimorbidity among adults in Botswana: A cross-sectional study. *PLoS One* 2020;15(9):e0239334. doi: 10.1371/journal.pone.0239334

Tan XW, Xie Y, Lew JK, et al. Patterns of patients with multiple chronic conditions in primary care: A cross-sectional study. *PLoS One* 2020;15(8):e0238353. doi: 10.1371/journal.pone.0238353

Newman D, Tong M, Levine E, et al. Prevalence of multiple chronic conditions by U.S. state and territory, 2017. *PLoS One* 2020;15(5):e0232346. doi: 10.1371/journal.pone.0232346

Guimaraes RM, Andrade FCD. Healthy life-expectancy and multimorbidity among older adults: Do inequality and poverty matter? *Arch Gerontol Geriatr* 2020;90:104157. doi: 10.1016/j.archger.2020.104157

Gimeno-Feliu LA, Pastor-Sanz M, Poblador-Plou B, et al. Multimorbidity and chronic diseases among undocumented migrants: evidence to contradict the myths. *Int J Equity Health* 2020;19(1):113. doi: 10.1186/s12939-020-01225-0

Vinjerui KH, Boeckxstaens P, Douglas KA, et al. Prevalence of multimorbidity with frailty and associations with socioeconomic position in an adult population: findings from the cross-sectional HUNT Study in Norway. *BMJ Open* 2020;10(6):e035070. doi: 10.1136/bmjopen-2019-035070

Johnston MC, Black C, Mercer SW, et al. Prevalence of secondary care multimorbidity in mid-life and its association with premature mortality in a large longitudinal cohort study. *BMJ Open* 2020;10(5):e033622. doi: 10.1136/bmjopen-2019-033622

Zhang Y, Misra R, Sambamoorthi U. Prevalence of Multimorbidity among Asian Indian, Chinese, and Non-Hispanic White Adults in the United States. *Int J Environ Res Public Health* 2020;17(9) doi: 10.3390/ijerph17093336

Pollack LM, Wang M, Leung MYM, et al. Obesity-related multimorbidity and risk of cardiovascular disease in the middle-aged population in the United States. *Prev Med* 2020;139:106225. doi: 10.1016/j.ypmed.2020.106225

Wang X, Yao S, Wang M, et al. Multimorbidity among Two Million Adults in China. *Int J Environ Res Public Health* 2020;17(10) doi: 10.3390/ijerph17103395

Craig LS, Hotchkiss DR, Theall KP, et al. Prevalence and patterns of multimorbidity in the Jamaican population: A comparative analysis of latent variable models. *PLoS One* 2020;15(7):e0236034. doi: 10.1371/journal.pone.0236034

Aminisani N, Rastgou L, Shamshirgaran SM, et al. Predictors of multimorbidity among the Kurdish population living in the Northwest of Iran. *BMC Public Health* 2020;20(1):1094. doi: 10.1186/s12889-020-09214-2

Vinjerui KH, Bjerkeset O, Bjorngaard JH, et al. Socioeconomic inequalities in the prevalence of complex multimorbidity in a Norwegian population: findings from the cross-sectional HUNT Study. *BMJ Open* 2020;10(6):e036851. doi: 10.1136/bmjopen-2020-036851

Griffith LE, Gruneir A, Fisher KA, et al. Measuring multimorbidity series-an overlooked

complexity comparison of self-report vs. administrative data in community-living adults: paper 2. Prevalence estimates depend on the data source. *J Clin Epidemiol* 2020 doi: 10.1016/j.jclinepi.2020.04.019

Li H, Wang A, Gao Q, et al. Prevalence of somatic-mental multimorbidity and its prospective association with disability among older adults in China. *Aging (Albany NY)* 2020;**12**(8):7218-31. doi: 10.18632/aging.103070

Corallo B, Proser M, Nocon R. Comparing Rates of Multiple Chronic Conditions at Primary Care and Mental Health Visits to Community Health Centers Versus Private Practice Providers. *J Ambul Care Manage* 2020;**43**(2):136-47. doi: 10.1097/JAC.0000000000000324

Gruneir A, Griffith LE, Fisher K, Perez R, Favotto L, Patterson C, Markle-Reid M, Ploeg J, Upshur R. Measuring multimorbidity series. An overlooked complexity - Comparison of self-report vs. administrative data in community-living adults: Paper 3. Agreement across data sources and implications for estimating associations with health service use. *J Clin Epidemiol*. 2020 Aug;124:173-182. doi: 10.1016/j.jclinepi.2020.04.018. Epub 2020 Apr 27. PMID: 32353402.

Odland ML, Payne C, Witham MD, et al. Epidemiology of multimorbidity in conditions of extreme poverty: a population-based study of older adults in rural Burkina Faso. *BMJ Glob Health* 2020;**5**(3):e002096. doi: 10.1136/bmjgh-2019-002096

Ebrahimoghli R, Janati A, Sadeghi-Bazargani H, et al. Epidemiology of multimorbidity in Iran: An investigation of a large pharmacy claims database. *Pharmacoepidemiol Drug Saf* 2020;**29**(1):39-47. doi: 10.1002/pds.4925

Basham CA, Karim ME. Multimorbidity prevalence in Canada: a comparison of Northern Territories with Provinces, 2013/14. *Int J Circumpolar Health* 2019;**78**(1):1607703. doi: 10.1080/22423982.2019.1607703

Khan N, Rahman M, Mitra D, et al. Prevalence of multimorbidity among Bangladeshi adult population: a nationwide cross-sectional study. *BMJ Open* 2019;**9**(11):e030886. doi: 10.1136/bmjopen-2019-030886

Whitney DG, Whitney RT, Kamdar NS, et al. Early-Onset Noncommunicable Disease and Multimorbidity Among Adults With Pediatric-Onset Disabilities. *Mayo Clin Proc* **67**(2):144-57 2019 doi: 10.1016/j.mayocp.2019.07.010

Majumdar UB, Hunt C, Doupe P, et al. Multiple chronic conditions at a major urban health system: a retrospective cross-sectional analysis of frequencies, costs and comorbidity patterns. *BMJ Open* 2019;**9**(10):e029340. doi: 10.1136/bmjopen-2019-029340

Petarli GB, Cattafesta M, Sant'Anna MM, et al. Multimorbidity and complex multimorbidity in Brazilian rural workers. *PLoS One* 2019;**14**(11):e0225416. doi: 10.1371/journal.pone.0225416

Hu RH, Hsiao FY, Chen LJ, et al. Increasing age- and gender-specific burden and complexity of multimorbidity in Taiwan, 2003-2013: a cross-sectional study based on nationwide claims data. *BMJ Open* 2019;**9**(6):e028333. doi: 10.1136/bmjopen-2018-

028333

Ba NV, Minh HV, Quang LB, et al. Prevalence and correlates of multimorbidity among adults in border areas of the Central Highland Region of Vietnam, 2017. *J Comorb* 2019;9:2235042X19853382. doi: 10.1177/2235042X19853382

Nicholson K, Terry AL, Fortin M, et al. Prevalence, characteristics, and patterns of patients with multimorbidity in primary care: a retrospective cohort analysis in Canada. *Br J Gen Pract* 2019;69(686):e647-e56. doi: 10.3399/bjgp19X704657

Yao SS, Cao GY, Han L, et al. Prevalence and patterns of multimorbidity in a nationally representative sample of older Chinese: results from CHARLS. *J Gerontol A Biol Sci Med Sci* 2019 doi: 10.1093/gerona/glz185

Chang AY, Gomez-Olive FX, Payne C, et al. Chronic multimorbidity among older adults in rural South Africa. *BMJ Glob Health* 2019;4(4):e001386. doi: 10.1136/bmjgh-2018-001386

Zhang R, Lu Y, Shi L, et al. Prevalence and patterns of multimorbidity among the elderly in China: a cross-sectional study using national survey data. *BMJ Open* 2019;9(8):e024268. doi: 10.1136/bmjopen-2018-024268

Singh K, Patel SA, Biswas S, et al. Multimorbidity in South Asian adults: prevalence, risk factors and mortality. *J Public Health (Oxf)* 2019;41(1):80-89. doi: 10.1093/pubmed/fdy017

Newman D, Levine E, Kishore SP. Prevalence of multiple chronic conditions in New York State, 2011-2016. *PLoS One* 2019;14(2):e0211965. doi: 10.1371/journal.pone.0211965

Sakib MN, Shooshtari S, St John P, et al. The prevalence of multimorbidity and associations with lifestyle factors among middle-aged Canadians: an analysis of Canadian Longitudinal Study on Aging data. *BMC Public Health* 2019;19(1):243. doi: 10.1186/s12889-019-6567-x

Zhang D, Tang X, Shen P, et al. Multimorbidity of cardiometabolic diseases: prevalence and risk for mortality from one million Chinese adults in a longitudinal cohort study. *BMJ Open* 2019;9(3):e024476. doi: 10.1136/bmjopen-2018-024476

Ryan BL, Bray Jenkyn K, Shariff SZ, et al. Beyond the grey tsunami: a cross-sectional population-based study of multimorbidity in Ontario. *Can J Public Health* 2018;109(5-6):845-54. doi: 10.17269/s41997-018-0103-0

Chen H, Cheng M, Zhuang Y, et al. Multimorbidity among middle-aged and older persons in urban China: Prevalence, characteristics and health service utilization. *Geriatr Gerontol Int* 2018;18(10):1447-52. doi: 10.1111/ggi.13510

Nunes BP, Batista SRR, Andrade FB, et al. Multimorbidity: The Brazilian Longitudinal Study of Aging (ELSI-Brazil). *Rev Saude Publica* 2018;52Suppl 2(Suppl 2):10s. doi: 10.11606/S1518-8787.2018052000637

Araujo MEA, Silva MT, Galvao TF, et al. Prevalence and patterns of multimorbidity in Amazon Region of Brazil and associated determinants: a cross-sectional study. *BMJ Open* 2018;8(11):e023398. doi: 10.1136/bmjopen-2018-023398

Moin JS, Moineddin R, Upshur REG. Measuring the association between marginalization and multimorbidity in Ontario, Canada: A cross-sectional study. *J Comorb* 2018;**8**(1):2235042X18814939. doi: 10.1177/2235042X18814939

King DE, Xiang J, Pilkerton CS. Multimorbidity Trends in United States Adults, 1988-2014. *J Am Board Fam Med* 2018;**31**(4):503-13. doi: 10.3122/jabfm.2018.04.180008

. Gnadinger M, Herzig L, Ceschi A, et al. Chronic conditions and multimorbidity in a primary care population: a study in the Swiss Sentinel Surveillance Network (Sentinella). *Int J Public Health* 2018 doi: 10.1007/s00038-018-1114-6.

Gebregziabher M, Ward RC, Taber DJ, et al. Ethnic and geographic variations in multimorbidity: Evidence from three large cohorts. *Soc Sci Med* 2018;**211**:198-206. doi: 10.1016/j.socscimed.2018.06.020.

Randall DA, Lujic S, Havard A, et al. Multimorbidity among Aboriginal people in New South Wales contributes significantly to their higher mortality. *Med J Aust* 2018;**209**(1):19-23.

Islas-Granillo H, Medina-Solis CE, de Lourdes Marquez-Corona M, et al. Prevalence of multimorbidity in subjects aged ≥ 60 years in a developing country. *Clinical interventions in aging* 2018;**13**:1129-33. doi: 10.2147/CIA.S154418.

Jin L, Guo X, Dou J, et al. Multimorbidity Analysis According to Sex and Age towards Cardiovascular Diseases of Adults in Northeast China. *Sci Rep* 2018;**8**(1):8607. doi: 10.1038/s41598-018-25561-y.

Stanley J, Semper K, Millar E, et al. Epidemiology of multimorbidity in New Zealand: a cross-sectional study using national-level hospital and pharmaceutical data. *BMJ Open* 2018;**8**(5):e021689. doi: 10.1136/bmjopen-2018-021689.

Mondor L, Cohen D, Khan AI, et al. Income inequalities in multimorbidity prevalence in Ontario, Canada: a decomposition analysis of linked survey and health administrative data. *Int J Equity Health* 2018;**17**(1):90. doi: 10.1186/s12939-018-0800-6.

Lim E, Gandhi K, Davis J, et al. Prevalence of Chronic Conditions and Multimorbidities in a Geographically Defined Geriatric Population With Diverse Races and Ethnicities. *J Aging Health* 2018;**30**(3):421-44. doi: 10.1177/0898264316680903

Kingston A, Robinson L, Booth H, et al. Projections of multi-morbidity in the older population in England to 2035: estimates from the Population Ageing and Care Simulation (PACSim) model. *Age Ageing* 2018;**47**(3):374-80. doi: 10.1093/ageing/afx201.

Singh K, Patel SA, Biswas S, et al. Multimorbidity in South Asian adults: prevalence, risk factors and mortality. *J Public Health (Oxf)* 2018 doi: 10.1093/pubmed/fdy017.

Rosella L, Kornas K, Huang A, et al. Accumulation Of Chronic Conditions At The Time Of Death Increased In Ontario From 1994 To 2013. *Health Aff (Millwood)* 2018;**37**(3):464-72. doi: 10.1377/hlthaff.2017.1150.

Excoffier S, Herzig L, N'Goran AA, et al. Prevalence of multimorbidity in general practice:

a cross-sectional study within the Swiss Sentinel Surveillance System (Sentinella). *BMJ Open* 2018;**8**(3):e019616. doi: 10.1136/bmjopen-2017-019616.

Woldesemayat EM, Kassa A, Gari T, et al. Chronic diseases multi-morbidity among adult patients at Hawassa University Comprehensive Specialized Hospital. *BMC Public Health* 2018;**18**(1):352. doi: 10.1186/s12889-018-5264-5.

Jureviciene E, Onder G, Visockiene Z, et al. Does multimorbidity still remain a matter of the elderly: Lithuanian national data analysis. *Health Policy* 2018 doi: 10.1016/j.healthpol.2018.03.003.

He Z, Bian J, Carretta HJ, et al. Prevalence of Multiple Chronic Conditions Among Older Adults in Florida and the United States: Comparative Analysis of the OneFlorida Data Trust and National Inpatient Sample. *J Med Internet Res* 2018;**20**(4):e137. doi: 10.2196/jmir.8961.

Pengpid S, Peltzer K. Multimorbidity in Chronic Conditions: Public Primary Care Patients in Four Greater Mekong Countries. *Int J Environ Res Public Health*. 2017;**14**(9).

Puth MT, Weckbecker K, Schmid M, Munster E. Prevalence of multimorbidity in Germany: impact of age and educational level in a cross-sectional study on 19,294 adults. *BMC Public Health*. 2017;**17**(1):826.

Roche S, De Vries E. Multimorbidity in a large district hospital: A descriptive cross-sectional study. *S Afr Med J*. 2017;**107**(12):1110-1115.

Nunes BP, Chiavegatto Filho ADP, Pati S, et al. Contextual and individual inequalities of multimorbidity in Brazilian adults: a cross-sectional national-based study. *BMJ Open*. 2017;**7**(6):e015885. doi: 10.1136/bmjopen-2017-015885.

Feely A, Lix LM, Reimer K. Estimating multimorbidity prevalence with the Canadian Chronic Disease Surveillance System. *Health Promot Chronic Dis Prev Can*. 2017;**37**(7):215-222. doi: 10.24095/hpcdp.37.7.02.

Hayek S, Ifrah A, Enav T, Shohat T. Prevalence, Correlates, and Time Trends of Multiple Chronic Conditions Among Israeli Adults: Estimates From the Israeli National Health Interview Survey, 2014-2015. *Prev Chronic Dis*. 2017;**14**:E64. doi: 10.5888/pcd14.170038.

Staimez LR, Wei MY, Kim M, Narayan KMV, Saydah SS. Multimorbidity of four cardiometabolic and chronic pulmonary disease groups: prevalence and attributable fraction in US adults, 2007-2012. *Journal of Comorbidity*. 2017;**7**:22-32.

Harrison C, Henderson J, Miller G, Britt H. The prevalence of diagnosed chronic conditions and multimorbidity in Australia: A method for estimating population prevalence from general practice patient encounter data. *PLoS One*. 2017;**12**(3):e0172935.

Gu J, Chao J, Chen W, et al. Multimorbidity in the community-dwelling elderly in urban China. *Arch Gerontol Geriatr*. 2017;**68**:62-67.

Carvalho JN, Roncalli AG, Cancela MC, Souza DL. Prevalence of multimorbidity in the Brazilian adult population according to socioeconomic and demographic characteristics.

PLoS One. 2017;**12**(4):e0174322.

Mini GK, Thankappan KR. Pattern, correlates and implications of non-communicable disease multimorbidity among older adults in selected Indian states: a cross-sectional study. *BMJ Open*. 2017;**7**(3):e013529.

Lowe DB, Taylor MJ, Hill SJ. Cross-sectional examination of musculoskeletal conditions and multimorbidity: influence of different thresholds and definitions on prevalence and association estimates. *BMC Res Notes*. 2017;**10**(1):51.

Rzewuska M, de Azevedo-Marques JM, Coxon D, et al. Epidemiology of multimorbidity within the Brazilian adult general population: Evidence from the 2013 National Health Survey (PNS 2013). *PLoS One*. 2017;**12**(2):e0171813.

Gupta S. Burden of Multiple Chronic Conditions in Delaware, 2011-2014. *Prev Chronic Dis*. 2016;**13**:E160

Bobo WV, Yawn BP, St Sauver JL, Grossardt BR, Boyd CM, Rocca WA. Prevalence of Combined Somatic and Mental Health Multimorbidity: Patterns by Age, Sex, and Race/Ethnicity. *J Gerontol A Biol Sci Med Sci*. 2016.

Lim E, Gandhi K, Davis J, Chen JJ. Prevalence of Chronic Conditions and Multimorbidities in a Geographically Defined Geriatric Population With Diverse Races and Ethnicities. *J Aging Health*. 2016.

Lenzi J, Avaldi VM, Rucci P, Pieri G, Fantini MP. Burden of multimorbidity in relation to age, gender and immigrant status: a cross-sectional study based on administrative data. *BMJ Open*. 2016;**6**(12):e012812.

Weston C, Gilkes A, Durbaba S, Schofield P, White P, Ashworth M. Long term condition morbidity in English general practice: a cross-sectional study using three composite morbidity measures. *BMC Fam Pract*. 2016;**17**(1):166.

Nunes BP, Camargo-Figuera FA, Guttier M, et al. Multimorbidity in adults from a southern Brazilian city: occurrence and patterns. *Int J Public Health*. 2016;**61**(9):1013-1020.

Ward BW, Black LI. State and Regional Prevalence of Diagnosed Multiple Chronic Conditions Among Adults Aged ≥ 18 Years - United States, 2014. *MMWR Morb Mortal Wkly Rep*. 2016;**65**:735-8.

Weimann A, Dai D, Oni T. A cross-sectional and spatial analysis of the prevalence of multimorbidity and its association with socioeconomic disadvantage in South Africa: A comparison between 2008 and 2012. *Soc Sci Med*. 2016;**163**:144-56.

van Oostrom SH, Gijzen R, Stirbu I, et al. Time Trends in Prevalence of Chronic Diseases and Multimorbidity Not Only due to Aging: Data from General Practices and Health Surveys. *PLoS One*. 2016;**11**:e0160264.

Gu J, Chao J, Chen W, et al. Multimorbidity in the community-dwelling elderly in urban China. *Arch Gerontol Geriatr*. 2016;**68**:62-7.

Buurman BM, Frenkel WJ, Abu-Hanna A, Parlevliet JL, de Rooij SE: Acute and chronic diseases as part of multimorbidity in acutely hospitalized older patients. *Eur J Intern Med.* 2016;**27**:68-75.

Jovic D, Vukovic D, Marinkovic J. Prevalence and Patterns of Multi-Morbidity in Serbian Adults: A Cross-Sectional Study. *PLoS One.* 2016;**11**:e0148646.

Ahmadi B, Alimohammadian M, Yaseri M, et al. Multimorbidity: Epidemiology and Risk Factors in the Golestan Cohort Study, Iran: A Cross-Sectional Analysis. *Medicine (Baltimore).* 2016;**95**:e2756.

Marengoni A, Angleman S, Meinow B, et al. Coexisting chronic conditions in the older population: Variation by health indicators. *Eur J Intern Med.* 2016;**31**:29-34.

Harrison C, Henderson J, Miller G, Britt H. The prevalence of complex multimorbidity in Australia. *Aust N Z J Public Health.* 2016;**40**:239-44.

Hewitt J, McCormack C, Tay HS, et al. Prevalence of multimorbidity and its association with outcomes in older emergency general surgical patients: an observational study. *BMJ Open.* 2016;**6**:e010126.

Lowe D, Taylor M, Hill S. Changing definitions altered multimorbidity prevalence, but not burden associations, in a musculoskeletal population. *J Clin Epidemiol.* 2016.

Nunes BP, Camargo-Figuera FA, Guttier M, et al. Multimorbidity in adults from a southern Brazilian city: occurrence and patterns. *Int J Public Health.* 2016;**61**(9):1013-1020

Mokraoui NM, Haggerty J, Almirall J, Fortin M. Prevalence of self-reported multimorbidity in the general population and in primary care practices: a cross-sectional study. *BMC Res Notes.* 2016;**9**:314.

Jovic D, Marinkovic J, Vukovic D. Association between body mass index and prevalence of multimorbidity: a cross-sectional study. *Public Health.* 2016.

Nunes BP, Thume E, Facchini LA: Multimorbidity in older adults: magnitude and challenges for the Brazilian health system. *BMC Public Health.* 2015;**15**:1172.

Wang SB, D'Arcy C, Yu YQ, Li B, Liu YW, Tao YC *et al*: Prevalence and patterns of multimorbidity in northeastern China: a cross-sectional study. *Public Health.* 2015;**129**(11):1539-1546.

Wang R, Yan Z, Liang Y, Tan EC, Cai C, Jiang H *et al*: Prevalence and Patterns of Chronic Disease Pairs and Multimorbidity among Older Chinese Adults Living in a Rural Area. *PLoS One.* 2015;**10**(9):e0138521.

Prazeres F, Santiago L: Prevalence of multimorbidity in the adult population attending primary care in Portugal: a cross-sectional study. *BMJ Open.* 2015;**5**(9):e009287.

Mwangi J, Kulane A, Van Hoi L: Chronic diseases among the elderly in a rural Vietnam: prevalence, associated socio-demographic factors and healthcare expenditures. *Int J Equity Health.* 2015;**14**(1):134.

Hussain MA, Huxley RR, Al Mamun A: Multimorbidity prevalence and pattern in Indonesian adults: an exploratory study using national survey data. *BMJ Open.* 2015;**5**(12):e009810.

Kumar D, Raithatha SJ, Gupta S, Raj R, Kharod N: Burden of Self-Reported Noncommunicable Diseases in 26 Villages of Anand District of Gujarat, India. *Int J Chronic Dis*. 2015;**2015**:260143.

Pati S, Swain S, Hussain MA, Kadam S, Salisbury C. Prevalence, Correlates, and Outcomes of Multimorbidity Among Patients Attending Primary Care in Odisha, India. *Ann Fam Med*. Sep 2015;**13**(5):446-450.

Joshi R, Santoshi JA, Rai N, Pakhare A. Prevalence and Patterns of Coexistence of Multiple Chronic Conditions: A Study from Indian Urban Outpatient Setting. *J Family Med Prim Care*. Jul-Sep 2015;**4**(3):411-415.

Pefoyo AJ, Bronskill SE, Gruneir A, et al. The increasing burden and complexity of multimorbidity. *BMC Public Health*. 2015;**15**:415.

Gough H, Grabenhenrich L, Reich A, et al. Allergic multimorbidity of asthma, rhinitis, and eczema over 20 years in the German birth cohort MAS. *Pediatr Allergy Immunol*. May 22 2015.

Ha NT, Le NH, Khanal V, Moorin R. Multimorbidity and its social determinants among older people in southern provinces, Vietnam. *Int J Equity Health*. 2015;**14**(1):50.

Roberts KC, Rao DP, Bennett TL, Loukine L, Jayaraman GC. Prevalence and patterns of chronic disease multimorbidity and associated determinants in Canada. *Health Promot Chronic Dis Prev Can*. Aug 2015;**35**(6):87-94.

Navickas R, Visockiene Z, Puronaite R, Rukseniene M, Kasiulevicius V, Jureviciene E. Prevalence and structure of multiple chronic conditions in Lithuanian population and the distribution of the associated healthcare resources. *Eur J Intern Med*. Apr 2015;**26**(3):160-168.

Hien H, Berthe A, Drabo MK, et al. Prevalence and patterns of multimorbidity among the elderly in Burkina Faso: cross-sectional study. *Trop Med Int Health*. Nov 2014;**19**(11):1328-1333.

Fu S, Huang N, Chou YJ. Trends in the prevalence of multiple chronic conditions in taiwan from 2000 to 2010: a population-based study. *Prev Chronic Dis*. 2014;**11**:E187.

Rocca WA, Boyd CM, Grossardt BR, Bobo WV, Finney Rutten LJ, Roger VL, Ebbert JO, Therneau TM, Yawn BP, St Sauver JL. Prevalence of multimorbidity in a geographically defined American population: patterns by age, sex, and race/ethnicity. *Mayo Clin Proc*. 2014;**89**(10):1336-1349.

Gallacher KI, Batty GD, McLean G, Mercer SW, Guthrie B, May CR, Langhorne P, Mair FS. Stroke, multimorbidity and polypharmacy in a nationally representative sample of 1,424,378 patients in Scotland: implications for treatment burden. *BMC Med*. 2014;**12**(1):151.

Wang H, Wang J, Wong S, Wong M, Li F, Wang P, Zhou Z, Zhu C, Griffiths SM, Mercer SW. Epidemiology of multimorbidity in China and implications for the healthcare system: cross-sectional survey among 162,464 community household residents in southern China. *BMC Med*. 2014;**12**(1):188.

Ward BW, Schiller JS, Goodman RA. Multiple chronic conditions among US adults: a 2012 update. *Prev Chronic Dis*. 2014;**11**:E62.

Violan C, Foguet-Boreu Q, Roso-Llorach A, Rodriguez-Blanco T, Pons-Vigues M, Pujol-Ribera E, Munoz-Perez MA, Valderas JM. Burden of multimorbidity, socioeconomic status and use of health services across stages of life in urban areas: a cross-sectional study. *BMC Public Health*. 2014;**14**:530.

Abad-Diez JM, Calderon-Larranaga A, Poncel-Falco A, Poblador-Plou B, Calderon-Meza JM, Sicras-Mainar A, Clerencia-Sierra M, Prados-Torres A. Age and gender differences in the prevalence and patterns of multimorbidity in the older population. *BMC Geriatr*. 2014;**14**:75.

Islam MM, Valderas JM, Yen L, Dawda P, Jowsey T, McRae IS. Multimorbidity and comorbidity of chronic diseases among the senior Australians: prevalence and patterns. *PLoS One*. 2014;9(1):e83783.

Orueta JF, Garcia-Alvarez A, Garcia-Goni M, Paolucci F, Nuno-Solinis R. Prevalence and costs of multimorbidity by deprivation levels in the basque country: a population based study using health administrative databases. *PLoS One*. 2014;9(2):e89787.

Hermans H, Evenhuis HM. Multimorbidity in older adults with intellectual disabilities. *Res Dev Disabil*. Apr 2014;35(4):776-783.

Agborsangaya CB, Ngwakongnwi E, Lahtinen M, Cooke T, Johnson JA. Multimorbidity prevalence in the general population: the role of obesity in chronic disease clustering. *BMC Public Health*. 2013;**13**:1161.

Pfortmueller CA, Stotz M, Lindner G, Muller T, Rodondi N, Exadaktylos AK. Multimorbidity in adult asylum seekers: a first overview. *PLoS One*. 2013;**8**(12):e82671.

Alaba O, Chola L. The social determinants of multimorbidity in South Africa. *Int J Equity Health*. Aug 20 2013;**12**(1):63.

Ford ES, Croft JB, Posner SF, Goodman RA, Giles WH. Co-occurrence of leading lifestyle-related chronic conditions among adults in the United States, 2002-2009. *Prev Chronic Dis*. 2013;**10**:E60.

Lochner KA, Cox CS. Prevalence of multiple chronic conditions among medicare beneficiaries, United States, 2010. *Prev Chronic Dis*. 2013;**10**:E61.

Ashman JJ, Beresovsky V. Multiple Chronic Conditions Among US Adults Who Visited Physician Offices: Data From the National Ambulatory Medical Care Survey, 2009. *Prev Chronic Dis*. 2013;**10**:E64.

Ward BW, Schiller JS. Prevalence of Multiple Chronic Conditions Among US Adults: Estimates From the National Health Interview Survey, 2010. *Prev Chronic Dis*. 2013;**10**:E65.

van den Brink AM, Gerritsen DL, Voshaar RC, Koopmans RT. Residents with mental-physical multimorbidity living in long-term care facilities: prevalence and characteristics. A systematic review. *Int Psychogeriatr*. Apr 2013;**25**(4):531-548.

van den Bussche H, Schafer I, Wiese B, et al. A comparative study demonstrated that prevalence figures on multimorbidity require cautious interpretation when drawn from a single database. *J Clin Epidemiol*. Feb 2013;**66**(2):209-217.

Jerliu N, Toci E, Burazeri G, Ramadani N, Brand H. Prevalence and socioeconomic correlates of chronic morbidity among elderly people in Kosovo: a population-based survey. *BMC Geriatr*. 2013;**13**:22.

Violan C, Foguet-Boreu Q, Hermosilla-Perez E, et al. Comparison of the information

provided by electronic health records data and a population health survey to estimate prevalence of selected health conditions and multimorbidity. *BMC Public Health*. 2013;**13**:251.

de S. Santos Machado V, Valadares AL, Costa-Paiva LH, Osis MJ, Sousa MH, Pinto-Neto AM. Aging, obesity, and multimorbidity in women 50 years or older: a population-based study. *Menopause*. Apr 1 2013.

Rizza A, Kaplan V, Senn O, et al. Age- and gender-related prevalence of multimorbidity in primary care: the swiss fire project. *BMC Fam Pract*. Nov 24 2012;**13**(1):113.

Barnett K, Mercer SW, Norbury M, Watt G, Wyke S, Guthrie B. Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *Lancet*. Jul 7 2012;**380**(9836):37-43.

van Oostrom SH, Picavet HS, van Gelder BM, et al. Multimorbidity and comorbidity in the Dutch population-data from general practices. *BMC Public Health*. Aug 30 2012;**12**(1):715.

Schneider F, Kaplan V, Rodak R, Battegay E, Holzer B. Prevalence of multimorbidity in medical inpatients. *Swiss Med Wkly*. 2012;**142**:w13533.

Agborsangaya CB, Lau D, Lahtinen M, Cooke T, Johnson JA. Multimorbidity prevalence and patterns across socioeconomic determinants: a cross-sectional survey. *BMC Public Health*. 2012;**12**:201.

Fuchs J, Busch M, Lange C, Scheidt-Nave C. Prevalence and patterns of morbidity among adults in Germany. Results of the German telephone health interview survey German Health Update (GEDA) 2009. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*. Apr 2012;**55**(4):576-586.

Marengoni A, Angleman S, Fratiglioni L. Prevalence of disability according to multimorbidity and disease clustering: a population-based study. *Journal of Comorbidity*. 2011;**1**:11-8.

Khanam, M.A., et al., Prevalence and patterns of multimorbidity among elderly people in rural Bangladesh: a cross-sectional study. *J Health Popul Nutr*, 2011. **29**: p. 406-14.

van Baal, P.H., et al., Co-occurrence of diabetes, myocardial infarction, stroke, and cancer: quantifying age patterns in the Dutch population using health survey data. *Popul Health Metr*, 2011. **9**: p. 51.

van den Bussche H, Koller D, Kolonko T, et al. Which chronic diseases and disease combinations are specific to multimorbidity in the elderly? Results of a claims data based cross-sectional study in Germany. *BMC Public Health* 2011;**11**:101.

Glynn LG, Valderas JM, Healy P, et al. The prevalence of multimorbidity in primary care and its effect on health care utilization and cost. *Fam Pract* 2011;**28**(5):516-23.

Taylor AW, Price K, Gill TK, et al. Multimorbidity - not just an older person's issue. Results from an Australian biomedical study. *BMC Public Health*. 2010;10:718.

Schneider KM, O'Donnell BE, Dean D. Prevalence of multiple chronic conditions in the United States' Medicare population. *Health Qual Life Outcomes*. 2009;7:82.

Cullen W, O'Brien S, O'Carroll A, O'Kelly FD, Bury G. Chronic illness and multimorbidity among problem drug users: a comparative cross sectional pilot study in primary care. *BMC Fam Pract*. 2009 Apr 21;10:25.

Lee PG, Cigolle C, Blaum C. The co-occurrence of chronic diseases and geriatric

syndromes: the health and retirement study. *J Am Geriatr Soc.* 2009 Mar;57(3):511-6.

Loza, E., L. Abasolo, et al. "Burden of disease across chronic diseases: a health survey that measured prevalence, function, and quality of life." *Journal of Rheumatology* 2008. 35(1): 159-65.

Uijen AA, van de Lisdonk EH. Multimorbidity in primary care: prevalence and trend over the last 20 years. *Eur J Gen Pract.* 2008;14 Suppl 1:28-32.

Britt HC, Harrison CM, Miller GC, Knox SA. Prevalence and patterns of multimorbidity in Australia. *Med J Aust.* 2008. 189(2):72-7.

Schram MT, Frijters D, van de Lisdonk EH, Ploemacher J, de Craen AJ, de Waal MW, van Rooij FJ, Heeringa J, Hofman A, Deeg DJ, Schellevis FG. Setting and registry characteristics affect the prevalence and nature of multimorbidity in the elderly. *J Clin Epidemiol.* 2008 2008;61(11):1104-12.

Marengoni A, Winblad B, Karp A, Fratiglioni L. Prevalence of chronic diseases and multimorbidity among the elderly population in Sweden. *Am J Public Health.* 2008. 98(7):1198-200. Epub 2008 May 29.

Alonso, J., et al., Health-related quality of life associated with chronic conditions in eight countries: results from the International Quality of Life Assessment (IQOLA) Project. *Quality of Life Research*, 2004. 13(2): p. 283-98.

Cuijpers, P., P. van Lammeren, and B. Duzijn, Relation between quality of life and chronic illnesses in elderly living in residential homes: a prospective study. *Int Psychogeriatr*, 1999. 11: p. 445-54.

Fortin F, Bravo G, Hudon C, Vanasse A, Lapointe L. Prevalence of Multimorbidity Among Adults Seen in Family Practice. *Ann Fam Med* 2005;3:223-8.

Fried, L.P., et al., Association of comorbidity with disability in older women: the Women's Health and Aging Study. *J Clin Epidemiol*, 1999. 52: p. 27-37.

Fuchs, Z., et al., Morbidity, comorbidity, and their association with disability among community-dwelling oldest-old in Israel. *Journals of Gerontology Series A-Biological Sciences & Medical Sciences.*, 1998. 53(6): p. M447-55.

Grau, L. and C. Kovner, Comorbidity, age, and hospital use among elderly Medicare patients. *Journal of Aging & Health.*, 1991. 3(3): p. 352-67.

Guralnik, J.M., Assessing the impact of comorbidity in the older population. *Ann Epidemiol*, 1996. 6(5): p. 376-80.

Grimby, A. and A. Svanborg, Morbidity and health-related quality of life among ambulant elderly citizens. *Aging Clin Exp Res*, 1997. 9: p. 356-64.

Fillenbaum, G.G., et al., Comorbidity of five chronic health conditions in elderly community residents: determinants and impact on mortality. *Journals of Gerontology Series A-Biological Sciences & Medical Sciences.*, 2000. 55(2): p. M84-9.

Hoffman, C., D. Rice, and H.Y. Sung, Persons with chronic conditions. Their prevalence and costs. *JAMA*, 1996. 276(18): p. 1473-1479.

Iron, K.S., D.G. Manuel, and J. Williams, Using a linked data set to determine the factors associated with utilization and costs of family physician services in Ontario: effects of self-reported chronic conditions. *Chronic Diseases in Canada*, 2003. 24(4): p. 124-32.

Kempen, G.I., M. Jelicic, and J. Ormel, Personality, chronic medical morbidity, and health-related quality of life among older persons. *Health Psychol*, 1997. **16**(6): p. 539-46.

Kempen, G.I., et al., Adaptive responses among Dutch elderly: the impact of eight chronic medical conditions on health-related quality of life.[see comment]. *American Journal of Public Health.*, 1997. **87**(1): p. 38-44.

Macleod, U., et al., Comorbidity and socioeconomic deprivation: an observational study of the prevalence of comorbidity in general practice. *European Journal of General Practice*, 2004. **10**(1): p. 24-6.

Menotti, A., et al., Prevalence of morbidity and multimorbidity in elderly male populations and their impact on 10-year all-cause mortality: The FINE study (Finland, Italy, Netherlands, Elderly). *Journal of Clinical Epidemiology.*, 2001. **54**(7): p. 680-6.

Metsemakers, J.F., et al., Computerized health information in The Netherlands: a registration network of family practices. *Br J Gen Pract*, 1992. **42**: p. 102-106.

Poli, L., et al., Autopsy and multiple pathology in the elderly. *Gerontology.*, 1993. **39**(1): p. 55-63.

Rigler, S.K., et al., Co-morbidity adjustment for functional outcomes in community-dwelling older adults. *Clinical Rehabilitation.*, 2002. **16**(4): p. 420-8.

Rapoport, J., et al., Refining the measurement of the economic burden of chronic diseases in Canada. *Chronic Diseases in Canada*, 2004. **25**(1): p. 13-21.

Rice, D.P. and M.P. LaPlante, Chronic illness, disability and increasing longevity, in *Ethics and economics of long term care.*, E.-L.M. Sullivan S., Editor. 1988. p. 9-55.

Rochon, P.A., et al., Comorbid illness is associated with survival and length of hospital stay in patients with chronic disability. A prospective comparison of three comorbidity indices. *Med Care*, 1996. **34**(11): p. 1093-101.

Schellevis, F.G., et al., Consultation rates and incidence of intercurrent morbidity among patients with chronic disease in general practice. *British Journal of General Practice.*, 1994. **44**(383): p. 259-62.

Schellevis, F.G., et al., Comorbidity of chronic diseases in general practice. *J Clin Epidemiol*, 1993. **46**: p. 469-73.

Starfield, B., et al., Comorbidity: Implications for the importance of primary care in "case" management. *Ann Fam Med*, 2003. **1**: p. 8-14.

Starfield, B., et al., Ambulatory care groups: a categorization of diagnoses for research and management. *Health Services Research.*, 1991. **26**(1): p. 53-74.

Stewart, A.L., et al., Functional status and well-being of patients with chronic conditions. Results from the Medical Outcomes Study. *JAMA*, 1989. **262**: p. 907-13.

van den Akker, M., et al., Problems in determining occurrence rates of multimorbidity. *J Clin Epidemiol*, 2001. **54**: p. 675-9.

van den Akker, M., et al., Marginal impact of psychosocial factors on multimorbidity: results of an explorative nested case-control study. *Social Science & Medicine.*, 2000. **50**(11): p. 1679-93.

van den Akker, M., et al., Multimorbidity in general practice: prevalence, incidence, and determinants of co-occurring chronic and recurrent diseases. *J Clin Epidemiol*, 1998.

51: p. 367-375.

Van Weel, C., Chronic diseases in general practice: the longitudinal dimension. *Eur J Gen Pract*, 1996. **2:** p. 17-21.

Wensing, M., E. Vingerhoets, and R. Grol, Functional status, health problems, age and comorbidity in primary care patients. *Qual Life Res*, 2001. **10:** p. 141-8.

Wolff, J.L., B. Starfield, and G. Anderson, Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Archives of Internal Medicine*, 2002. **162:** p. 2269-76.

Wun, Y.T., K. Chan, and A. Lee, Co-morbidity in general practice. *Family Practice.*, 1998. **15(3):** p. 266-8.

3.2 AETIOLOGY

Masoli JAH, Pilling LC, Frayling TM. Genomics and multimorbidity. *Age Ageing*. 2022;51(12).

Moftakhar L, Rezaeianzadeh R, Ghodduji Johari M, Hosseini SV, Rezaianzadeh A. Epidemiology and predictors of multimorbidity in Kharameh cohort study: A population-based cross-sectional study in southern Iran. *Health Sci Rep*. 2023;6(1):e988.

Ronaldson A, Arias de la Torre J, Ashworth M, Hansell AL, Hotopf M, Mudway I, et al. Associations between air pollution and multimorbidity in the UK Biobank: A cross-sectional study. *Front Public Health*. 2022;10:1035415.

Shi W, Zhang T, Li Y, Huang Y, Luo L. Association between household air pollution from solid fuel use and risk of chronic diseases and their multimorbidity among Chinese adults. *Environ Int*. 2022;170:107635.

Willadsen, T.G., Siersma, V., Nicolaisdóttir, D.R., Køster-Rasmussen, R., Reventlow, S. and Rosing, M. (2022). The effect of disease onset chronology on mortality among patients with multimorbidity: A Danish nationwide register study. *Journal of Multimorbidity and Comorbidity*, [online] 12, p.26335565221122025. doi:10.1177/26335565221122025.

Dong G, Feng J, Sun F, et al. A global overview of genetically interpretable multimorbidities among common diseases in the UK Biobank. *Genome Med* 2021;13(1):110. doi: 10.1186/s13073-021-00927-6

Gabet S, Just J, Couderc R, Bousquet J, Seta N, Momas I. Early polysensitization is associated with allergic multimorbidity in PARIS birth cohort infants. *Pediatr Allergy Immunol*. 2016;27(8):831-837.

Liu W, Huang C, Wang X, et al. Multimorbidities of Asthma, Allergies, and Airway Illnesses in Childhood: Chance or not Chance? *J Asthma*. 2016: Nov 23:1-12. doi: 10.1080/02770903.2016.1263648.

Schottker B, Sau m KU, Jansen EH, Holleczeck B, Brenner H: Associations of metabolic, inflammatory and oxidative stress markers with total morbidity and multi-morbidity in a large cohort of older German adults. *Age Ageing*. 2016;45(1):127-135.

Meems LM, de Borst MH, Postma DS, Vonk JM, Kremer HP, Schuttelaar ML *et al*: Low levels of vitamin D are associated with multimorbidity: results from the LifeLines Cohort Study. *Annals of medicine*. 2015;47(6):474-481.

Ballardini N, Bergstrom A, Wahlgren CF, van Hage M, Hallner E, Kull I *et al*: IgE antibodies in relation to prevalence and multimorbidity of eczema, asthma, and rhinitis from birth to adolescence. *Allergy*. 2016;71(3):342-349.

Pavela G, Latham K. Childhood Conditions and Multimorbidity Among Older Adults. *J Gerontol B Psychol Sci Soc Sci*. May 14 2015.

Tomasdottir MO, Sigurdsson JA, Petursson H, et al. Self Reported Childhood Difficulties, Adult Multimorbidity and Allostatic Load. A Cross-Sectional Analysis of the Norwegian HUNT Study. *PLoS One*. 2015;10(6):e0130591.

Wikstrom K, Lindstrom J, Harald K, Peltonen M, Laatikainen T. Clinical and lifestyle-related risk factors for incident multimorbidity: 10-year follow-up of Finnish population-based cohorts 1982-2012. *Eur J Intern Med*. Apr 2015;26(3):211-216.

Park J, Lee DS, Christakis NA, Barabási AL. The impact of cellular networks on disease comorbidity. *Mol Syst Biol.* 2009;**5**:262.

Neeleman, J., J. Ormel, and R.V. Bijl, The distribution of psychiatric and somatic III health: associations with personality and socioeconomic status. *Psychosomatic Medicine.*, 2001. **63**(2): p. 239-47.

Neeleman, J., S. Sytema, and M. Wadsworth, Propensity to psychiatric and somatic ill-health: evidence from a birth cohort. *Psychological Medicine*, 2002. **32**(5): p. 793-803.

Rhee, S.H., et al., The validity of the Neale and Kendler model-fitting approach in examining the etiology of comorbidity. *Behavior Genetics*, 2004. **34**(3): p. 251-65.

3.3 CORRELATION WITH BIOMARKERS

Beason-Held LL, Fournier D, Shafer AT, Fabbri E, An Y, Huang CW, et al. Disease Burden Affects Aging Brain Function. *J Gerontol A Biol Sci Med Sci.* 2022;**77**(9):1810-8.

Geng S, Chen X, Shi Z, Bai K, Shi S. Association of anthropometric indices with the development of multimorbidity in middle-aged and older adults: A retrospective cohort study. *PLoS One.* 2022;**17**(10):e0276216.

Granic A, Martin-Ruiz C, Rimmer L, Dodds RM, Robinson LA, Spyridopoulos I, et al. Immunosenescence profiles of lymphocyte compartments and multiple long-term conditions (multimorbidity) in very old adults: The Newcastle 85+ Study. *Mech Ageing Dev.* 2022;**208**:111739.

Iannone F, Crocco P, Dato S, Passarino G, Rose G. Circulating miR-181a as a novel potential plasma biomarker for multimorbidity burden in the older population. *BMC Geriatr.* 2022;**22**(1):772.

Jain P, Binder A, Chen B, Parada H, Gallo LC, Alcaraz J, et al. The association of epigenetic age acceleration and multimorbidity at age 90 in the Women's Health Initiative. *J Gerontol A Biol Sci Med Sci.* 2022.

Kochlik B, Franz K, Henning T, Weber D, Wernitz A, Herpich C, et al. Frailty is characterized by biomarker patterns reflecting inflammation or muscle catabolism in multi-morbid patients. *J Cachexia Sarcopenia Muscle.* 2022.

Piacenza F, Di Rosa M, Fedecostante M, Madotto F, Montesanto A, Corsonello A, et al. Improving the prognostic value of multimorbidity through the integration of selected biomarkers to the comprehensive geriatric assessment: An observational retrospective monocentric study. *Front Med (Lausanne).* 2022;**9**:999767.

Shang, X., Zhang, X., Huang, Y., Zhu, Z., Zhang, X., Liu, J., Wang, W., Tang, S., Yu, H., Ge, Z., Yang, X. and He, M. (2022). Association of a wide range of individual chronic diseases and their multimorbidity with brain volumes in the UK Biobank: A cross-sectional study. *EClinicalMedicine*, [online] 47, p.101413. doi:10.1016/j.eclinm.2022.101413.
Li, G., Lu, Y., Qiao, Y., Hu, D. and Ke, C. (2022). Role of Pulmonary Function in Predicting New-Onset Cardiometabolic Diseases and Cardiometabolic Multimorbidity. *Chest*. doi:10.1016/j.chest.2021.12.663.

Caballero, F.F., Lana, A., Struijk, E.A., Arias-Fernández, L., Yévenes-Briones, H., Cárdenas-Valladolid, J., Salinero-Fort, M.Á., Banegas, J.R., Rodríguez-Artalejo, F. and Lopez-Garcia, E. (2022). Prospective Association Between Plasma Amino Acids And Multimorbidity In Older Adults. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, [online] p.glac144. doi:10.1093/gerona/glac144.

Staunstrup LM, Bager CL, Frederiksen P, et al. Endotrophin is associated with chronic multimorbidity and all-cause mortality in a cohort of elderly women. *EBioMedicine* 2021;68:103391. doi: 10.1016/j.ebiom.2021.103391

Desdin-Mico G, Soto-Heredero G, Aranda JF, et al. T cells with dysfunctional mitochondria induce multimorbidity and premature senescence. *Science* 2020;368(6497):1371-76. doi: 10.1126/science.aax0860

Scutt G, Overall A, Bakrania P, et al. The association of a single nucleotide polymorphism in the nuclear factor erythroid derived-2 like 2 (Nrf-2) gene with adverse drug reactions, multimorbidity and frailty in older people. *J Gerontol A Biol Sci Med Sci* 2019 doi: 10.1093/gerona/glz131

Zhang Y, Yu L, Wang X, et al. Dose-response association of serum alanine aminotransferase levels with multimorbidity. *Sci Rep* 2019;9(1):8081. doi: 10.1038/s41598-019-44510-x

Stirland LE, Russ TC, Ritchie CW, et al. Associations Between Multimorbidity and Cerebrospinal Fluid Amyloid: A Cross-Sectional Analysis of the European Prevention of Alzheimer's Dementia (EPAD) V500.0 Cohort. *J Alzheimers Dis* 2019 doi: 10.3233/JAD-190222

Perez LM, Hooshmand B, Mangialasche F, et al. Glutathione Serum Levels and Rate of Multimorbidity Development in Older Adults. *J Gerontol A Biol Sci Med Sci* 2019 doi: 10.1093/gerona/glz101

Garrafa E, Casnici N, Squazzoni F, Uberti D, Marengoni A. C-reactive protein, lipoprotein (a) and cystatin C levels increase with multimorbidity in older persons. *Eur J Intern Med*. 2017;42:e25-e26. doi: 10.1016/j.ejim.2017.04.010.

Gabet S, Just J, Couderc R, Bousquet J, Seta N, Momas I. Early polysensitization is associated with allergic multimorbidity in PARIS birth cohort infants. *Pediatr Allergy Immunol*. 2016.

Isaac V, Wu CY, Huang CT, Baune BT, Tseng CL, McLachlan CS. Elevated neutrophil to lymphocyte ratio predicts mortality in medical inpatients with multiple chronic conditions. *Medicine (Baltimore)*. 2016;95:e3832.

Ballardini N, Bergstrom A, Wahlgren CF, et al. IgE antibodies in relation to prevalence and multimorbidity of eczema, asthma, and rhinitis from birth to adolescence. *Allergy*. 2016;71:342-9.

Pupek M, Pawlowicz R, Lindner K, et al. Occurrence of fibronectin-fibrin complexes in plasma of patients with multimorbidity due to the inflamm-aging phenomenon. *Exp Gerontol*. 2016;77:19-28.

Vassilaki M, Aakre JA, Mielke MM, et al. Multimorbidity and neuroimaging biomarkers among cognitively normal persons. *Neurology*. 2016;86:2077-84.

Fabrizi E, Tanaka T, An Y, et al. Loss of Weight in Obese Older Adults: A Biomarker of Impending Expansion of Multimorbidity? *J Am Geriatr Soc*. Sep 2015;63(9):1791-1797.

Friedman EM, Christ SL, Mroczek DK. Inflammation Partially Mediates the Association of Multimorbidity and Functional Limitations in a National Sample of Middle-Aged and Older Adults: The MIDUS Study. *J Aging Health*. Feb 2 2015.

Cervellati C, Romani A, Bosi C, et al. Serum levels of hydroperoxides and multimorbidity among older patients with mild cognitive impairment or late-onset Alzheimer's disease. *Aging Clin Exp Res*. Mar 21 2015.

Stepanova M, Rodriguez E, Birerdinc A, Baranova A. Age-independent rise of inflammatory scores may contribute to accelerated aging in multi-morbidity. *Oncotarget*. Jan 30 2015;**6**(3):1414-1421.

Fabbri E, An Y, Schrack JA, et al. Energy Metabolism and the Burden of Multimorbidity in Older Adults: Results From the Baltimore Longitudinal Study of Aging. *J Gerontol A Biol Sci Med Sci*. Nov 18 2014.

Fabbri E, An Y, Zoli M, et al. Aging and the burden of multimorbidity: associations with inflammatory and anabolic hormonal biomarkers. *J Gerontol A Biol Sci Med Sci*. Jan 2015;**70**(1):63-70.

Marengoni A, Petroboni B, Casella S, Martinelli D, Cossi S. Total lymphocyte count and in-hospital mortality in older persons with multimorbidity. *Aging Clin Exp Res*. 2008. **20**(4):290-6.

Castle, S.C., et al., Comorbidity is a better predictor of impaired immunity than chronological age in older adults. *Journal of the American Geriatrics Society*, 2005. **53**(9): p. 1565-9.

Rafi, A., W. Crawford, and W. Klaustermeyer, Declining cell-mediated immunity and increased chronic disease burden. *Ann Allergy Asthma Immunol*, 2005. **94**: p. 445-50.

3.4 INTERACTIONS AND PATTERNS

Alvarez-Galvez J, Vegas-Lozano E. Discovery and classification of complex multimorbidity patterns: unravelling chronicity networks and their social profiles. *Sci Rep.* 2022;12(1):20004.

Bishop NJ, Haas SA, Quiñones AR. Cohort Trends in the Burden of Multiple Chronic Conditions Among Aging U.S. Adults. *J Gerontol B Psychol Sci Soc Sci.* 2022;77(10):1867-79.

Cezard G, Sullivan F, Keenan K. Understanding multimorbidity trajectories in Scotland using sequence analysis. *Sci Rep.* 2022;12(1):16485.

Chen Y, Shi L, Zheng X, Yang J, Xue Y, Xiao S, et al. Patterns and Determinants of Multimorbidity in Older Adults: Study in Health-Ecological Perspective. *Int J Environ Res Public Health.* 2022;19(24).

Damiano C, Onder G, Zazzara MB, Carfi A, Zucchelli A, Marengoni A, et al. Frailty, multimorbidity patterns and mortality in institutionalized older adults in Italy. *Aging Clin Exp Res.* 2022;34(12):3123-30.

Davies LE, Mercer SW, Brittain K, Jagger C, Robinson L, Kingston A. The association between multimorbidity and mobility disability-free life expectancy in adults aged 85 years and over: A modelling study in the Newcastle 85+ cohort. *PLoS Med.* 2022;19(11):e1004130.

Jin H, Wang Z, Guo A, Zhang H, Liu W, Zhu Y, et al. Patterns of multimorbidity in community health centres in Shanghai, China: a retrospective, cross-sectional study based on outpatient data from 2014 to 2018. *BMJ Open.* 2022;12(10):e048727.

Kuan V, Denaxas S, Patalay P, Nitsch D, Mathur R, Gonzalez-Izquierdo A, et al. Identifying and visualising multimorbidity and comorbidity patterns in patients in the English National Health Service: a population-based study. *Lancet Digit Health.* 2023;5(1):e16-e27.

Shi Z, Zhang Z, Shi K, Yu B, Jiang Z, Yang L, et al. Association between multimorbidity trajectories and incident disability among mid to older age adults: China Health and Retirement Longitudinal Study. *BMC Geriatr.* 2022;22(1):741.

Velek P, Luik AI, Brusselle GGO, Stricker BC, Bindels PJE, Kavousi M, et al. Sex-specific patterns and lifetime risk of multimorbidity in the general population: a 23-year prospective cohort study. *BMC Med.* 2022;20(1):304.

Yan J, Wang M, Cao Y. Patterns of multimorbidity in association with falls among the middle-aged and older adults: results from the China Health and Retirement Longitudinal Study. *BMC Public Health.* 2022;22(1):1814.

Zhang Y, Chen C, Huang L, Liu G, Lian T, Yin M, et al. Associations Among Multimorbid Conditions in Hospitalized Middle-aged and Older Adults in China: Statistical Analysis of Medical Records. *JMIR Public Health Surveill.* 2022;8(11):e38182.

Batista, S.R., Sousa, A.L.L., Nunes, B.P., Silva, R.R., Jardim, P.C.B.V. and Brazilian Group of Studies on Multimorbidity (GBEM) (2022). Identifying multimorbidity clusters among

Brazilian older adults using network analysis: Findings and perspectives. *PLoS One*, [online] 17(7), p.e0271639. doi:10.1371/journal.pone.0271639.

Jääskeläinen, T., Koponen, P., Lundqvist, A., Suvisaari, J., Järvelin, J. and Koskinen, S. (2022). Study protocol for an epidemiological study 'Multimorbidity - identifying the most burdensome patterns, risk factors and potentials to reduce future burden (MOLTO)' based on the Finnish health examination surveys and the ongoing register-based follow-up. *BMJ open*, [online] 12(6), p.e056073. doi:10.1136/bmjopen-2021-056073.

Liu, H., Zhang, X., Chen, B., Fang, B., Lou, V.W.Q. and Hu, J. (2022). The Differential Impact of Multimorbidity Patterns and Subsequent Accumulation on Longitudinal Trajectories of Physical Function Decline in a Population-Based Cohort of Older People. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, [online] 77(8), pp.1629–1636. doi:10.1093/gerona/glab384.

Ho, H.-E., Yeh, C.-J., Wei, J.C.-C., Chu, W.-M. and Lee, M.-C. (2022). Multimorbidity patterns and their relationships with incident disability and frailty among older adults in Taiwan: A 16-year, population-based cohort study. *Archives of Gerontology and Geriatrics*, [online] 101, p.104688. doi:10.1016/j.archger.2022.104688.

Hariri, P., Clarke, R., Bragg, F., Chen, Y., Guo, Y., Yang, L., Lv, J., Yu, C., Li, L., Chen, Z., Bennett, D.A. and China Kadoorie Biobank Collaborative Group (2022). Frequency and types of clusters of major chronic diseases in 0.5 million adults in urban and rural China. *Journal of Multimorbidity and Comorbidity*, [online] 12, p.26335565221098327. doi:10.1177/26335565221098327.

Ho HE, Yeh CJ, Wei JC, Chu WM, Lee MC. Trends of Multimorbidity Patterns over 16 Years in Older Taiwanese People and Their Relationship to Mortality. *Int J Environ Res Public Health* 2022;19(6). doi: ijerph19063317 [pii] 10.3390/ijerph19063317

Pati, S., Sinha, A., Ghosal, S., Kerketta, S., Lee, J.T. and Kanungo, S. (2022). Family-Level Multimorbidity among Older Adults in India: Looking through a Syndemic Lens. *International Journal of Environmental Research and Public Health*, [online] 19(16), p.9850. doi:10.3390/ijerph19169850.

Puri P, Singh SK. Patterns and predictors of non-communicable disease multimorbidity among older adults in India: evidence from longitudinal ageing study in India (LASI), 2017-2018. *J Public Health Policy* 2022;43(1):109-28. doi: 10.1057/s41271-021-00321-x10.1057/s41271-021-00321-x [pii]

Quinones AR, Valenzuela SH, Huguet N, Ukhanova M, Marino M, Lucas JA, et al Prevalent Multimorbidity Combinations Among Middle-Aged and Older Adults Seen in Community Health Centers. *J Gen Intern Med* 2022. doi: 10.1007/s11606-021- 07198-2 10.1007/s11606-021-07198-2 [pii]

Wang L, Qiu H, Luo L, Zhou L. Age- and Sex-Specific Differences in Multimorbidity Patterns and Temporal Trends on Assessing Hospital Discharge Records in Southwest China: Network-Based Study. *J Med Internet Res* 2022;24(2):e27146. doi: v24i2e27146 [pii]10.2196/27146

Ho HE, Yeh CJ, Wei JC, Chu WM, Lee MC. Multimorbidity patterns and their relationships

- with incident disability and frailty among older adults in Taiwan: A 16-year, population-based cohort study. *Arch Gerontol Geriatr* 2022;101:104688. doi: S0167-4943(22)00069-3 [pii]10.1016/j.archger.2022.104688
- Shi J, Guo Y, Li Z, Liang Z, Pan L, Yu Y, et al. Sociodemographic and behavioral influences on multimorbidity among adult residents of northeastern China. *BMC Public Health* 2022;22(1):342. doi: 10.1186/s12889-022-12722-y 10.1186/s12889-022-12722-y [pii]
- Fan J, Sun Z, Yu C, Guo Y, Pei P, Yang L, et al. Multimorbidity patterns and association with mortality in 0.5 million Chinese adults. *Chin Med J (Engl)* 2022;135(6):648-57. doi: 10.1097/CM9.0000000000001985 00029330-900000000-98148 [pii]
- Robertson L, Vieira R, Butler J, Johnston M, Sawhney S, Black C. Identifying multimorbidity clusters in an unselected population of hospitalised patients. *Sci Rep* 2022;12(1):5134. doi: 10.1038/s41598-022-08690-3 10.1038/s41598-022-08690-3 [pii]
- Ronaldson A, Arias de la Torre J, Prina M, et al. Associations between physical multimorbidity patterns and common mental health disorders in middle-aged adults: A prospective analysis using data from the UK Biobank. *Lancet Reg Health Eur* 2021;8:100149. doi: 10.1016/j.lanepe.2021.100149
- Liu H, Zhang X, Chen B, et al. The Differential Impact of Multimorbidity Patterns and Subsequent Accumulation on Longitudinal Trajectories of Physical Function Decline in a Population-based Cohort of Older People. *J Gerontol A Biol Sci Med Sci* 2021 doi: 10.1093/gerona/glab384
- Soley-Bori M, Bisquera A, Ashworth M, et al. Identifying multimorbidity clusters with the highest primary care use: 15 years of evidence from a multi-ethnic metropolitan population. *Br J Gen Pract* 2022;72(716):e190-e98. doi: 10.3399/BJGP.2021.0325
- Hernandez B, Voll S, Lewis NA, et al. Comparisons of disease cluster patterns, prevalence and health factors in the USA, Canada, England and Ireland. *BMC Public Health* 2021;21(1):1674. doi: 10.1186/s12889-021-11706-8
- Yu J, Li Y, Zheng Z, et al. Analysis of multimorbidity networks associated with different factors in Northeast China: a cross-sectional analysis. *BMJ Open* 2021;11(11):e051050. doi: 10.1136/bmjopen-2021-0510
- Tazzeo C, Rizzuto D, Calderon-Larranaga A, et al. Multimorbidity patterns and risk of frailty in older community-dwelling adults: a population-based cohort study. *Age Ageing* 2021;50(6):2183-91. doi: 10.1093/ageing/afab138
- Axon DR, Arku D. Associations of multiple (≥ 5) chronic conditions among a nationally representative sample of older United States adults with self-reported pain. *Scand J Pain* 2021;21(4):814-22. doi: 10.1515/sjpain-2021-0094
- Piotrowicz K, Pac A, Skalska A, et al. Patterns of multimorbidity in 4588 older adults: implications for a nongeriatrician specialist. *Pol Arch Intern Med* 2021;131(12) doi: 10.20452/pamw.16128
- Bare M, Herranz S, Roso-Llorach A, et al. Multimorbidity patterns of chronic conditions and geriatric syndromes in older patients from the MoPIM multicentre cohort study. *BMJ Open* 2021;11(11):e049334. doi: 10.1136/bmjopen-2021-049334
- Puri P, Singh SK, Pati S. Temporal dynamics, patterns and correlates of single and

- multimorbidity in India, 1994-2018. *J Comorb* 2021;11:26335565211062756. doi: 10.1177/26335565211062756
- He K, Zhang W, Hu X, et al. Relationship between multimorbidity, disease cluster and all-cause mortality among older adults: a retrospective cohort analysis. *BMC Public Health* 2021;21(1):1080. doi: 10.1186/s12889-021-11108-w
- Guo X, Zhao B, Chen T, et al. Multimorbidity in the elderly in China based on the China Health and Retirement Longitudinal Study. *PLoS One* 2021;16(8):e0255908. doi: 10.1371/journal.pone.0255908
- Zacarias-Pons L, Vilalta-Franch J, Turro-Garriga O, et al. Multimorbidity patterns and their related characteristics in European older adults: A longitudinal perspective. *Arch Gerontol Geriatr* 2021;95:104428. doi: 10.1016/j.archger.2021.104428
- Tazzeo C, Rizzuto D, Calderon-Larranaga A, et al. Multimorbidity patterns and risk of frailty in older community-dwelling adults: a population-based cohort study. *Age Ageing* 2021 doi: 10.1093/ageing/afab138
- Lee SA, Joo S, Chai HW, et al. Patterns of multimorbidity trajectories and their correlates among Korean older adults. *Age Ageing* 2021;50(4):1336-41. doi: 10.1093/ageing/afab002
- Lai FTT, Beeler PE, Yip BHK, et al. Comparing Multimorbidity Patterns Among Discharged Middle-Aged and Older Inpatients Between Hong Kong and Zurich: A Hierarchical Agglomerative Clustering Analysis of Routine Hospital Records. *Front Med (Lausanne)* 2021;8:651925. doi: 10.3389/fmed.2021.651925
- Lu J, Wang Y, Hou L, et al. Multimorbidity patterns in old adults and their associated multi-layered factors: a cross-sectional study. *BMC Geriatr* 2021;21(1):372. doi: 10.1186/s12877-021-02292-w
- Matesanz-Fernandez M, Seoane-Pillado T, Iniguez-Vazquez I, et al. Description of multimorbidity clusters of admitted patients in medical departments of a general hospital. *Postgrad Med J* 2021 doi: 10.1136/postgradmedj-2020-139361
- Cheng S, Siddiqui TG, Gossop M, et al. The patterns and burden of multimorbidity in geriatric patients with prolonged use of addictive medications. *Aging Clin Exp Res* 2021 doi: 10.1007/s40520-021-01791-5

Chen N, Zhou L, Huang J, et al. Identifying multimorbidity patterns of non-communicable diseases in paediatric inpatients: a cross-sectional study in Shanghai, China. *BMJ Open* 2021;11(4):e042679. doi: 10.1136/bmjopen-2020-042679

Marengoni A, Akugizibwe R, Vetrano DL, et al. Patterns of multimorbidity and risk of disability in community-dwelling older persons. *Aging Clin Exp Res* 2021;33(2):457-62. doi: 10.1007/s40520-020-01773-z

Lee SA, Joo S, Chai HW, et al. Patterns of multimorbidity trajectories and their correlates among Korean older adults. *Age Ageing* 2021 doi: 10.1093/ageing/afab002

Marengoni A, Tazzeo C, Calderon-Larranaga A, et al. Multimorbidity Patterns and 6-Year Risk of Institutionalization in Older Persons: The Role of Social Formal and Informal Care. *J Am Med Dir Assoc* 2021 doi: 10.1016/j.jamda.2020.12.040

Bendayan R, Zhu Y, Federman AD, et al. Multimorbidity Patterns and Memory Trajectories in Older Adults: Evidence From the English Longitudinal Study of Aging. *J Gerontol A Biol Sci Med Sci* 2021;76(5):867-75. doi: 10.1093/gerona/glab009

Forslund T, Carlsson AC, Ljunggren G, et al. Patterns of multimorbidity and pharmacotherapy: a total population cross-sectional study. *Fam Pract* 2021;38(2):132-40. doi: 10.1093/fampra/cmaa056

Zheng DD, Loewenstein DA, Christ SL, et al. Multimorbidity patterns and their relationship to mortality in the US older adult population. *PLoS One* 2021;16(1):e0245053. doi: 10.1371/journal.pone.0245053

Ferguson M, Svendrovski A, Katz J. Association Between Multimorbid Disease Patterns and Pain Outcomes Among a Complex Chronic Care Population in Canada. *J Pain Res* 2020;13:3045-57. doi: 10.2147/JPR.S269648

Yao SS, Cao GY, Han L, et al. Associations Between Somatic Multimorbidity Patterns and Depression in a Longitudinal Cohort of Middle-Aged and Older Chinese. *J Am Med Dir Assoc* 2020;21(9):1282-87 e2. doi: 10.1016/j.jamda.2019.11.028

Nguyen H, Wu YT, Dregan A, et al. Multimorbidity patterns, all-cause mortality and healthy aging in older English adults: Results from the English Longitudinal Study of Aging. *Geriatr Gerontol Int* 2020;20(12):1126-32. doi: 10.1111/ggi.14051

Kim J, Keshavjee S, Atun R. Trends, patterns and health consequences of multimorbidity among South Korea adults: Analysis of nationally representative survey data 2007-2016. *J Glob Health* 2020;10(2):020426. doi: 10.7189/jogh.10.020426

Aubert CE, Schnipper JL, Fankhauser N, et al. Patterns of multimorbidity in medical inpatients: a multinational retrospective cohort study. *Intern Emerg Med* 2020;15(7):1207-17. doi: 10.1007/s11739-020-02306-2

Hassaine A, Canoy D, Solares JRA, et al. Learning multimorbidity patterns from electronic health records using Non-negative Matrix Factorisation. *J Biomed Inform* 2020;112:103606. doi: 10.1016/j.jbi.2020.103606

Zhang J, Xu L, Li J, et al. Association between obesity-related anthropometric indices and multimorbidity among older adults in Shandong, China: a cross-sectional study. *BMJ Open* 2020;10(5):e036664. doi: 10.1136/bmjopen-2019-036664

Zhao Y, Atun R, Oldenburg B, et al. Physical multimorbidity, health service use, and catastrophic health expenditure by socioeconomic groups in China: an analysis of population-based panel data. *Lancet Glob Health* 2020;8(6):e840-e49. doi: 10.1016/S2214-109X(20)30127-3

Yao SS, Meng X, Cao GY, et al. Associations between Multimorbidity and Physical Performance in Older Chinese Adults. *Int J Environ Res Public Health* 2020;17(12) doi: 10.3390/ijerph17124546

Bowling CB, Sloane R, Pieper C, et al. Association of Sustained Blood Pressure Control with Multimorbidity Progression Among Older Adults. *J Am Geriatr Soc* 2020 doi: 10.1111/jgs.16558

Vetrano DL, Roso-Llorach A, Fernandez S, et al. Twelve-year clinical trajectories of multimorbidity in a population of older adults. *Nature communications* 2020;11(1):3223. doi: 10.1038/s41467-020-16780-x

Blumel JE, Carrillo-Larco RM, Vallejo MS, et al. Multimorbidity in a cohort of middle-aged women: Risk factors and disease clustering. *Maturitas* 2020;137:45-49. doi: 10.1016/j.maturitas.2020.04.016

Bretos-Azcona PE, Sanchez-Iriso E, Cabases Hita JM. Tailoring integrated care services for high-risk patients with multiple chronic conditions: a risk stratification approach using cluster analysis. *BMC Health Serv Res* 2020;20(1):806. doi: 10.1186/s12913-020-05668-7

Zheng DD, McCollister KE, Christ SL, et al. Chronic condition patterns in the US population and their association with health related quality of life. *Prev Med* 2020;136:106102. doi: 10.1016/j.ypmed.2020.106102

Oh H, Glass J, Narita Z, et al. Discrimination and Multimorbidity Among Black Americans: Findings from the National Survey of American Life. *J Racial Ethn Health Disparities* 2020 doi: 10.1007/s40615-020-00773-z

Aubert CE, Schnipper JL, Fankhauser N, et al. Association of patterns of multimorbidity with length of stay: A multinational observational study. *Medicine (Baltimore)* 2020;99(34):e21650. doi: 10.1097/MD.00000000000021650

Walsh CA, Bennett KE, Wallace E, et al. Identifying Adherence Patterns Across Multiple Medications and Their Association With Health Outcomes in Older Community-Dwelling Adults With Multimorbidity. *Value Health* 2020;23(8):1063-71. doi: 10.1016/j.jval.2020.03.016

Schuttner L, Wong ES, Rosland AM, et al. Association of the Patient-Centered Medical Home Implementation with Chronic Disease Quality in Patients with Multimorbidity. *J Gen Intern Med* 2020 doi: 10.1007/s11606-020-06076-7

Bernabeu-Wittel M, Gomez-Diaz R, Gonzalez-Molina A, et al. Oxidative Stress, Telomere Shortening, and Apoptosis Associated to Sarcopenia and Frailty in Patients with Multimorbidity. *J Clin Med* 2020;9(8) doi: 10.3390/jcm9082669

Ryan BL, Allen B, Zwarenstein M, et al. Multimorbidity and mortality in Ontario, Canada: A population-based retrospective cohort study. *J Comorb* 2020;10:2235042X20950598. doi: 10.1177/2235042X20950598

Henderson DAG, Atherton I, McCowan C, et al. Linkage of national health and social care data: a cross-sectional study of multimorbidity and social care use in people aged over 65 years in Scotland. *Age Ageing* 2020 doi: 10.1093/ageing/afaa134

Hanlon P, McCallum M, Jani BD, et al. Association between childhood maltreatment and the prevalence and complexity of multimorbidity: A cross-sectional analysis of 157,357 UK Biobank participants. *J Comorb* 2020;10:2235042X10944344. doi: 10.1177/2235042X10944344

Yildiz B, Schuring M, Knoef MG, et al. Chronic diseases and multimorbidity among unemployed and employed persons in the Netherlands: a register-based cross-sectional study. *BMJ Open* 2020;10(7):e035037. doi: 10.1136/bmjopen-2019-035037

Jacob L, Oh H, Shin JI, et al. Informal Caregiving, Chronic Physical Conditions, and Physical Multimorbidity in 48 Low- and Middle-Income Countries. *J Gerontol A Biol Sci Med Sci* 2020;75(8):1572-78. doi: 10.1093/gerona/glaa017

Buja A, Rivera M, De Battisti E, et al. Multimorbidity and Hospital Admissions in High-Need, High-Cost Elderly Patients. *J Aging Health* 2020;32(5-6):259-68. doi: 10.1177/0898264318817091

Aubert CE, Schnipper JL, Fankhauser N, et al. Patterns of multimorbidity in medical inpatients: a multinational retrospective cohort study. *Intern Emerg Med* 2020 doi: 10.1007/s11739-020-02306-2

Lee Y, Kim H, Jeong H, et al. Patterns of Multimorbidity in Adults: An Association Rules Analysis Using the Korea Health Panel. *Int J Environ Res Public Health* 2020;17(8) doi: 10.3390/ijerph17082618

Yu J, Song F, Li Y, et al. Multimorbidity Analysis of 13 Systemic Diseases in Northeast China. *Int J Environ Res Public Health* 2020;17(6) doi: 10.3390/ijerph17061817

Khorrami Z, Rezapour M, Etemad K, et al. The patterns of Non-communicable disease Multimorbidity in Iran: A Multilevel Analysis. *Sci Rep* 2020;10(1):3034. doi: 10.1038/s41598-020-59668-y

Marengoni A, Roso-Llorach A, Vetrano DL, et al. Patterns of Multimorbidity in a Population-Based Cohort of Older People: Sociodemographic, Lifestyle, Clinical, and Functional Differences. *J Gerontol A Biol Sci Med Sci* 2020;75(4):798-805. doi: 10.1093/gerona/glz137

Nguyen H, Chua KC, Dregan A, et al. Factors Associated With Multimorbidity Patterns in Older Adults in England: Findings From the English Longitudinal Study of Aging (ELSA). *J Aging Health*. 2020 Oct;32(9):1120-1132. doi: 10.1177/0898264319891026

Hernandez B, Reilly RB, Kenny RA. Investigation of multimorbidity and prevalent disease combinations in older Irish adults using network analysis and association rules. *Sci Rep* 2019;9(1):14567. doi: 10.1038/s41598-019-51135-7

Bekic S, Babic F, Filipcic I, et al. Clustering of Mental and Physical Comorbidity and the Risk of Frailty in Patients Aged 60 Years or More in Primary Care. *Med Sci Monit* 2019;25:6820-35. doi: 10.12659/MSM.915063

Park B, Lee HA, Park H. Use of latent class analysis to identify multimorbidity patterns and associated factors in Korean adults aged 50 years and older. *PLoS One* 2019;14(11):e0216259. doi: 10.1371/journal.pone.0216259

Zulman DM, Slightam CA, Brandt K, et al. "They are interrelated, one feeds off the other": A taxonomy of perceived disease interactions derived from patients with multiple chronic conditions. *Patient Educ Couns* 2019 doi: 10.1016/j.pec.2019.11.020

Gellert P, von Berenberg P, Zahn T, et al. Multimorbidity Profiles in German Centenarians: A Latent Class Analysis of Health Insurance Data. *J Aging Health* 2019;**31**(4):580-94. doi: 10.1177/0898264317737894

Romain AJ, Marleau J, Baillet A. Association between physical multimorbidity, body mass index and mental health/disorders in a representative sample of people with obesity. *J Epidemiol Community Health* 2019;**73**(9):874-80. doi: 10.1136/jech-2018-211497

Aubert CE, Fankhauser N, Marques-Vidal P, et al. Patterns of multimorbidity in internal medicine patients in Swiss university hospitals: a multicentre cohort study. *Swiss Med Wkly* 2019;149:w20094. doi: 10.4414/smw.2019.20094

Zador Z, Landry A, Cusimano MD, et al. Multimorbidity states associated with higher mortality rates in organ dysfunction and sepsis: a data-driven analysis in critical care. *Crit Care* 2019;**23**(1):247. doi: 10.1186/s13054-019-2486-6

Sheridan PE, Mair CA, Quinones AR. Associations between prevalent multimorbidity combinations and prospective disability and self-rated health among older adults in Europe. *BMC Geriatr* 2019;**19**(1):198. doi: 10.1186/s12877-019-1214-z

Madlock-Brown C, Reynolds RB. Identifying obesity-related multimorbidity combinations in the United States. *Clin Obes* 2019:e12336. doi: 10.1111/cob.12336

Violan C, Foguet-Boreu Q, Fernandez-Bertolin S, et al. Soft clustering using real-world data for the identification of multimorbidity patterns in an elderly population: cross-sectional study in a Mediterranean population. *BMJ Open* 2019;**9**(8):e029594. doi: 10.1136/bmjopen-2019-029594

Wang YP, Nunes BP, Coelho BM, et al. Multilevel Analysis of the Patterns of Physical-Mental Multimorbidity in General Population of Sao Paulo Metropolitan Area, Brazil. *Sci Rep* 2019;**9**(1):2390. doi: 10.1038/s41598-019-39326-8

Mitsutake S, Ishizaki T, Teramoto C, et al. Patterns of Co-Occurrence of Chronic Disease Among Older Adults in Tokyo, Japan. *Prev Chronic Dis* 2019;**16**:E11. doi: 10.5888/pcd16.180170

Filipic I, Simunovic Filipic I, Grosic V, et al. Patterns of chronic physical multimorbidity in psychiatric and general population. *J Psychosom Res* 2018;**114**:72-80. doi: 10.1016/j.jpsychores.2018.09.011

Buja A, Claus M, Perin L, et al. Multimorbidity patterns in high-need, high-cost elderly patients. *PLoS One* 2018;**13**(12):e0208875. doi: 10.1371/journal.pone.0208875

Jia H, Lubetkin EI, Barile JP, et al. Quality-adjusted Life Years (QALY) for 15 Chronic Conditions and Combinations of Conditions Among US Adults Aged 65 and Older. *Med Care* 2018;**56**(8):740-46. doi: 10.1097/MLR.0000000000000943.

Zemedikun DT, Gray LJ, Khunti K, et al. Patterns of Multimorbidity in Middle-Aged and Older Adults: An Analysis of the UK Biobank Data. *Mayo Clin Proc* 2018;**93**(7):857-66. doi: 10.1016/j.mayocp.2018.02.012.

- Gates ML, Hunter EG, Dicks V, et al. Multimorbidity patterns and associations with functional limitations among an aging population in prison. *Arch Gerontol Geriatr* 2018;**77**:115-23. doi: 10.1016/j.archger.2018.03.012.
- Nguyen QD, Wu C, Odden MC, et al. Multimorbidity Patterns, Frailty, and Survival in Community-Dwelling Older Adults. *J Gerontol A Biol Sci Med Sci* 2018 doi: 10.1093/gerona/gly205.
- Violan C, Roso-Llorach A, Foguet-Boreu Q, et al. Multimorbidity patterns with K-means nonhierarchical cluster analysis. *BMC Fam Pract* 2018;**19**(1):108. doi: 10.1186/s12875-018-0790-x.
- Guisado-Clavero M, Roso-Llorach A, Lopez-Jimenez T, et al. Multimorbidity patterns in the elderly: a prospective cohort study with cluster analysis. *BMC Geriatr* 2018;**18**(1):16. doi: 10.1186/s12877-018-0705-7.
- Roso-Llorach A, Violan C, Foguet-Boreu Q, et al. Comparative analysis of methods for identifying multimorbidity patterns: a study of 'real-world' data. *BMJ Open* 2018;**8**(3):e018986. doi: 10.1136/bmjopen-2017-018986
- Pati S, Swain S, Metsemakers J, Knottnerus JA, van den Akker M. Pattern and severity of multimorbidity among patients attending primary care settings in Odisha, India. *PLoS One*. 2017;**12**(9):e0183966.
- Gellert P, von Berenberg P, Zahn T, Neuwirth J, Kuhlmeier A, Dräger D. Multimorbidity Profiles in German Centenarians: A Latent Class Analysis of Health Insurance Data. *J Aging Health*. 2017:898264317737894.
- Kalgotra P, Sharda R, Croff JM. Examining health disparities by gender: A multimorbidity network analysis of electronic medical record. *Int J Med Inform*. 2017;**108**:22-28.
- Quinones AR, Markwardt S, Thielke S, Rostant O, Vasquez E, Botosaneanu A. Prospective Disability in Different Combinations of Somatic and Mental Multimorbidity. *J Gerontol A Biol Sci Med Sci*. 2017. doi: 10.1093/gerona/glx100.
- Deruaz-Luyet A, N'Goran AA, Senn N, et al. Multimorbidity and patterns of chronic conditions in a primary care population in Switzerland: a cross-sectional study. *BMJ Open*. 2017;**7**(6):e013664. doi: 10.1136/bmjopen-2016-013664.
- van Timmeren EA, Waninge A, van Schrojenstein Lantman-de HMJ, van der Putten AAJ, van der Schans CP. Patterns of multimorbidity in people with severe or profound intellectual and motor disabilities. *Res Dev Disabil*. 2017;**67**:28-33. doi: 10.1016/j.ridd.2017.05.002.
- Olaya B, Moneta MV, Caballero FF, et al. Latent class analysis of multimorbidity patterns and associated outcomes in Spanish older adults: a prospective cohort study. *BMC Geriatr*. 2017;**17**(1):186. doi: 10.1186/s12877-017-0586-1.
- Koroukian SM, Schiltz NK, Warner DF, et al. Multimorbidity: constellations of conditions across subgroups of midlife and older individuals, and related Medicare expenditures. *Journal of Comorbidity*. 2017;**7**:33-43.
- Schiltz NK, Warner DF, Sun J, et al. Identifying Specific Combinations of Multimorbidity that Contribute to Health Care Resource Utilization: An Analytic Approach. *Med Care*. 2017;**55**(3):276-284.

Larsen FB, Pedersen MH, Friis K, Glumer C, Lasgaard M. A Latent Class Analysis of Multimorbidity and the Relationship to Socio-Demographic Factors and Health-Related Quality of Life. A National Population-Based Study of 162,283 Danish Adults. *PLoS One*. 2017;**12**(1):e0169426.

Simoes D, Araujo FA, Severo M, et al. Patterns and Consequences of Multimorbidity in the General Population: There is No Chronic Disease Management Without Rheumatic Disease Management. *Arthritis Care Res (Hoboken)*. 2017;**69**(1):12-20.

Ferrer A, Formiga F, Sanz H, Almeda J, Padros G. Multimorbidity as specific disease combinations, an important predictor factor for mortality in octogenarians: the Octabaix study. *Clinical interventions in aging*. 2017;**12**:223-231.

Cromley EK, Wilson-Genderson M, Heid AR, Pruchno RA. Spatial Associations of Multiple Chronic Conditions Among Older Adults. *J Appl Gerontol*. 2016.

Simoes D, Araujo FA, Severo M, et al. Patterns and Consequences of Multimorbidity in the General Population: There is No Chronic Disease Management Without Rheumatic Disease Management. *Arthritis Care Res (Hoboken)*. 2017;**69**(1):12-20.

Pruchno RA, Wilson-Genderson M, Heid AR. Multiple Chronic Condition Combinations and Depression in Community-Dwelling Older Adults. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:910-5.

Whitson HE, Johnson KS, Sloane R, et al. Identifying Patterns of Multimorbidity in Older Americans: Application of Latent Class Analysis. *J Am Geriatr Soc*. 2016;**64**:1668-73.

Li J, Green M, Kearns B, et al. Patterns of multimorbidity and their association with health outcomes within Yorkshire, England: baseline results from the Yorkshire Health Study. *BMC Public Health*. 2016;**16**:649.

An KO, Kim J. Association of Sarcopenia and Obesity With Multimorbidity in Korean Adults: A Nationwide Cross-Sectional Study. *J Am Med Dir Assoc*. 2016;**17**:960 e1-7.

Rocca WA, Gazzuola-Rocca L, Smith CY, et al. Accelerated Accumulation of Multimorbidity After Bilateral Oophorectomy: A Population-Based Cohort Study. *Mayo Clin Proc* **67**(2):144-57. 2016.

Garin N, Koyanagi A, Chatterji S, et al. Global Multimorbidity Patterns: A Cross-Sectional, Population-Based, Multi-Country Study. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:205-14.

Goodman RA, Ling SM, Briss PA, Parrish RG, Salive ME, Finke BS. Multimorbidity Patterns in the United States: Implications for Research and Clinical Practice. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:215-20.

Koroukian SM, Schiltz N, Warner DF, et al. Combinations of Chronic Conditions, Functional Limitations, and Geriatric Syndromes that Predict Health Outcomes. *J Gen Intern Med*. 2016;**31**:630-7.

Bobo WV, Yawn BP, St Sauver JL, Grossardt BR, Boyd CM, Rocca WA. Prevalence of Combined Somatic and Mental Health Multimorbidity: Patterns by Age, Sex, and Race/Ethnicity. *J Gerontol A Biol Sci Med Sci*. 2016.

Quinones AR, Markwardt S, Botosaneanu A. Multimorbidity Combinations and Disability in Older Adults. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:823-30.

Jackson CA, Dobson AJ, Tooth LR, Mishra GD. Lifestyle and Socioeconomic Determinants of Multimorbidity Patterns among Mid-Aged Women: A Longitudinal Study. *PLoS One*. 2016;**11**:e0156804.

Scherer M, Hansen H, Gensichen J, et al. Association between multimorbidity patterns and chronic pain in elderly primary care patients: a cross-sectional observational study. *BMC Fam Pract*. 2016;**17**:68.

Whitson HE, Johnson KS, Sloane R, et al. Identifying Patterns of Multimorbidity in Older Americans: Application of Latent Class Analysis. *J Am Geriatr Soc*. 2016.

Ng SK: A two-way clustering framework to identify disparities in multimorbidity patterns of mental and physical health conditions among Australians. *Stat Med*. 2015;**34**(26):3444-3460

Sinnige J, Korevaar JC, Westert GP, Spreeuwenberg P, Schellevis FG, Braspenning JC: Multimorbidity patterns in a primary care population aged 55 years and over. *Fam Pract*. 2015;**32**(5):505-513.

Jackson CA, Jones M, Tooth L, Mishra GD, Byles J, Dobson A: Multimorbidity patterns are differentially associated with functional ability and decline in a longitudinal cohort of older women. *Age Ageing*. 2015;**44**(5):810-816.

Garin N, Koyanagi A, Chatterji S, Tyrovolas S, Olaya B, Leonardi M *et al*: Global Multimorbidity Patterns: A Cross-Sectional, Population-Based, Multi-Country Study. *J Gerontol A Biol Sci Med Sci*. 2016;**71**(2):205-214.

Held FP, Blyth F, Gnjdjic D, Hirani V, Naganathan V, Waite LM *et al*: Association Rules Analysis of Comorbidity and Multimorbidity: The Concord Health and Aging in Men Project. *J Gerontol A Biol Sci Med Sci*. 2015.

Foguet-Boreu Q, Violan C, Rodriguez-Blanco T, Roso-Llorach A, Pons-Vigues M, Pujol-Ribera E *et al*: Multimorbidity Patterns in Elderly Primary Health Care Patients in a South Mediterranean European Region: A Cluster Analysis. *PLoS One*. 2015;**10**(11):e0141155.

Vetrano DL, Foebel AD, Marengoni A, Brandi V, Collamati A, Heckman GA *et al*: Chronic diseases and geriatric syndromes: The different weight of comorbidity. *Eur J Intern Med*. 2016;**27**:62-67.

Diaz E, Poblador-Pou B, Gimeno-Feliu LA, Calderon-Larranaga A, Kumar BN, Prados-Torres A: Multimorbidity and Its Patterns according to Immigrant Origin. A Nationwide Register-Based Study in Norway. *PLoS One*. 2015;**10**(12):e0145233.

Clark NM, Lachance L, Benedict MB, et al. The extent and patterns of multiple chronic conditions in low-income children. *Clin Pediatr (Phila)*. Apr 2015;**54**(4):353-358.

Mujica-Mota RE, Roberts M, Abel G, et al. Common patterns of morbidity and multimorbidity and their impact on health-related quality of life: evidence from a national survey. *Qual Life Res*. Apr 2015;**24**(4):909-918.

Hsu HC. Trajectories of multimorbidity and impacts on successful aging. *Exp Gerontol*. Jun 2015;**66**:32-38.

Sinnige J, Korevaar JC, Westert GP, Spreeuwenberg P, Schellevis FG, Braspenning JC. Multimorbidity patterns in a primary care population aged 55 years and over. *Fam Pract*. Oct 2015;**32**(5):505-513.

- Clerencia-Sierra M, Calderon-Larranaga A, Martinez-Velilla N, et al. Multimorbidity Patterns in Hospitalized Older Patients: Associations among Chronic Diseases and Geriatric Syndromes. *PLoS One*. 2015;**10**(7):e0132909.
- Jackson CA, Jones M, Tooth L, Mishra GD, Byles J, Dobson A. Multimorbidity patterns are differentially associated with functional ability and decline in a longitudinal cohort of older women. *Age Ageing*. Sep 2015;**44**(5):810-816.
- Kuwornu JP, Lix LM, Shoostari S. Multimorbidity disease clusters in Aboriginal and non-Aboriginal Caucasian populations in Canada. *Chronic Dis Inj Can*. Nov 2014;**34**(4):218-225.
- Schafer I, Kaduszkiewicz H, Wagner HO, Schon G, Scherer M, van den Bussche H. Reducing complexity: a visualisation of multimorbidity by combining disease clusters and triads. *BMC Public Health*. 2014;**14**:1285.
- Vos R, van den Akker M, Boesten J, Robertson C, Metsemakers J. Trajectories of multimorbidity: exploring patterns of multimorbidity in patients with more than ten chronic health problems in life course. *BMC Fam Pract*. Jan 22 2015;**16**(1):2.
- Boeckxstaens P, Peersman W, Goubin G, Ghali S, De Maeseneer J, Brusselle G, De Sutter A. A practice-based analysis of combinations of diseases in patients aged 65 or older in primary care. *BMC Fam Pract*. 2014;**15**:159.
- Hermans H, Evenhuis HM. Multimorbidity in older adults with intellectual disabilities. *Res Dev Disabil*. Apr 2014;**35**(4):776-783.
- Moore KL, Boscardin WJ, Steinman MA, Schwartz JB. Patterns of chronic co-morbid medical conditions in older residents of U.S. nursing homes: differences between the sexes and across the agespan. *J Nutr Health Aging*. Apr 2014;**18**(4):429-436.
- Woodhead C, Ashworth M, Schofield P, Henderson M. Patterns of physical co-/multi-morbidity among patients with serious mental illness: a London borough-based cross-sectional study. *BMC Fam Pract*. 2014;**15**(1):117.
- Poblador-Plou B, van den Akker M, Vos R, Calderon-Larranaga A, Metsemakers J, Prados-Torres A. Similar multimorbidity patterns in primary care patients from two European regions: results of a factor analysis. *PLoS One*. 2014;**9**(6):e100375.
- Garin N, Olaya B, Perales J, Moneta MV, Miret M, Ayuso-Mateos JL, Haro JM. Multimorbidity patterns in a national representative sample of the Spanish adult population. *PLoS One*. 2014;**9**(1):e84794.
- Akushevich I, Kravchenko J, Ukraintseva S, Arbeev K, Kulminski A, Yashin AI. Morbidity risks among older adults with pre-existing age-related diseases. *Exp Gerontol*. Dec 2013;**48**(12):1395-1401.
- McCarron M, Swinburne J, Burke E, McGlinchey E, Carroll R, McCallion P. Patterns of multimorbidity in an older population of persons with an intellectual disability: results from the intellectual disability supplement to the Irish longitudinal study on aging (IDS-TILDA). *Res Dev Disabil*. Jan 2013;**34**(1):521-527.
- Formiga F, Ferrer A, Sanz H, Marengoni A, Alburquerque J, Pujol R. Patterns of comorbidity and multimorbidity in the oldest old: the Octabaix study. *Eur J Intern Med*. Jan 2013;**24**(1):40-44.
- Vos HM, Bor HH, Rangelrooij-Minkels MJ, Schellevis FG, Lagro-Janssen AL. Multimorbidity in older women: The negative impact of specific combinations of chronic

conditions on self-rated health. *Eur J Gen Pract.* Jan 22 2013;**19**(2):117-22.

Marengoni A, Nobili A, Pirali C, et al. Comparison of Disease Clusters in Two Elderly Populations Hospitalized in 2008 and 2010. *Gerontology.* Jan 25 2013.

Schafer I. Does multimorbidity influence the occurrence rates of chronic conditions? A claims data based comparison of expected and observed prevalence rates. *PLoS One.* 2012;**7**(9):e45390.

Steinman MA, Lee SJ, John Boscardin W, et al. Patterns of multimorbidity in elderly veterans. *J Am Geriatr Soc.* Oct 2012;**60**(10):1872-1880.

McCarron M, Swinburne J, Burke E, McGlinchey E, Carroll R, McCallion P. Patterns of multimorbidity in an older population of persons with an intellectual disability: Results from the intellectual disability supplement to the Irish longitudinal study on aging (IDS-TILDA). *Res Dev Disabil.* Jan 2013;**34**(1):521-527.

Henninger DE, Whitson HE, Cohen HJ, Ariely D. Higher medical morbidity burden is associated with external locus of control. *J Am Geriatr Soc.* Apr 2012;**60**(4):751-755.

Perruccio AV, Katz JN, Losina E. Health burden in chronic disease: multimorbidity is associated with self-rated health more than medical comorbidity alone. *J Clin Epidemiol.* Jan 2012;**65**(1):100-106.

Cheung CL, Nguyen US, Au E, Tan KC, Kung AW. Association of handgrip strength with chronic diseases and multimorbidity : A cross-sectional study. *Age (Dordr).* Feb 8 2012.

Prados-Torres A, Poblador-Plou B, Calderon-Larranaga A, et al. Multimorbidity patterns in primary care: interactions among chronic diseases using factor analysis. *PLoS One.* 2012;**7**(2):e32190.

Spruit-van Eijk M, Zuidema SU, Buijck BI, Koopmans RT, Geurts AC. To what extent can multimorbidity be viewed as a determinant of postural control in stroke patients? *Arch Phys Med Rehabil* 80(1):103-11. Jun 2012;**93**(6):1021-1026.

Holden, L., et al., Patterns of multimorbidity in working Australians. *Popul Health Metr*, 2011. **9**: p. 15.

Schäfer I, von Leitner EC, Schön G, et al. Multimorbidity patterns in the elderly: a new approach of disease clustering identifies complex interrelations between chronic conditions. *PLoS ONE* 2010;**5**:e15941.

Galenkamp H, Braam AW, Huisman M, J. DD. Somatic Multimorbidity and Self-rated Health in the Older Population. *J Gerontol B Psychol Sci Soc Sci* 2011;**66**:380-6.

Guh DP, Zhang W, Bansback N, Amarsi Z, Birmingham CL, Anis AH. The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis. *BMC Public Health.* 2009 Mar 25;**9**(1):88.

Ekundayo OJ, Muchimba M, Aban IB, Ritchie C, Campbell RC, Ahmed A. Multimorbidity due to diabetes mellitus and chronic kidney disease and outcomes in chronic heart failure. *Am J Cardiol.* 2009 Jan 1;**103**(1):88-92.

Ritchie C, Ekundayo OJ, Muchimba M, Campbell RC, Frank SJ, Liu B, Aban IB, Ahmed A. Effects of diabetes mellitus in patients with heart failure and chronic kidney disease: A propensity-matched study of multimorbidity in chronic heart failure. *Int J Cardiol.* 2009;**134**(3):330-5.

Fleming, S.T., et al., A comprehensive prognostic index to predict survival based on multiple comorbidities: a focus on breast cancer. p. 601-14, 1999 Jun.

Rao, A.V., P.H. Seo, and H.J. Cohen, Geriatric assessment and comorbidity. p. 149-59,

2004 Apr.

Rijken, M., et al., Comorbidity of chronic diseases: effects of disease pairs on physical and mental functioning. *Qual Life Res*, 2005. **14**: p. 45-55.

Repetto, L., et al., Comprehensive geriatric assessment adds information to Eastern Cooperative Oncology Group performance status in elderly cancer patients: an Italian Group for Geriatric Oncology Study. p. 494-502, 2002 Jan 15.

van den Akker M, Buntinx F, Roos S, Knottnerus JA. Problems in determining occurrence rates of multimorbidity. *J Clin Epidemiol* 2001;**54**:675-9.

Wee, H.L., et al., The impact of diabetes mellitus and other chronic medical conditions on health-related Quality of Life: is the whole greater than the sum of its parts? *Health & Quality of Life Outcomes*, 2005. **3**(1): p. 2.

3.5 SOCIO-DEMOGRAPHIC, SOCIO-ECONOMIC, PSYCHOSOCIAL VARIABLES AND LIFESTYLE FACTORS

Álvarez-Gálvez J, Carretero-Bravo J, Suárez-Lledó V, Ortega-Martín E, Ramos-Fiol B, Lagares-Franco C, et al. Social inequalities in multimorbidity patterns in Europe: A multilevel latent class analysis using the European Social Survey (ESS). *SSM Popul Health*. 2022;20:101268.

Barboza LLS, Werneck AO, Araujo RHO, Porto LGG, Silva DR. Multimorbidity is associated with TV-viewing, but not with other types of screen-based behaviors in Brazilian adults. *BMC Public Health*. 2022;22(1):1991.

Bernabe-Ortiz A, Carrillo-Larco RM. Multimorbidity and Disability Among Venezuelan Migrants: A Population-Based Survey in Peru. *J Immigr Minor Health*. 2022;24(5):1206-13.

Bof de Andrade F, Thumé E, Facchini LA, Torres JL, Nunes BP. Education and income-related inequalities in multimorbidity among older Brazilian adults. *PLoS One*. 2022;17(10):e0275985.

Caraballo C, Herrin J, Mahajan S, Massey D, Lu Y, Ndumele CD, et al. Temporal Trends in Racial and Ethnic Disparities in Multimorbidity Prevalence in the United States, 1999-2018. *Am J Med*. 2022;135(9):1083-92.e14.

Dambha-Miller H, Cheema S, Saunders N, Simpson G. Multiple Long-Term Conditions (MLTC) and the Environment: A Scoping Review. *Int J Environ Res Public Health*. 2022;19(18).

Guo W, Du J, Chen K, Wang W, Gao B, Hu Z, et al. The mediation path of physical multimorbidity on the vulnerability to health-related poverty of rural aging families in Ningxia, China: A cross-sectional survey. *Front Public Health*. 2022;10:993977.

Jackson CT, Young J, Onsando WM. High Rates of Multimorbidity Reported Among People of Color Despite Healthy Weight. *Health Equity*. 2022;6(1):662-8.

Jin C, Dai X, Mishra GD, Wang Y, Xu X. Childhood socioeconomic disadvantage and risk of physical multimorbidity in later life: The mediating role of depression. *Maturitas*. 2023;167:17-23.

Kaluvu L, Asogwa OA, Marzà-Florensa A, Kyobutungi C, Levitt NS, Boateng D, et al. Multimorbidity of communicable and non-communicable diseases in low- and middle-income countries: A systematic review. *J Multimorb Comorb*. 2022;12:26335565221112593.

Khowaja S, Hashmi S, Zaheer S, Shafique K. Patterns of smoked and smokeless tobacco use among multimorbid and non-multimorbid middle-aged and older-aged adults in Karachi, Pakistan: a cross-sectional survey. *BMJ Open*. 2022;12(12):e060090.

Lewis EG, Gray WK, Walker R, Urasa S, Witham M, Dotchin C. Multimorbidity and its socio-economic associations in community-dwelling older adults in rural Tanzania; a cross-sectional study. *BMC Public Health*. 2022;22(1):1918.

Lin Y, Hu Y, Guo J, Chen M, Xu X, Wen Y, et al. Association between sleep and multimorbidity in Chinese elderly: Results from the Chinese Longitudinal Healthy Longevity Survey (CLHLS). *Sleep Med.* 2022;98:1-8.

Liu X, Song F, Liu F, Mao Z, Qu S. Multiple chronic conditions among older adults in China: differences in socio-demographic characteristics. *Heliyon.* 2022;8(10):e11129.

MacRae C, Fiskew HW, Lawrence E, Connor T, Pearce J, Marshall A, et al. Household and area determinants of emergency department attendance and hospitalisation in people with multimorbidity: a systematic review. *BMJ Open.* 2022;12(10):e063441.

Nascimento-Souza MA, Firmo JOA, Souza Júnior PRB, Peixoto SV. Sociodemographic and residential factors associated with multimorbidity: results of Brumadinho Health Project. *Rev Bras Epidemiol.* 2022;25(Supl 2):e220006.

Páscoa R, Teixeira A, Monteiro H, Prazeres F, Martins C. Association of lifestyle and sociodemographic factors on multimorbidity: a cross-sectional study in Portugal. *BMC Public Health.* 2022;22(1):2341.

Rojas-Huerta A, Giraldo-Rodríguez L, Agudelo-Botero M, Mino-León D. Differences by Sex in the Presentation of Multimorbidity: Longitudinal Study in Mexican Adults Living in the Community, 2001-2018. *J Womens Health (Larchmt).* 2022;31(12):1742-50.

Ronaldson A, de la Torre JA, Broadbent M, Ashworth M, Armstrong D, Bakolis I, et al. Ethnic differences in physical and mental multimorbidity in working age adults with a history of depression and/or anxiety. *Psychol Med.* 2022:1-11.

Ryu S, Morey BN, Lee GE, Kawachi I, Redline S, Lee S. The Cross-sectional Association of Sleep Disturbance and Sleep Apnea with Complex Multimorbidity among Chinese and Korean Americans. *Am J Epidemiol.* 2022.

Sabia S, Dugravot A, Léger D, Ben Hassen C, Kivimaki M, Singh-Manoux A. Association of sleep duration at age 50, 60, and 70 years with risk of multimorbidity in the UK: 25-year follow-up of the Whitehall II cohort study. *PLoS Med.* 2022;19(10):e1004109.

Smith L, Shin JI, Jacob L, López Sánchez GF, Schuch F, Tully MA, et al. Food insecurity and physical multimorbidity among adults aged ≥ 50 years from six low- and middle-income countries. *Eur J Nutr.* 2022:1-9.

Sturmer J, Franken DL, Ternus DL, Henn RL, Dias-da-Costa JS, Olinto MTA, et al. Dietary pattern as a predictor of multimorbidity patterns: A population-based cross-sectional study with women. *Clin Nutr ESPEN.* 2022;51:452-60.

Sturmer J, Franken DL, Ternus DL, Henn RL, Soares Dias-da-Costa J, Anselmo Olinto MT, et al. Dietary patterns and prevalence of multimorbidity in women in southern Brazil. *Menopause.* 2022;29(9):1047-54.

Wister A. Social Determinants and Health Behaviours among Older Adults Experiencing Multimorbidity Using the Canadian Longitudinal Study on Aging. *Can J Aging.* 2022;41(3):327-47.

Xue B, Xue Y, Dong F, Zheng X, Shi L, Xiao S, et al. The impact of socioeconomic status and sleep quality on the prevalence of multimorbidity in older adults. *Front Public Health.* 2022;10:959700.

Yang HL, Mo BR, Molassiotis A, Wang M, He GL, Xie YJ. Relationship between multimorbidity and composite lifestyle status in Shenzhen, China. *J Multimorb Comorb*. 2022;12:26335565221123990.

Zhang Y, Chen H, Carrillo-Larco RM, Lim CCW, Mishra SR, Yuan C, et al. Association of dietary patterns and food groups intake with multimorbidity: A prospective cohort study. *Clin Nutr ESPEN*. 2022;51:359-66.

Zhong Y, Xi H, Guo X, Wang T, Wang Y, Wang J. Gender and Socioeconomic Differences in the Prevalence and Patterns of Multimorbidity among Middle-Aged and Older Adults in China. *Int J Environ Res Public Health*. 2022;19(24).

Rojas-Huerta, A., Giraldo-Rodríguez, L., Agudelo-Botero, M. and Mino-León, D. (2022). Differences by Sex in the Presentation of Multimorbidity: Longitudinal Study in Mexican Adults Living in the Community, 2001–2018. *Journal of Women's Health*. doi:10.1089/jwh.2021.0599.

Kim, J., Baek, Y., Jeong, K. and Lee, S. (2022). Association of Dietary Factors With Grip Strength, Body Fat, and Prevalence of Sarcopenic Obesity in Rural Korean Elderly With Cardiometabolic Multimorbidity. *Frontiers in Nutrition*, [online] 9, p.910481. doi:10.3389/fnut.2022.910481.

Jungo, K.T., Cheval, B., Sieber, S., Antonia van der Linden, B.W., Ihle, A., Carmeli, C., Chiolerio, A., Streit, S. and Cullati, S. (2022). Life-course socioeconomic conditions, multimorbidity and polypharmacy in older adults: A retrospective cohort study. *PloS One*, [online] 17(8), p.e0271298. doi:10.1371/journal.pone.0271298.

Zou, S., Wang, Z. and Tang, K. (2022). Social inequalities in all-cause mortality among adults with multimorbidity: a 10-year prospective study of 0.5 million Chinese adults. *International Health*, [online] p.ihac052. doi:10.1093/inthealth/ihac052.

Li, D., Wang, L., Zhou, Z., Song, L., Chen, S., Yang, Y., Hu, Y., Wang, Y., Wu, S. and Tian, Y. (2022). Role of socioeconomic, lifestyle, and clinical factors in the progression of cardiometabolic multimorbidity in China: A 10-year prospective cohort study. *Nutrition, metabolism, and cardiovascular diseases: NMCD*, [online] pp.S0939-4753(22)002812. doi:10.1016/j.numecd.2022.06.016.

Grundy, E.M. and Stuchbury, R. (2022). Multimorbidity as assessed by reporting of multiple causes of death: variations by period, sociodemographic characteristics and place of death among older decedents in England and Wales, 2001–2017. *Journal of Epidemiology and Community Health*, [online] p.jech-2021-217846. doi:10.1136/jech-2021-217846.

Han, S., Mo, G., Gao, T., Sun, Q., Liu, H. and Zhang, M. (2022). Age, sex, residence, and region-specific differences in prevalence and patterns of multimorbidity among older Chinese: evidence from Chinese Longitudinal Healthy Longevity Survey. *BMC public health*, [online] 22(1), p.1116. doi:10.1186/s12889-022-13506-0.

Catalao, R., Dorrington, S., Pritchard, M., Jewell, A., Broadbent, M., Ashworth, M., Hatch, S. and Howard, L. (2022). Ethnic inequalities in mental and physical multimorbidity in women of reproductive age: a data linkage cohort study. *BMJ open*, [online] 12(7), p.e059257. doi:10.1136/bmjopen-2021-059257.

Gurgel do Amaral, G.S., Ots, P., Brouwer, S. and van Zon, S.K.R. (2022). Multimorbidity and exit from paid employment: the effect of specific combinations of chronic health conditions. *European Journal of Public Health*. doi:10.1093/eurpub/ckac018.

Knies, G. and Kumari, M. (2022). Multimorbidity is associated with the income, education, employment and health domains of area-level deprivation in adult residents in the UK. *Scientific Reports*, [online] 12(1), p.7280. doi:10.1038/s41598-022-11310-9.

Keetile, M., Letamo, G. and Navaneetham, K. (2022). The influence of childhood socioeconomic status on non-communicable disease risk factor clustering and multimorbidity among adults in Botswana: a life course perspective. *International Health*. doi:10.1093/inthealth/ihac026.

Kato, D., Kawachi, I. and Kondo, N. (2022). Complex Multimorbidity and Working beyond Retirement Age in Japan: A Prospective Propensity-Matched Analysis. *International Journal of Environmental Research and Public Health*, [online] 19(11), p.6553. doi:10.3390/ijerph19116553.

Zhou, J., Wei, M.Y., Zhang, J., Liu, H. and Wu, C. (2022). Association of multimorbidity patterns with incident disability and recovery of independence among middle-aged and older adults. *Age and Ageing*, [online] 51(8), p.afac177. doi:10.1093/ageing/afac177.

Franken DL, Olinto MTA, Dias-da-Costa JS, Bairros FS, Paniz VMV. Lifestyle, high Body Mass Index, and markers of socioeconomic conditions associated with multimorbidity in women. *Rev Bras Epidemiol* 2022;25:e220007. doi: S1415- 790X2022000100405 [pii] 10.1590/1980-549720220007

Pati, S., Sinha, A., Ghosal, S., Kerketta, S., Lee, J.T. and Kanungo, S. (2022). Family-Level Multimorbidity among Older Adults in India: Looking through a Syndemic Lens. *International Journal of Environmental Research and Public Health*, [online] 19(16), p.9850. doi:10.3390/ijerph19169850.

Christofolletti M, Duca GFD, Benedetti TRB, Malta DC. Sociodemographic determinants of multimorbidity in Brazilian adults and older adults: a cross-sectional study. *Sao Paulo Med J* 2022;140(1):115-22. doi: S1516-31802022000100115 [pii] 10.1590/1516-3180.2021.0105.R1.31052021

Coste J, Valderas JM, Carcaillon-Bentata L. The epidemiology of multimorbidity in France: Variations by gender, age and socioeconomic factors, and implications for surveillance and prevention. *PLoS One* 2022;17(4):e0265842. doi: 10.1371/journal.pone.0265842 PONE-D-21-38127 [pii]

Mishra VK, Srivastava S, T M, et al. Population attributable risk for multimorbidity among adult women in India: Do smoking tobacco, chewing tobacco and consuming alcohol make a difference? *PLoS One* 2021;16(11):e0259578. doi: 10.1371/journal.pone.0259578

Bennett HQ, Kingston A, Lourida I, et al. The contribution of multiple long-term conditions to widening inequalities in disability-free life expectancy over two decades: Longitudinal analysis of two cohorts using the Cognitive Function and Ageing Studies. *EClinicalMedicine* 2021;39:101041. doi: 10.1016/j.eclinm.2021.101041

Lau JH, Lee ES, Zhang Y, et al. Association Between Self-Reported Sedentary Behavior and Health-Related Quality of Life Among Multimorbidity Patients in Singapore. *Am J Health Promot* 2021;35(7):929-38. doi: 10.1177/08901171211001274

Khanolkar AR, Chaturvedi N, Kuan V, et al. Socioeconomic inequalities in prevalence and development of multimorbidity across adulthood: A longitudinal analysis of the MRC 1946 National Survey of Health and Development in the UK. *PLoS Med* 2021;18(9):e1003775. doi: 10.1371/journal.pmed.1003775

Ballesteros SM, Moreno-Montoya J, Grooten WJA, et al. Socioeconomic variation of multimorbidity in Colombian older adults. *Sci Rep* 2021;11(1):22738. doi: 10.1038/s41598-021-02219-w

Lu Y, Liu S, Qiao Y, et al. Waist-to-height ratio, waist circumference, body mass index, waist divided by height(0.5) and the risk of cardiometabolic multimorbidity: A national longitudinal cohort study. *Nutr Metab Cardiovasc Dis* 2021;31(9):2644-51. doi: 10.1016/j.numecd.2021.05.026

McCallum M, MacDonald S. "Multimorbidity Plus": a secondary analysis exploring GP work in areas of high socioeconomic deprivation. *BJGP Open* 2021 doi: 10.3399/BJGPO.2021.0117

Flores TR, Rodrigues A, Neves RG, et al. The Risk of Multimorbidity Associated with Overweight and Obesity: Data from the Brazilian National

Anindya K, Ng N, Atun R, et al. Effect of multimorbidity on utilisation and out-of-pocket expenditure in Indonesia: quantile regression analysis. *BMC Health Serv Res* 2021;21(1):427. doi: 10.1186/s12913-021-06446-9

Kone AP, Mondor L, Maxwell C, et al. Rising burden of multimorbidity and related socio-demographic factors: a repeated cross-sectional study of Ontarians. *Can J Public Health* 2021;112(4):737-47. doi: 10.17269/s41997-021-00474-y

Craig LS, Cunningham-Myrie CA, Hotchkiss DR, et al. Social determinants of multimorbidity in Jamaica: application of latent class analysis in a cross-sectional study. *BMC Public Health* 2021;21(1):1197. doi: 10.1186/s12889-021-11225-6

Shao J, Wang X, Zou P, et al. Associating modifiable lifestyle factors with multimorbidity in community dwelling individuals from mainland China. *Eur J Cardiovasc Nurs* 2021 doi: 10.1093/eurjcn/zvaa038

Kone AP, Mondor L, Maxwell C, et al. Rising burden of multimorbidity and related socio-demographic factors: a repeated cross-sectional study of Ontarians. *Can J Public Health* 2021 doi: 10.17269/s41997-021-00474-y

Andersen H, Kankaanranta H, Tuomisto LE, et al. Multimorbidity in Finnish and Swedish speaking Finns; association with daily habits and socioeconomic status - Nordic EpiLung cross-sectional study. *Prev Med Rep* 2021;22:101338. doi: 10.1016/j.pmedr.2021.101338

Espeland MA, Gaussoin SA, Bahnson J, et al. Impact of an 8-Year Intensive Lifestyle Intervention on an Index of Multimorbidity. *J Am Geriatr Soc* 2020;68(10):2249-56. doi: 10.1111/jgs.16672

Luben R, Hayat S, Wareham N, et al. Sociodemographic and lifestyle predictors of incident hospital admissions with multimorbidity in a general population, 1999-2019: the EPIC-Norfolk cohort. *BMJ Open* 2020;10(9):e042115. doi: 10.1136/bmjopen-2020-042115

Ferry FR, Rosato MG, Curran EJ, et al. Multimorbidity among persons aged 25-64 years: a population-based study of social determinants and all-cause mortality. *J Public Health (Oxf)* 2020 doi: 10.1093/pubmed/fdaa209

La Foucade A, Davis G, Baboolal N, et al. The socio-economic determinants of

multimorbidity among the elderly population in Trinidad and Tobago. *PLoS One* 2020;15(9):e0237307. doi: 10.1371/journal.pone.0237307

Chudasama YV, Khunti K, Gillies CL, et al. Healthy lifestyle and life expectancy in people with multimorbidity in the UK Biobank: A longitudinal cohort study. *PLoS Med* 2020;17(9):e1003332. doi: 10.1371/journal.pmed.1003332

Costa AK, Bertoldi AD, Fontanella AT, et al. Does socioeconomic inequality occur in the multimorbidity among Brazilian adults? *Rev Saude Publica* 2020;54:138. doi: 10.11606/s1518-8787.2020054002569

Russell J, Grant CC, Morton SMB. Multimorbidity in Early Childhood and Socioeconomic Disadvantage: Findings From a Large New Zealand Child Cohort. *Acad Pediatr* 2020;20(5):619-27. doi: 10.1016/j.acap.2019.09.007

Vinjerui KH, Bjorngaard JH, Krokstad S, et al. Socioeconomic Position, Multimorbidity and Mortality in a Population Cohort: The HUNT Study. *J Clin Med* 2020;9(9) doi: 10.3390/jcm9092759

Nicholson K, Rodrigues R, Anderson KK, et al. Sleep behaviours and multimorbidity occurrence in middle-aged and older adults: findings from the Canadian Longitudinal Study on Aging (CLSA). *Sleep Med* 2020;75:156-62. doi: 10.1016/j.sleep.2020.07.002

Li X, Cai L, Cui WL, et al. Association of socioeconomic and lifestyle factors with chronic non-communicable diseases and multimorbidity among the elderly in rural southwest China. *J Public Health (Oxf)* 2020;42(2):239-46. doi: 10.1093/pubmed/fdz020

Moller SP, Laursen B, Johannesen CK, et al. Patterns of multimorbidity and demographic profile of latent classes in a Danish population-A register-based study. *PLoS One* 2020;15(8):e0237375. doi: 10.1371/journal.pone.0237375

Carrilero N, Dalmau-Bueno A, Garcia-Altes A. Comorbidity patterns and socioeconomic inequalities in children under 15 with medical complexity: a population-based study. *BMC pediatrics* 2020;20(1):358. doi: 10.1186/s12887-020-02253-z

Chamberlain AM, Finney Rutten LJ, Wilson PM, et al. Neighborhood socioeconomic disadvantage is associated with multimorbidity in a geographically-defined community. *BMC Public Health* 2020;20(1):13. doi: 10.1186/s12889-019-8123-0

Dugravot A, Fayosse A, Dumurgier J, et al. Social inequalities in multimorbidity, frailty, disability, and transitions to mortality: a 24-year follow-up of the Whitehall II cohort study. *Lancet Public Health* 2020;5(1):e42-e50. doi: 10.1016/S2468-2667(19)30226-9

Smeets RGM, Elissen AMJ, Kroese M, et al. Identifying subgroups of high-need, high-cost, chronically ill patients in primary care: A latent class analysis. *PLoS One* 2020;15(1):e0228103. doi: 10.1371/journal.pone.0228103

Aminisani N, Stephens C, Allen J, et al. Socio-demographic and lifestyle factors associated with multimorbidity in New Zealand. *Epidemiol Health* 2020;42:e2020001. doi: 10.4178/epih.e2020001

Freisling H, Viallon V, Lennon H, et al. Lifestyle factors and risk of multimorbidity of cancer and cardiometabolic diseases: a multinational cohort study. *BMC Med* 2020;18(1):5. doi: 10.1186/s12916-019-1474-7

Kandola A, Stubbs B, Koyanagi A. Physical multimorbidity and sedentary behavior in older adults: Findings from the Irish longitudinal study on ageing (TILDA). *Maturitas* 2020;**134**:1-7. doi: 10.1016/j.maturitas.2020.01.007

Rijken M, van der Heide I. Identifying subgroups of persons with multimorbidity based on their needs for care and support. *BMC Fam Pract* 2019;**20**(1):179. doi: 10.1186/s12875-019-1069-6

Seo S. Multimorbidity Development in Working People. *Int J Environ Res Public Health* 2019;**16**(23) doi: 10.3390/ijerph16234749

Ashworth M, Durbaba S, Whitney D, et al. Journey to multimorbidity: longitudinal analysis exploring cardiovascular risk factors and sociodemographic determinants in an urban setting. *BMJ Open* 2019;**9**(12):e031649. doi: 10.1136/bmjopen-2019-031649

Kristensen K, Konig HH, Hajek A. The association of multimorbidity, loneliness, social exclusion and network size: findings from the population-based German Ageing Survey. *BMC Public Health* 2019;**19**(1):1383. doi: 10.1186/s12889-019-7741-x

Russell J, Grant CC, Morton SMB. Multimorbidity in Early Childhood and Socioeconomic Disadvantage: Findings From a Large New Zealand Child Cohort. *Acad Pediatr* 2019 doi: 10.1016/j.acap.2019.09.007

Oude Hengel K, Robroek SJW, Eekhout I, et al. Educational inequalities in the impact of chronic diseases on exit from paid employment among older workers: a 7-year prospective study in the Netherlands. *Occup Environ Med* 2019;**76**(10):718-25. doi: 10.1136/oemed-2019-105788

Dugravot A, Fayosse A, Dumurgier J, et al. Social inequalities in multimorbidity, frailty, disability, and transitions to mortality: a 24-year follow-up of the Whitehall II cohort study. *Lancet Public Health* 2020;**5**(1):e42-e50. doi: 10.1016/S2468-2667(19)30226-9

Low LL, Kwan YH, Ko MSM, et al. Epidemiologic Characteristics of Multimorbidity and Sociodemographic Factors Associated With Multimorbidity in a Rapidly Aging Asian Country. *JAMA Netw Open* 2019;**2**(11):e1915245. doi: 10.1001/jamanetworkopen.2019.15245

Nguyen TN, Ngangue P, Bouhali T, et al. Social Vulnerability in Patients with Multimorbidity: A Cross-Sectional Analysis. *Int J Environ Res Public Health* 2019;**16**(7) doi: 10.3390/ijerph16071244

Contant E, Loignon C, Bouhali T, et al. A multidisciplinary self-management intervention among patients with multimorbidity and the impact of socioeconomic factors on results. *BMC Fam Pract* 2019;**20**(1):53. doi: 10.1186/s12875-019-0943-6

Singer L, Green M, Rowe F, et al. Social determinants of multimorbidity and multiple functional limitations among the ageing population of England, 2002-2015. *SSM Popul Health* 2019;**8**:100413. doi: 10.1016/j.ssmph.2019.100413

Seo S, Kwon YD, Yoo KB, et al. Is Transient and Persistent Poverty Harmful to Multimorbidity?: Model Testing Algorithms. *Int J Environ Res Public Health* 2019;**16**(13) doi: 10.3390/ijerph16132395

Johnston MC, Black C, Mercer SW, et al. Impact of educational attainment on the association between social class at birth and multimorbidity in middle age in the Aberdeen Children of the 1950s cohort study. *BMJ Open* 2019;**9**(1):e024048. doi:

10.1136/bmjopen-2018-024048

Verest W, Galenkamp H, Spek B, et al. Do ethnic inequalities in multimorbidity reflect ethnic differences in socioeconomic status? The HELIUS study. *Eur J Public Health* 2019 doi: 10.1093/eurpub/ckz012

Sreedhar S, Richard L, Stokes T. Multimorbidity and multiple social disadvantage in a New Zealand high-needs free primary healthcare clinic population: a cross-sectional study. *N Z Med J* 2019;**132**(1490):42-51.

Li X, Cai L, Cui WL, et al. Association of socioeconomic and lifestyle factors with chronic non-communicable diseases and multimorbidity among the elderly in rural southwest China. *J Public Health (Oxf)* 2019 doi: 10.1093/pubmed/fdz020

Rivera-Almaraz A, Manrique-Espinoza B, Chatterji S, et al. Longitudinal associations of multimorbidity, disability and out-of-pocket health expenditures in households with older adults in Mexico: The study on global AGEing and adult health (SAGE). *Disabil Health J* 2019 doi: 10.1016/j.dhjo.2019.03.004

Chan MS, van den Hout A, Pujades-Rodriguez M, et al. Socio-economic inequalities in life expectancy of older adults with and without multimorbidity: a record linkage study of 1.1 million people in England. *Int J Epidemiol* 2019 doi: 10.1093/ije/dyz052

Nguyen TN, Ngangue P, Bouhali T, et al. Social Vulnerability in Patients with Multimorbidity: A Cross-Sectional Analysis. *Int J Environ Res Public Health* 2019;**16**(7) doi: 10.3390/ijerph16071244

Contant E, Loignon C, Bouhali T, et al. A multidisciplinary self-management intervention among patients with multimorbidity and the impact of socioeconomic factors on results. *BMC Fam Pract* 2019;**20**(1):53. doi: 10.1186/s12875-019-0943-6

Byrne D, Cournane S, Conway R, et al. Socio-Economic Status and MultiOriginal morbidity - Fact or Fiction? *Acute Med* 2019;**18**(2):64-70.

Costa CDS, Flores TR, Wendt A, et al. Inequalities in multimorbidity among elderly: a population-based study in a city in Southern Brazil. *Cad Saude Publica* 2018;**34**(11):e00040718. doi: 10.1590/0102-311X00040718

Singh-Manoux A, Fayosse A, Sabia S, et al. Clinical, socioeconomic, and behavioural factors at age 50 years and risk of cardiometabolic multimorbidity and mortality: A cohort study. *PLoS Med* 2018;**15**(5):e1002571. doi: 10.1371/journal.pmed.1002571.

Stanley J, Millar E, Semper K, et al. The impact of multimorbidity on people's lives: a cross-sectional survey. *N Z Med J* 2018;**131**(1477):78-90.

Jureviciene E, Onder G, Visockiene Z, et al. Does multimorbidity still remain a matter of the elderly: Lithuanian national data analysis. *Health Policy* 2018;**122**(6):681-86. doi: 10.1016/j.healthpol.2018.03.003.

Tetzlaff J, Epping J, Sperlich S, et al. Widening inequalities in multimorbidity? Time trends among the working population between 2005 and 2015 based on German health insurance data. *Int J Equity Health* 2018;**17**(1):103. doi: 10.1186/s12939-018-0815-z.

Ryan BL, Bray Jenkyn K, Shariff SZ, et al. Beyond the grey tsunami: a cross-sectional

- population-based study of multimorbidity in Ontario. *Can J Public Health* 2018 doi: 10.17269/s41997-018-0103-0.
- Mounce LTA, Campbell JL, Henley WE, et al. Predicting Incident Multimorbidity. *Ann Fam Med* 2018;**16**(4):322-29. doi: 10.1370/afm.2271.
- Stickley A, Koyanagi A. Physical multimorbidity and loneliness: A population-based study. *PLoS One* 2018;**13**(1):e0191651. doi: 10.1371/journal.pone.0191651.
- Calderon-Larranaga A, Santoni G, Wang HX, et al. Rapidly developing multimorbidity and disability in older adults: does social background matter? *J Intern Med* 2018;**283**(5):489-99. doi: 10.1111/joim.12739.
- Mercer SW, Zhou Y, Humphris GM, et al. Multimorbidity and Socioeconomic Deprivation in Primary Care Consultations. *Ann Fam Med* 2018;**16**(2):127-31. doi: 10.1370/afm.2202.
- Thavorn K, Maxwell CJ, Gruneir A, et al. Effect of socio-demographic factors on the association between multimorbidity and healthcare costs: a population-based, retrospective cohort study. *BMJ Open*. 2017;**7**(10):e017264.
- Lund Jensen N, Pedersen HS, Vestergaard M, Mercer SW, Glumer C, Prior A. The impact of socioeconomic status and multimorbidity on mortality: a population-based cohort study. *Clin Epidemiol*. 2017;**9**:279-289. doi: 10.2147/CLEP.S129415.
- Schiotz ML, Stockmarr A, Host D, Glumer C, Frolich A. Social disparities in the prevalence of multimorbidity - A register-based population study. *BMC Public Health*. 2017;**17**(1):422. doi: 10.1186/s12889-017-4314-8.
- Kunna R, San Sebastian M, Stewart Williams J. Measurement and decomposition of socioeconomic inequality in single and multimorbidity in older adults in China and Ghana: results from the WHO study on global AGEing and adult health (SAGE). *Int J Equity Health*. 2017;**16**(1):79. doi: 10.1186/s12939-017-0578-y.
- Ranstad K, Midlov P, Halling A. Socioeconomic status and geographical factors associated with active listing in primary care: a cross-sectional population study accounting for multimorbidity, age, sex and primary care. *BMJ Open*. 2017;**7**(6):e014984. doi: 10.1136/bmjopen-2016-014984.
- Walker ER, Druss BG. Cumulative burden of comorbid mental disorders, substance use disorders, chronic medical conditions, and poverty on health among adults in the U.S.A. *Psychol Health Med*. 2017;**22**(6):727-735. doi: 10.1080/13548506.2016.1227855.
- Leiser S, Deruaz-Luyet A, N'Goran AA, et al. Determinants associated with deprivation in multimorbid patients in primary care-A cross-sectional study in Switzerland. *PLoS One*. 2017;**12**(7):e0181534. doi: 10.1371/journal.pone.0181534.
- Katikireddi SV, Skivington K, Leyland AH, Hunt K, Mercer SW. The contribution of risk factors to socioeconomic inequalities in multimorbidity across the lifecourse: a longitudinal analysis of the Twenty-07 cohort. *BMC Med*. 2017;**15**(1):152. doi: 10.1186/s12916-017-0913-6.
- Ki M, Lee YH, Kim YS, Shin JY, Lim J, Nazroo J. Socioeconomic inequalities in health in the context of multimorbidity: A Korean panel study. *PLoS One*. 2017;**12**(3):e0173770.
- Habib RR, Mikati D, Hojeij S, El Asmar K, Chaaya M, Zurayk R. Associations between

poor living conditions and multi-morbidity among Syrian migrant agricultural workers in Lebanon. *Eur J Public Health*. 2016;**26**(6):1039-1044.

Walker ER, Druss BG. Cumulative burden of comorbid mental disorders, substance use disorders, chronic medical conditions, and poverty on health among adults in the U.S.A. *Psychol Health Med*. 2016:1-9.

Yokota RT, Van der Heyden J, Nusselder WJ, et al. Impact of Chronic Conditions and Multimorbidity on the Disability Burden in the Older Population in Belgium. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:903-9.

Wister A, Kendig H, Mitchell B, Fyffe I, Loh V. Multimorbidity, health and aging in Canada and Australia: a tale of two countries. *BMC Geriatr*. 2016;**16**:163.

Eckardt M, Brettschneider C, van den Bussche H, König HH, MultiCare Study G. Analysis of Health Care Costs in Elderly Patients with Multiple Chronic Conditions Using a Finite Mixture of Generalized Linear Models. *Health economics*. 2016.

van der Zee-Neuen A, Putrik P, Ramiro S, et al. Impact of chronic diseases and multimorbidity on health and healthcare costs: The additional role of musculoskeletal disorders. *Arthritis Care Res (Hoboken)*. 2016.

Picco L, Achilla E, Abdin E, et al. Economic burden of multimorbidity among older adults: impact on healthcare and societal costs. *BMC Health Serv Res*. 2016;**16**:173.

Assari S, Lankarani MM: Does Multi-morbidity Mediate the Effect of Socioeconomics on Self-rated Health? Cross-country Differences. *Int J Prev Med*. 2015;**6**:85.

Jackson CA, Dobson A, Tooth L, Mishra GD: Body mass index and socioeconomic position are associated with 9-year trajectories of multimorbidity: A population-based study. *Prev Med*. 2015;**81**:92-98.

Chung RY, Mercer S, Lai FT, Yip BH, Wong MC, Wong SY: Socioeconomic Determinants of Multimorbidity: A Population-Based Household Survey of Hong Kong Chinese. *PLoS One*. 2015;**10**(10):e0140040.

McLean G, Guthrie B, Mercer SW, Watt GC: General practice funding underpins the persistence of the inverse care law: cross-sectional study in Scotland. *Br J Gen Pract*. 2015;**65**(641):e799-805.

Brilleman SL, Purdy S, Salisbury C, Windmeijer F, Gravelle H, Hollinghurst S. Implications of comorbidity for primary care costs in the UK: a retrospective observational study. *Br J Gen Pract*. Apr 2013;**63**(609):e274-282.

Sinnott C, Mc Hugh S, Fitzgerald AP, Bradley CP, Kearney PM. Psychosocial complexity in multimorbidity: the legacy of adverse childhood experiences. *Fam Pract*. Jun 2015;**32**(3):269-275.

Lee JT, Hamid F, Pati S, Atun R, Millett C. Impact of Noncommunicable Disease Multimorbidity on Healthcare Utilisation and Out-Of-Pocket Expenditures in Middle-Income Countries: Cross Sectional Analysis. *PLoS One*. 2015;**10**(7):e0127199.

Jason KJ, Carr DC, Washington TR, Hilliard TS, Mingo CA. Multiple Chronic Conditions, Resilience, and Workforce Transitions in Later Life: A Socio-Ecological Model. *Gerontologist*. Jul 25 2015.

Arokiasamy P, Uttamacharya U, Jain K, et al. The impact of multimorbidity on adult physical and mental health in low- and middle-income countries: what does the study on

global ageing and adult health (SAGE) reveal? *BMC Med.* 2015;**13**:178.

Afshar S, Roderick PJ, Kowal P, Dimitrov BD, Hill AG. Multimorbidity and the inequalities of global ageing: a cross-sectional study of 28 countries using the World Health Surveys. *BMC Public Health.* 2015;**15**(1):776.

Jackson CA, Dobson A, Tooth L, Mishra GD. Body mass index and socioeconomic position are associated with 9-year trajectories of multimorbidity: A population-based study. *Prev Med.* Aug 24 2015;**81**:92-98.

Brett T, Arnold-Reed DE, Troeung L, Bulsara MK, Williams A, Moorhead RG. Multimorbidity in a marginalised, street-health Australian population: a retrospective cohort study. *BMJ Open.* 2014;**4**(8):e005461.

Habib RR, Hojeij S, Elzein K, Chaaban J, Seyfert K. Associations between life conditions and multi-morbidity in marginalized populations: the case of Palestinian refugees. *Eur J Public Health.* Oct 2014;**24**(5):727-733.

McLean G, Gunn J, Wyke S, Guthrie B, Watt GC, Blane DN, Mercer SW. The influence of socioeconomic deprivation on multimorbidity at different ages: a cross-sectional study. *Br J Gen Pract.* Jul 2014;**64**(624):e440-447.

Banjare P, Pradhan J. Socio-Economic Inequalities in the Prevalence of Multi-Morbidity among the Rural Elderly in Bargarh District of Odisha (India). *PLoS One.* 2014;**9**(6):e97832.

Yoon J, Zulman D, Scott JY, Maciejewski ML. Costs associated with multimorbidity among VA patients. *Med Care.* Mar 2014;**52** Suppl 3:S31-36.

Greene R, Dasso E, Ho S, Frank J, Scandrett G, Genaidy A. Patterns and expenditures of multi-morbidity in an insured working population in the United States: insights for a sustainable health care system and building healthier lives. *Popul Health Manag.* Dec 2013;**16**(6):381-389

Ataguba JE. Inequalities in multimorbidity in South Africa. *Int J Equity Health.* 2013;**12**(1):64.

Greene R, Dasso E, Ho S, Frank J, Scandrett G, Genaidy A. Patterns and Expenditures of Multi-Morbidity in an Insured Working Population in the United States: Insights for a Sustainable Health Care System and Building Healthier Lives. *Popul Health Manag.* Aug 22 2013.

Konig HH, Leicht H, Bickel H, et al. Effects of multiple chronic conditions on health care costs: an analysis based on an advanced tree-based regression model. *BMC Health Serv Res.* Jun 15 2013;**13**(1):219.

Kadam UT, Uttley J, Jones PW, Iqbal Z. Chronic disease multimorbidity transitions across healthcare interfaces and associated costs: a clinical-linkage database study. *BMJ Open.* 2013;**3**(7).

Doos L, Uttley J, Onyia I, Iqbal Z, Jones PW, Kadam UT. Mosaic segmentation, COPD and CHF multimorbidity and hospital admission costs: a clinical linkage study. *J Public Health (Oxf).* Jul 30 2013.

Vila-Rodriguez F, Panenka WJ, Lang DJ, et al. The Hotel Study: Multimorbidity in a Community Sample Living in Marginal Housing. *Am J Psychiatry.* Aug 9 2013.

Cornish RP, Boyd AW, Van Staa T, Salisbury C, Macleod J. Socio-economic position and childhood multimorbidity: a study using linkage between the Avon Longitudinal study of

parents and children and the general practice research database. *Int J Equity Health*. Aug 20 2013;**12**(1):66.

Demirchyan A, Khachadourian V, Armenian HK, Petrosyan V. Short and long term determinants of incident multimorbidity in a cohort of 1988 earthquake survivors in Armenia. *Int J Equity Health*. 2013;**12**(1):68.

Wilkie R, Blagojevic M, Jordan KP, Lacey R, McBeth J. Reasons why multimorbidity increases the risk of participation restriction in older adults with lower limb osteoarthritis: A prospective cohort study in primary care. *Arthritis Care Res (Hoboken)*. Dec 6 2012.

Friedman EM, Ryff CD. Living well with medical comorbidities: a biopsychosocial perspective. *J Gerontol B Psychol Sci Soc Sci*. Sep 2012;**67**(5):535-544.

Kirchberger I, Meisinger C, Heier M, et al. Patterns of multimorbidity in the aged population. Results from the KORA-Age study. *PLoS One*. 2012;**7**(1):e30556

Schafer I, Hansen H, Schon G, et al. The influence of age, gender and socio-economic status on multimorbidity patterns in primary care. first results from the multicare cohort study. *BMC Health Serv Res*. 2012;**12**:89.

Quiñones, A.R., et al., How Does the Trajectory of Multimorbidity Vary Across Black, White, and Mexican Americans in Middle and Old Age? *J Gerontol B Psychol Sci Soc Sci*. 2011;**66**(6):739-49.

Andrade LH et al. Clustering of psychiatric and somatic illnesses in the general population: multimorbidity and socioeconomic correlates. *Braz J Med Biol Res*. 2010. **43**(5):483-91.

Goldstein G, Luther JF, Haas GL, Gordon AJ, Appelt C. Comorbidity Between Psychiatric and General Medical Disorders in Homeless Veterans. *Psychiatr Q*. 2009;**80**(4):199-212.

Wong, S. Y., S. W. Mercer, et al. "The influence of multi-morbidity and self-reported socio-economic standing on the prevalence of depression in an elderly Hong Kong population." *BMC Public Health* 2008. **8**: 119.

Bayliss EA, Ellis JL, Steiner JF. Seniors' self-reported multimorbidity captured biopsychosocial factors not incorporated into two other data-based morbidity measures. *J Clin Epidemiol*. 2009;**62**(5):550-7.

Schoen C, Osborn R, How SK, Doty MM, Peugh J. In *Chronic Condition: Experiences Of Patients With Complex Health Care Needs, In Eight Countries, 2008*. Health Aff (Millwood). 2009;**28**(1):w1-16.

Hassan Soubhi, Martin Fortin and Catherine Hudon. Perceived conflict in the couple and chronic illness management: Preliminary analyses from the Quebec Health Survey. *BMC Family Practice* 2006;**7**:59. Hou, F. and J. Chen, Neighbourhood low income, income inequality and health in Toronto. *Health Reports*, 2003. **14**(2): p. 21-34.

Kempen, G.I., et al., Adaptive responses among Dutch elderly: the impact of eight chronic medical conditions on health-related quality of life. *American Journal of Public Health*., 1997. **87**(1): p. 38-44.

Knottnerus, J.A., et al., Chronic illness in the community and the concept of 'social prevalence'. *Fam Pract*, 1992. **9**: p. 15-21.

Macleod, U., et al., Comorbidity and socioeconomic deprivation: an observational study of the prevalence of comorbidity in general practice. *European Journal of General Practice*, 2004. **10**(1): p. 24-6.

Neeleman, J., J. Ormel, and R.V. Bijl, The distribution of psychiatric and somatic III health: associations with personality and socioeconomic status. *Psychosomatic Medicine.*, 2001. **63**(2): p. 239-47.

Neeleman, J., S. Sytema, and M. Wadsworth, Propensity to psychiatric and somatic ill-health: evidence from a birth cohort. *Psychological Medicine*, 2002. **32**(5): p. 793-803.

van den Akker, M., R. Vos, and J.A. Knottnerus, In an exploratory prospective study on multimorbidity general and disease-related susceptibility could be distinguished. *Journal of Clinical Epidemiology*, 2006. **59**(9): p. 934-9.

van den Akker, M., et al., Psychosocial patient characteristics and GP-registered chronic morbidity: a prospective study. *Journal of Psychosomatic Research.*, 2001. **50**(2): p. 95-102.

van der Linden, M., M. van der Akker, and F. Buntinx, The relation between health locus of control and multimorbidity; a case-control study. *Personality and Individual Differences*, 2001. **30**: p. 1189-97.

van den Akker, M., et al., Marginal impact of psychosocial factors on multimorbidity: results of an explorative nested case-control study. *Social Science & Medicine.*, 2000. **50**(11): p. 1679-93.

3.6 VARIABLES RELATED TO HOSPITALISATION, INSTITUTIONALISATION AND/OR OUTCOMES

Carrasco-Ribelles LA, Roso-Llorach A, Cabrera-Bean M, Costa-Garrido A, Zabaleta-Del-Olmo E, Toran-Monserrat P, et al. Dynamics of multimorbidity and frailty, and their contribution to mortality, nursing home and home care need: A primary care cohort of 1 456 052 ageing people. *EClinicalMedicine*. 2022;52:101610.

Coatsworth-Puspoky R, Dahlke S, Duggleby W, Hunter KF. Older persons with multiple chronic conditions' experiences of unplanned readmission: An integrative review. *Int J Older People Nurs*. 2022;17(6):e12481.

Le Lay J, Alfonso-Lizarazo E, Augusto V, Bongue B, Masmoudi M, Xie X, et al. Prediction of hospital readmission of multimorbid patients using machine learning models. *PLoS One*. 2022;17(12):e0279433.

McParland C, Cooper MA, Lowe DJ, Stanley B, Johnston B. Multimorbidity, disease count, mortality and emergency care use in persons attending the emergency department: a cross-sectional data-linkage study. *J Multimorb Comorb*. 2022;12:26335565221147417.

Quiñones AR, McAvay GJ, Peak KD, Vander Wyk B, Allore HG. The Contribution of Chronic Conditions to Hospitalization, Skilled Nursing Facility Admission, and Death: Variation by Race. *Am J Epidemiol*. 2022;191(12):2014-25.

Roberts SE, Rosen CB, Wirtalla CJ, Finn CB, Kaufman EJ, Reilly PM, et al. Examining disparities among older multimorbid emergency general surgery patients: An observational study of Medicare beneficiaries. *Am J Surg*. 2022.

Wei MY. Multimorbidity, 30-day readmissions, and post-discharge mortality among Medicare beneficiaries using a new ICD-coded multimorbidity-weighted index. *J Gerontol A Biol Sci Med Sci*. 2022.

Rosen, C.B., Wirtalla, C., Keele, L.J., Roberts, S.E., Kaufman, E.J., Holena, D.N., Halpern, S.D. and Kelz, R.R. (2022). Multimorbidity Confers Greater Risk for Older Patients in Emergency General Surgery Than the Presence of Multiple Comorbidities: A Retrospective Observational Study. *Medical Care*, [online] 60(8), pp.616–622. doi:10.1097/MLR.0000000000001733.

Morales-Puerto, M., Ruiz-Díaz, M., Aranda-Gallardo, M., Morales-Asencio, J.M., Alcalá-Gutiérrez, P., Rodríguez-Montalvo, J.A., León-Campos, Á., García-Mayor, S. and Canca-Sánchez, J.C. (2022). Development of a Clinical Prediction Rule for Adverse Events in Multimorbid Patients in Emergency and Hospitalisation. *International Journal of Environmental Research and Public Health*, [online] 19(14), p.8581. doi:10.3390/ijerph19148581.

Aubert, C.E., Rodondi, N., Netzer, S., Dalleur, O., Spinewine, A., Maanen, C.D., Knol, W., O'Mahony, D., Aujesky, D. and Donzé, J. (2022). Predictors of 1-year drug-related admissions in older multimorbid hospitalized adults. *Journal of the American Geriatrics Society*, [online] 70(5), pp.1510–1516. doi:10.1111/jgs.17667.

Coatsworth-Puspoky, R., Dahlke, S., Duggleby, W. and Hunter, Kathleen F. (2022). Older persons with multiple chronic conditions' experiences of unplanned readmission: An integrative review. *International Journal of Older People Nursing*. doi:10.1111/opn.12481.

Rodrigues, L.P., Vissoci, J.R.N., França, D.G., Caruzzo, N.M., Batista, S.R.R., de Oliveira, C., Nunes, B.P. and Silveira, E.A. (2022). Multimorbidity patterns and hospitalisation occurrence in adults and older adults aged 50 years or over. *Scientific Reports*, [online] 12(1), p.11643. doi:10.1038/s41598-022-15723-4.

Rodrigues, L.P., de Oliveira Rezende, A.T., Delpino, F.M., Mendonça, C.R., Noll, M., Nunes, B.P., de Oliviera, C. and Silveira, E.A. (2022). Association between multimorbidity and hospitalization in older adults: systematic review and meta-analysis. *Age and Ageing*, 51(7). doi:10.1093/ageing/afac155.

Kabir, A., Tran, A., Ansari, S., Conway, D.P. and Barr, M. (2022). Impact of multimorbidity and complex multimorbidity on mortality among older Australians aged 45 years and over: a large population-based record linkage study. *BMJ Open*, [online] 12(7), p.e060001. doi:10.1136/bmjopen-2021-060001.

Wartelle A, Mourad-Chehade F, Yalaoui F, Questiaux H, Monneret T, Soliveau G, et al. Multimorbidity clustering of the emergency department patient flow: Impact analysis of new unscheduled care clinics. *PLoS One* 2022;17(1):e0262914. doi: 10.1371/journal.pone.0262914. PONE-D-21-18947 [pii]

Wang-Hansen MS, Kersten H, Benth JS, Wyller TB. The association between geriatric treatment and 30-day readmission risk among medical inpatients aged ≥ 75 years with multimorbidity. *PLoS One* 2022;17(1):e0262340. doi: 10.1371/journal.pone.0262340 PONE-D-21-13191 [pii]

Cavalli L, Angehrn L, Schindler C, Orsini N, Grob C, Kaufmann M, et al. Number of comorbidities and their impact on perioperative outcome and costs - a single centre cohort study. *Swiss Med Wkly* 2022;152:w30135. doi: 10.4414/smw.2022.w30135 Swiss Med Wkly. 2022;152:w30135 [pii]

Ghazalbash S, Zargoush M, Mowbray F, Costa A. Impact of multimorbidity and frailty on adverse outcomes among older delayed discharge patients: Implications for healthcare policy. *Health Policy* 2022;126(3):197-206. doi: S0168-8510(22)00004-5 [pii] 10.1016/j.healthpol.2022.01.004

Tseng CL, Hsu NC, Hsieh PI, Lin YF, Chen CY, Wu CY, et al. Integrated approach for multimorbid patients in a hospitalist setting: Survival analysis of a two-year prospective study. *J Formos Med Assoc* 2022;121(2):473-81. doi: S0929-6646(21)00244-8 [pii] 10.1016/j.jfma.2021.05.029

Matesanz-Fernandez M, Seoane-Pillado T, Iniguez-Vazquez I, Suarez-Gil R, Pertega-Diaz S, Casariego-Vales E. Description of multimorbidity clusters of admitted patients in medical departments of a general hospital. *Postgrad Med J* 2022;98(1158):294-99. doi: postgradmedj-2020-139361 [pii]

10.1136/postgradmedj-2020-139361

Zhao D, Li J, Gao T, Sun J, Wang Y, Wang Q, et al. Do older adults with multimorbidity prefer institutional care than those without multimorbidity? The role of functional limitation. *BMC Geriatr* 2022;22(1):126. doi: 10.1186/s12877-022-02812-2 10.1186/s12877-022-02812-2 [pii]

- Westley-Wise V, Lago L, Mullan J, Facci F, Zingel R, Eagar K. Patterns of morbidity and multimorbidity associated with early and late readmissions in an Australian regional health service. *Chronic Illn* 2022;18(1):86-104. doi: 10.1177/1742395319899459
- Ho VP, Bensken WP, Santry HP, Towe CW, Warner DF, Connors AF, Jr., et al. Health status, frailty, and multimorbidity in patients with emergency general surgery conditions. *Surgery* 2022. doi: S0039-6060(22)00135-0 [pii] 10.1016/j.surg.2022.02.011
- Ho VP, Bensken WP, Warner DF, Claridge JA, Santry HP, Robenstine JC, et al. Association of Complex Multimorbidity and Long-term Survival After Emergency General Surgery in Older Patients With Medicare. *JAMA Surg* 2022. doi: 2791575 [pii] 10.1001/jamasurg.2022.0811
- Zhou Z, Shi M, Liu M, et al. Multimorbidity in Hospitalized Patients Admitted to General Practice Departments and Its Implications for the General Practice Healthcare System: A Four-Year Longitudinal Study in China. *Front Public Health* 2021;9:760792. doi: 10.3389/fpubh.2021.760792
- Monacelli F, Signori A, Marengoni A, et al. Delirium and Clusters of Older Patients Affected by Multimorbidity in Acute Hospitals. *J Am Med Dir Assoc* 2021 doi: 10.1016/j.jamda.2021.10.004
- Marengoni A, Tazzeo C, Calderon-Larranaga A, et al. Multimorbidity Patterns and 6-Year Risk of Institutionalization in Older Persons: The Role of Social Formal and Informal Care. *J Am Med Dir Assoc* 2021;22(10):2184-89 e1. doi: 10.1016/j.jamda.2020.12.040
- McPeake J, Quasim T, Henderson P, et al. Multimorbidity and Its Relationship With Long-Term Outcomes After Critical Care Discharge: A Prospective Cohort Study. *Chest* 2021;160(5):1681-92. doi: 10.1016/j.chest.2021.05.069
- Viljanen A, Salminen M, Irjala K, et al. Chronic conditions and multimorbidity associated with institutionalization among Finnish community-dwelling older people: an 18-year population-based follow-up study. *Eur Geriatr Med* 2021;12(6):1275-84. doi: 10.1007/s41999-021-00535-y
- Blum MR, Sallevelt B, Spinewine A, et al. Optimizing Therapy to Prevent Avoidable Hospital Admissions in Multimorbid Older Adults (OPERAM): cluster randomised controlled trial. *BMJ* 2021;374:n1585. doi: 10.1136/bmj.n1585
- Tseng CL, Hsu NC, Hsieh PI, et al. Integrated approach for multimorbid patients in a hospitalist setting: Survival analysis of a two-year prospective study. *J Formos Med Assoc* 2021 doi: 10.1016/j.jfma.2021.05.029
- Corsonello A, Soraci L, Di Rosa M, et al. Prognostic Interplay of Functional Status and Multimorbidity Among Older Patients Discharged From Hospital. *J Am Med Dir Assoc* 2021 doi: 10.1016/j.jamda.2021.07.012
- Tomita A, Leyna GH, Kim HY, et al. Patterns of multimorbidity and their association with hospitalisation: a population-based study of older adults in urban Tanzania. *Age Ageing* 2021;50(4):1349-60. doi: 10.1093/ageing/afab046

Muller M, Huembelin M, Baechli C, et al. Association of in-hospital multimorbidity with healthcare outcomes in Swiss medical inpatients. *Swiss Med Wkly* 2021;151:w20405. doi: 10.4414/smw.2021.20405

Stokes J, Guthrie B, Mercer SW, et al. Multimorbidity combinations, costs of hospital care and potentially preventable emergency admissions in England: A cohort study. *PLoS Med* 2021;18(1):e1003514. doi: 10.1371/journal.pmed.1003514

Tomita A, Leyna GH, Kim HY, et al. Patterns of multimorbidity and their association with hospitalisation: a population-based study of older adults in urban Tanzania. *Age Ageing* 2021 doi: 10.1093/ageing/afab046

Allen A, Frederick L, Hovey SL. Using Palliative Care Nurses in a Supportive Care Program to Reduce Hospital Utilization for Patients With Multiple Chronic Conditions. *J Nurs Care Qual* 2021;36(1):79-83. doi: 10.1097/NCQ.0000000000000482

Lea M, Mowe M, Molden E, et al. Effect of medicines management versus standard care on readmissions in multimorbid patients: a randomised controlled trial. *BMJ Open* 2020;10(12):e041558. doi: 10.1136/bmjopen-2020-041558

Vasan A, Morgan JW, Mitra N, et al. Effects of a standardized community health worker intervention on hospitalization among disadvantaged patients with multiple chronic conditions: A pooled analysis of three clinical trials. *Health Serv Res* 2020;55 Suppl 2:894-901. doi: 10.1111/1475-6773.13321

Lenti MV, Corazza GR. Administrative data for exploring multimorbidity in hospitalised patients. *Intern Emerg Med* 2020;15(7):1161-63. doi: 10.1007/s11739-020-02307-1

Akugizibwe R, Calderon-Larranaga A, Roso-Llorach A, et al. Multimorbidity Patterns and Unplanned Hospitalisation in a Cohort of Older Adults. *J Clin Med* 2020;9(12) doi: 10.3390/jcm9124001

Messi M, Mueller Y, Haller DM, et al. A cross-sectional study of Swiss ambulatory care services use by multimorbid patients in primary care in the light of the Andersen model. *BMC Fam Pract* 2020;21(1):150. doi: 10.1186/s12875-020-01221-x

Tran VT, Diard E, Ravaud P. Priorities to improve the care for chronic conditions and multimorbidity: a survey of patients and stakeholders nested within the ComPaRe e-cohort. *BMJ Qual Saf* 2020 doi: 10.1136/bmjqs-2020-011219

Ward BW, Myrick KL, Cherry DK. Physician Specialty and Office Visits Made by Adults With Diagnosed Multiple Chronic Conditions: United States, 2014-2015. *Public Health Rep* 2020;135(3):372-82. doi: 10.1177/0033354920913005

Vasan A, Morgan JW, Mitra N, et al. Effects of a standardized community health worker intervention on hospitalization among disadvantaged patients with multiple chronic conditions: A pooled analysis of three clinical trials. *Health Serv Res* 2020;55 Suppl 2:894-901. doi: 10.1111/1475-6773.13321

Juul-Larsen HG, Christensen LD, Bandholm T, et al. Patterns of Multimorbidity and Differences in Healthcare Utilization and Complexity Among Acutely Hospitalized Medical Patients (>=65 Years) - A Latent Class Approach. *Clin Epidemiol* 2020;12:245-59. doi: 10.2147/CLEP.S226586

Ha NT, Wright C, Youens D, et al. Effect Modification of Multimorbidity on the Association Between Regularity of General Practitioner Contacts and Potentially Avoidable Hospitalisations. *J Gen Intern Med* 2020;**35**(5):1504-15. doi: 10.1007/s11606-020-05699-0

Zhang L, Ma L, Sun F, et al. A Multicenter Study of Multimorbidity in Older Adult Inpatients in China. *J Nutr Health Aging* 2020;**24**(3):269-76. doi: 10.1007/s12603-020-1311-x

Ahn S, Hussein M, Mahmood A, et al. Emergency department and inpatient utilization among U.S. older adults with multiple chronic conditions: a post-reform update. *BMC Health Serv Res* 2020;**20**(1):77. doi: 10.1186/s12913-020-4902-7

Juul-Larsen HG, Andersen O, Bandholm T, et al. Differences in function and recovery profiles between patterns of multimorbidity among older medical patients the first year after an acute admission-An exploratory latent class analysis. *Arch Gerontol Geriatr* 2020;**86**:103956. doi: 10.1016/j.archger.2019.103956

Robertson L, Ayansina D, Johnston M, et al. Urban-rural and socioeconomic status: Impact on multimorbidity prevalence in hospitalized patients. *J Comorb* 2020;**10**:2235042X19893470. doi: 10.1177/2235042X19893470

Almagro P, Ponce A, Komal S, et al. Multimorbidity gender patterns in hospitalized elderly patients. *PLoS One* 2020;**15**(1):e0227252. doi: 10.1371/journal.pone.0227252

Facchinetti G, D'Angelo D, Piredda M, et al. Continuity of care interventions for preventing hospital readmission of older people with chronic diseases: A meta-analysis. *Int J Nurs Stud* 2020;**101**:103396. doi: 10.1016/j.ijnurstu.2019.103396

Beeler PE, Cheetham M, Held U, et al. Depression is independently associated with increased length of stay and readmissions in multimorbid inpatients. *Eur J Intern Med* 2020;**73**:59-66. doi: 10.1016/j.ejim.2019.11.012

Westley-Wise V, Lago L, Mullan J, et al. Patterns of morbidity and multimorbidity associated with early and late readmissions in an Australian regional health service. *Chronic Illn* 2020:1742395319899459. doi: 10.1177/1742395319899459

Masnoon N, Shakib S, Kalisch Ellett L, et al. Predictors of unplanned hospitalisation in the older population: The role of polypharmacy and other medication and chronic disease-related factors. *Australas J Ageing* 2020 doi: 10.1111/ajag.12769

Aubert CE, Schnipper JL, Fankhauser N, et al. Patterns of multimorbidity associated with 30-day readmission: a multinational study. *BMC Public Health* 2019;**19**(1):738. doi: 10.1186/s12889-019-7066-9

Lee JH, Kim AJ, Kyong TY, et al. Evaluating the Outcome of Multi-Morbid Patients Cared for by Hospitalists: a Report of Integrated Medical Model in Korea. *J Korean Med Sci* 2019;**34**(25):e179. doi: 10.3346/jkms.2019.34.e179

Gaulin M, Simard M, Candas B, et al. Combined impacts of multimorbidity and mental disorders on frequent emergency department visits: a retrospective cohort study in Quebec, Canada. *CMAJ* 2019;**191**(26):E724-E32. doi: 10.1503/cmaj.181712

Lea M, Mowe M, Mathiesen L, et al. Prevalence and risk factors of drug-related hospitalizations in multimorbid patients admitted to an internal medicine ward. *PLoS One* 2019;**14**(7):e0220071. doi: 10.1371/journal.pone.0220071

Lai FTT, Wong SYS, Yip BHK, et al. Multimorbidity in middle age predicts more subsequent hospital admissions than in older age: A nine-year retrospective cohort study of 121,188 discharged in-patients. *Eur J Intern Med* 2019;**61**:103-11. doi: 10.1016/j.ejim.2018.12.001

Nieto-Martin MD, De la Higuera-Vila L, Bernabeu-Wittel M, et al. A multidisciplinary approach for patients with multiple chronic conditions: IMPACTO study. *Med Clin (Barc)* 2019 doi: 10.1016/j.medcli.2019.01.014

Basu J, Hanchate A, Koroukian S. Multiple Chronic Conditions and Disparities in 30-Day Hospital Readmissions Among Nonelderly Adults. *J Ambul Care Manage* 2018;**41**(4):262-73. doi: 10.1097/JAC.0000000000000246

Wu LT, Zhu H, Ghitzza UE. Multicomorbidity of chronic diseases and substance use disorders and their association with hospitalization: Results from electronic health records data. *Drug Alcohol Depend* 2018;**192**:316-23. doi: 10.1016/j.drugalcdep.2018.08.013

Buja A, Rivera M, De Battisti E, et al. Multimorbidity and Hospital Admissions in High-Need, High-Cost Elderly Patients. *J Aging Health* 2018:898264318817091. doi: 10.1177/0898264318817091

Lai FTT, Wong SYS, Yip BHK, et al. Multimorbidity in middle age predicts more subsequent hospital admissions than in older age: A nine-year retrospective cohort study of 121,188 discharged in-patients. *Eur J Intern Med* 2018 doi: 10.1016/j.ejim.2018.12.001

Behm L, Bjorkman E, Ahlstrom G. Mental health and reactions to caregiving among next of kin of older people (65+) with multi-morbidity discharged home after hospitalization. *Scand J Caring Sci* 2018 doi: 10.1111/scs.12592.

Moen K, Ormstad H, Wang-Hansen MS, et al. Physical function of elderly patients with multimorbidity upon acute hospital admission versus 3 weeks post-discharge. *Disabil Rehabil* 2018;**40**(11):1280-87. doi: 10.1080/09638288.2017.1294211.

Teh RO, Menzies OH, Connolly MJ, et al. Patterns of multi-morbidity and prediction of hospitalisation and all-cause mortality in advanced age. *Age Ageing* 2018;**47**(2):261-68. doi: 10.1093/ageing/afx184.

Wang XX, Chen ZB, Chen XJ, et al. Functional status and annual hospitalization in multimorbid and non-multimorbid older adults: a cross-sectional study in Southern China. *Health Qual Life Outcomes* 2018;**16**(1):33. doi: 10.1186/s12955-018-0864-4

Nunes BP, Soares MU, Wachs LS, et al. Hospitalization in older adults: association with multimorbidity, primary health care and private health plan. *Rev Saude Publica*. 2017;**51**:43. doi: 10.1590/S1518-8787.2017051006646.

Park S, Kim B, Kwon E. The Role of Senior Housing in Hospitalizations Among Vulnerable Older Adults With Multiple Chronic Conditions: A Longitudinal Perspective. *Gerontologist*. 2017. doi: 10.1093/geront/gnx046.

Ensrud KE, Lui LY, Langsetmo L, et al. Effects of Mobility and Multimorbidity on Inpatient and Post-Acute Health Care Utilization. *J Gerontol A Biol Sci Med Sci*. 2017. doi: 10.1093/gerona/glx128.

Berry JG, Ash AS, Cohen E, Hasan F, Feudtner C, Hall M. Contributions of Children With

- Multiple Chronic Conditions to Pediatric Hospitalizations in the United States: A Retrospective Cohort Analysis. *Hosp Pediatr*. 2017;**7**(7):365-372. doi: 10.1542/hpeds.2016-0179.
- Powell MP, Yu X, Isehunwa O, Chang CF. National Trends in Hospital Emergency Department Visits among Those with and without Multiple Chronic Conditions, 2007-2012. *Hosp Top*. 2017:1-8. doi: 10.1080/00185868.2017.1349523.
- Dattalo M, DuGoff E, Ronk K, Kennelty K, Gilmore-Bykovskiy A, Kind AJ. Apples and Oranges: Four Definitions of Multiple Chronic Conditions and their Relationship to 30-Day Hospital Readmission. *J Am Geriatr Soc*. 2017;**65**(4):712-720.
- Hijazi HH, Alyahya MS, Hammouri HM, Alshraideh HA. Risk assessment of comorbidities on 30-day avoidable hospital readmissions among internal medicine patients. *J Eval Clin Pract*. 2017;**23**(2):391-401.
- Schamess A, Foraker R, Kretovics M, et al. Reduced emergency room and hospital utilization in persons with multiple chronic conditions and disability receiving home-based primary care. *Disabil Health J*. 2016.
- Prior A, Vestergaard M, Davydow DS, Larsen KK, Ribe AR, Fenger-Gron M. Perceived Stress, Multimorbidity, and Risk for Hospitalizations for Ambulatory Care-sensitive Conditions: A Population-based Cohort Study. *Med Care*. 2016.
- Chung RY, Mercer SW, Yip BH, et al. The association between types of regular primary care and hospitalization among people with and without multimorbidity: A household survey on 25,780 Chinese. *Sci Rep*. 2016;**6**:29758.
- Shakib S, Dundon BK, Maddison J, et al. Effect of a Multidisciplinary Outpatient Model of Care on Health Outcomes in Older Patients with Multimorbidity: A Retrospective Case Control Study. *PLoS One*. 2016;**11**:e0161382.
- Wallace E, McDowell R, Bennett K, Fahey T, Smith SM. Comparison of count-based multimorbidity measures in predicting emergency admission and functional decline in older community-dwelling adults: a prospective cohort study. *BMJ Open*. 2016;**6**:e013089.
- Basu J, Avila R, Ricciardi R. Hospital Readmission Rates in U.S. States: Are Readmissions Higher Where More Patients with Multiple Chronic Conditions Cluster? *Health Serv Res*. 2016;**51**:1135-51.
- Harris LJ, Graetz I, Podila PS, Wan J, Waters TM, Bailey JE. Characteristics of Hospital and Emergency Care Super-utilizers with Multiple Chronic Conditions. *J Emerg Med*. 2016;**50**:e203-14.
- Takahashi PY, Ryu E, Hathcock MA, et al. A novel housing-based socioeconomic measure predicts hospitalisation and multiple chronic conditions in a community population. *J Epidemiol Community Health*. 2016;**70**:286-91.
- Jackson C, Kasper EW, Williams C, DuBard CA. Incremental Benefit of a Home Visit Following Discharge for Patients with Multiple Chronic Conditions Receiving Transitional Care. *Popul Health Manag*. 2016;**19**:163-70.
- Skinner HG, Coffey R, Jones J, Heslin KC, Moy E. The effects of multiple chronic conditions on hospitalization costs and utilization for ambulatory care sensitive conditions in the United States: a nationally representative cross-sectional study. *BMC Health Serv*

Res. 2016;**16**:77.

Gruneir A, Bronskill SE, Maxwell CJ, et al. The association between multimorbidity and hospitalization is modified by individual demographics and physician continuity of care: a retrospective cohort study. *BMC Health Serv Res.* 2016;**16**:154.

Buurman BM, Frenkel WJ, Abu-Hanna A, Parlevliet JL, de Rooij SE: Acute and chronic diseases as part of multimorbidity in acutely hospitalized older patients. *Eur J Intern Med.* 2016;**27**:68-75.

Ruiz M, Bottle A, Long S, Aylin P: Multi-Morbidity in Hospitalised Older Patients: Who Are the Complex Elderly? *PLoS One.* 2015;**10**(12):e0145372.

Ticinesi A, Nouvenne A, Folesani G, Prati B, Morelli I, Guida L *et al*: Multimorbidity in elderly hospitalised patients and risk of *Clostridium difficile* infection: a retrospective study with the Cumulative Illness Rating Scale (CIRS). *BMJ Open.* 2015;**5**(10):e009316.

Bayliss EA, Ellis JL, Shoup JA, Zeng C, McQuillan DB, Steiner JF. Effect of continuity of care on hospital utilization for seniors with multiple medical conditions in an integrated health care system. *Ann Fam Med.* Mar 2015;**13**(2):123-129.

Wang HH, Wang JJ, Lawson KD, et al. Relationships of multimorbidity and income with hospital admissions in 3 health care systems. *Ann Fam Med.* Mar 2015;**13**(2):164-167.

de Souto Barreto P, Lapeyre-Mestre M, Vellas B, Rolland Y. Multimorbidity type, hospitalizations and emergency department visits among nursing home residents: a preliminary study. *J Nutr Health Aging.* Jul 2014;**18**(7):705-709.

Hempstead K, Delia D, Cantor JC, Nguyen T, Brenner J. The fragmentation of hospital use among a cohort of high utilizers: implications for emerging care coordination strategies for patients with multiple chronic conditions. *Med Care.* Mar 2014;**52** Suppl 3:S67-74.

Surate Solaligue DE, Hederman L, Martin CM. What weekday? How acute? An analysis of reported planned and unplanned GP visits by older multi-morbid patients in the Patient Journey Record System database. *J Eval Clin Pract.* May 19 2014.

Diez-Manglano J, de Escalante Yanguela B, Garcia-Arilla Calvo E, Ubis Diez E, Munilla Lopez E, Clerencia Sierra M, Revillo Pinilla P, Omiste Sanvicente T. Differential characteristics in polypathological inpatients in internal medicine departments and acute geriatric units: The PLUPAR study. *Eur J Intern Med.* Dec 2013;**24**(8):767-771.

Steiner CA, Friedman B. Hospital utilization, costs, and mortality for adults with multiple chronic conditions, nationwide inpatient sample, 2009. *Prev Chronic Dis.* 2013;**10**:E62.

Payne RA, Abel GA, Guthrie B, Mercer SW. The effect of physical multimorbidity, mental health conditions and socioeconomic deprivation on unplanned admissions to hospital: a retrospective cohort study. *CMAJ.* Mar 19 2013;**185**(5):E221-228.

Longman JM, M IR, Passey MD, et al. Frequent hospital admission of older people with chronic disease: a cross-sectional survey with telephone follow-up and data linkage. *BMC Health Serv Res.* 2012;**12**:373.

Freund T, Kunz CU, Ose D, Szecsenyi J, Peters-Klimm F. Patterns of multimorbidity in primary care patients at high risk of future hospitalization. *Popul Health Manag.* Apr 2012;**15**(2):119-124.

Condelius, A., A. K. Edberg, et al. "Hospital admissions among people 65+ related to

multimorbidity, municipal and outpatient care." *Archives of Gerontology & Geriatrics* 2008. **46**(1): 41-55.

Fernández Miera, M. F. "[Patients with multimorbidity in the hospital setting.][Spanish]." *Gac Sanit* 2008. **22**: 137-41.

Marengoni A et al. Poor mental and physical health differentially contributes to disability in hospitalized geriatric patients of different ages. *Int J Geriatr Psychiatry*. 2004. **19**(1): p. 27-34.

Beddhu, S., et al., A simple comorbidity scale predicts clinical outcomes and costs in dialysis patients. *Am J Med*, 2000. **108**: p. 609-13.

Beddhu, S., et al., The effects of comorbid conditions on the outcomes of patients undergoing peritoneal dialysis. *American Journal of Medicine.*, 2002. **112**(9): p. 696-701.

Bergeron, E., et al., Comorbidity and age are both independent predictors of length of hospitalization in trauma patients. *Canadian Journal of Surgery*, 2005. **48**(5): p. 361-6.

van den Bos, G.A., The burden of chronic diseases in terms of disability, use of health care and healthy life expectancies. *Eur J Public Health*, 1995. **5**: p. 29-34.

Buntinx, F., et al., Evaluation of Charlson's comorbidity index in elderly living in nursing homes. *Journal of Clinical Epidemiology.*, 2002. **55**(11): p. 1144-7.

Christakis, N.A. and J.J. Escarce, Survival of Medicare patients after enrollment in hospice programs.[see comment]. *New England Journal of Medicine.*, 1996. **335**(3): p. 172-8.

Clough, R.A., et al., The effect of comorbid illness on mortality outcomes in cardiac surgery. *Archives of Surgery.*, 2002. **137**(4): p. 428-32; discussion 432-3.

Ettinger, W.H., et al., Long-term physical functioning in persons with knee osteoarthritis from NHANES. I: Effects of comorbid medical conditions. *Journal of Clinical Epidemiology*, 1994. **47**(7): p. 809-15.

Fan, V.S., et al., Validation of case-mix measures derived from self-reports of diagnoses and health. *J Clin Epidemiol*, 2002. **55**: p. 371-80.

Fillenbaum, G.G., et al., Comorbidity of five chronic health conditions in elderly community residents: determinants and impact on mortality. *Journals of Gerontology Series A-Biological Sciences & Medical Sciences.*, 2000. **55**(2): p. M84-9.

Fried, L.P., et al., Risk factors for 5-year mortality in older adults: the Cardiovascular Health Study.[see comment]. *Jama*, 1998. **279**(8): p. 585-92.

Grau, L. and C. Kovner, Comorbidity, age, and hospital use among elderly Medicare patients. *Journal of Aging & Health.*, 1991. **3**(3): p. 352-67.

Gray, L.K., et al., Heterogeneity in older people: examining physiologic failure, age, and comorbidity. *Journal of the American Geriatrics Society.*, 2002. **50**(12): p. 1955-61.

Greenfield, S., et al., The importance of co-existent disease in the occurrence of postoperative complications and one-year recovery in patients undergoing total hip replacement. *Comorbidity and outcomes after hip replacement. Med Care*, 1993. **31**: p. 141-54.

Holman, C.D., et al., A multipurpose comorbidity scoring system performed better than the Charlson index. *Journal of Clinical Epidemiology*, 2005. **58**(10): p. 1006-14.

Incalzi, R.A., et al., The interaction between age and comorbidity contributes to predicting the mortality of geriatric patients in the acute-care hospital. *J Intern Med*, 1997. **242**: p. 291-8.

Librero, J., S. Peiro, and R. Ordinana, Chronic comorbidity and outcomes of hospital care: length of stay, mortality, and readmission at 30 and 365 days. *J Clin Epidemiol*, 1999. **52**: p. 171-9.

Lyketsos, C.G., et al., Medical comorbidity in psychiatric inpatients: relation to clinical outcomes and hospital length of stay. *Psychosomatics*, 2002. **43**(1): p. 24-30.

Lyketsos, C.G., et al., The General Medical Health Rating: a bedside global rating of medical comorbidity in patients with dementia. *Journal of the American Geriatrics Society*, 1999. **47**(4): p. 487-91.

McGee, D., et al., Patterns of comorbidity and mortality risk in blacks and whites. *Annals of Epidemiology*, 1996. **6**(5): p. 381-5.

McPherson, C.P., K.K. Swenson, and M.W. Lee, The effects of mammographic detection and comorbidity on the survival of older women with breast cancer. *Journal of the American Geriatrics Society*, 2002. **50**(6): p. 1061-8.

Menotti, A., et al., Prevalence of morbidity and multimorbidity in elderly male populations and their impact on 10-year all-cause mortality: The FINE study (Finland, Italy, Netherlands, Elderly). *Journal of Clinical Epidemiology*, 2001. **54**(7): p. 680-6.

Naessens, J.M. and T.R. Huschka, Distinguishing hospital complications of care from pre-existing conditions. *International Journal for Quality in Health Care*, 2004. **16 Suppl 1**: p. i27-35.

Orwelius, L., et al., Role of preexisting disease in patients' perceptions of health-related quality of life after intensive care.[see comment]. *Critical Care Medicine*, 2005. **33**(7): p. 1557-64.

Perkins, A.J., et al., Common comorbidity scales were similar in their ability to predict health care costs and mortality. *J Clin Epidemiol*, 2004. **57**: p. 1040-1048.

Piccirillo, J.F., et al., Prognostic importance of comorbidity in a hospital-based cancer registry. *JAMA*, 2004. **291**(20): p. 2441-7.

Poli, L., et al., Autopsy and multiple pathology in the elderly. *Gerontology*, 1993. **39**(1): p. 55-63.

Pompei, P., M.E. Charlson, and R.G. Douglas, Jr., Clinical assessments as predictors of one year survival after hospitalization: implications for prognostic stratification. *J Clin Epidemiol*, 1988. **41**: p. 275-84.

Poses, R.M., et al., Prediction of survival of critically ill patients by admission comorbidity. *J Clin Epidemiol*, 1996. **49**(7): p. 743-7.

Rochon, P.A., et al., Comorbid illness is associated with survival and length of hospital stay in patients with chronic disability. A prospective comparison of three comorbidity indices. *Med Care*, 1996. **34**(11): p. 1093-101.

Roe, C.J., et al., Comorbidities and prediction of length of hospital stay. *Australian & New Zealand Journal of Medicine*, 1998. **28**(6): p. 811-5.

Turesson, C., et al., Occurrence of extraarticular disease manifestations is associated

with excess mortality in a community based cohort of patients with rheumatoid arthritis. *Journal of Rheumatology.*, 2002. **29**(1): p. 62-7.

Verbrugge, L.M., J.M. Lepkowski, and Y. Imanaka, Comorbidity and its impact on disability. *Milbank Quarterly*, 1989. **67**: p. 450-84.

Wasielewski, R.C., et al., Patient comorbidity: relationship to outcomes of total knee arthroplasty. *Clinical Orthopaedics & Related Research*, 1998(356): p. 85-92.

West, D.W., et al., Comorbidity and breast cancer survival: a comparison between black and white women. *Ann Epidemiol*, 1996. **6**(5): p. 413-9.

Wolff, J.L., B. Starfield, and G. Anderson, Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Archives of Internal Medicine*, 2002. **162**: p. 2269-76.

Williams, A. and M. Botti, Issues concerning the on-going care of patients with comorbidities in acute care and post-discharge in Australia: a literature review. *Journal of Advanced Nursing.*, 2002. **40**(2): p. 131-40.

3.7 RESOURCE UTILISATION

Chen Y, Liu W. Utilization and out-of-pocket expenses of primary care among the multimorbid elderly in China: A two-part model with nationally representative data. *Front Public Health*. 2022;10:1057595.

Goodson JD, Shahbazi S, Song Z. Changes in coverage among non-elderly adults with chronic diseases following Affordable Care Act implementation. *PLoS One*. 2022;17(11):e0278414.

Matthews KS, Rennoldson SC, Fraser SD. Influence of health-system change on treatment burden: a systematic review. *Br J Gen Pract*. 2023;73(726):e59-e66.

Wang YH, Enguidanos S. The Relationship Between Multiple Chronic Conditions and Physician Visits in Advance Care Planning Activities. *Am J Hosp Palliat Care*. 2022:10499091221136854.

Litchfield, I., Kingston, B., Narga, D. and Turner, A. (2022). The move towards integrated care: Lessons learnt from managing patients with multiple morbidities in the UK. *Health Policy (Amsterdam, Netherlands)*, [online] 126(8), pp.777–785. doi:10.1016/j.healthpol.2022.05.010.

Pati, S., Pati, S., Puri, P., Sinha, R. and Panda, M. (2022). Profile of comorbidity and multimorbidity among women attending antenatal clinics: An exploratory cross-sectional study from Odisha, India. *Journal of Family Medicine and Primary Care*, 11(5), p.1980. doi:10.4103/jfmpc.jfmpc_1855_21.

Puri P, Pati S. Exploring the Linkages Between Non-Communicable Disease Multimorbidity, Health Care Utilization and Expenditure Among Aboriginal Older Adult Population in India. *Int J Public Health* 2022;67:1604333. doi: 10.3389/ijph.2022.1604333

1604333 [pii]

Ahn S, Bartmess M, Lindley LC. Multimorbidity and healthcare utilization among Black Americans: A cross-sectional study. *Nurs Open* 2022;9(2):959-65. doi: 10.1002/nop2.1095

Santauegenia SJ, Contel JC, Vela E, et al. Characteristics and Service Utilization by Complex Chronic and Advanced Chronic Patients in Catalonia: A Retrospective Seven-Year Cohort-Based Study of an Implemented Chronic Care Program. *Int J Environ Res Public Health* 2021;18(18) doi: 10.3390/ijerph18189473

Francisco P, Assumpcao D, Bacurau AGM, et al. Multimorbidity and use of health services in the oldest old in Brazil. *Rev Bras Epidemiol* 2021;24(suppl 2):e210014. doi: 10.1590/1980-549720210014.supl.2

Ahn S, Bartmess M, Lindley LC. Multimorbidity and healthcare utilization among Black Americans: A cross-sectional study. *Nurs Open* 2021 doi: 10.1002/nop2.1095

Zhao Y, Zhao S, Zhang L, et al. Impacts of multimorbidity on medication treatment, primary healthcare and hospitalization among middle-aged and older adults in China: evidence from a nationwide longitudinal study. *BMC Public Health* 2021;21(1):1380. doi:

10.1186/s12889-021-11456-7

Hone T, Stokes J, Trajman A, et al. Racial and socioeconomic disparities in multimorbidity and associated healthcare utilisation and outcomes in Brazil: a cross-sectional analysis of three million individuals. *BMC Public Health* 2021;21(1):1287. doi: 10.1186/s12889-021-11328-0

Canca-Sanchez JC, Garcia-Mayor S, Morales-Asencio JM, et al. Predictors of health service use by family caregivers of persons with multimorbidity. *J Clin Nurs* 2021 doi: 10.1111/jocn.15814

Mbuya-Bienge C, Simard M, Gaulin M, et al. Does socio-economic status influence the effect of multimorbidity on the frequent use of ambulatory care services in a universal healthcare system? A population-based cohort study. *BMC Health Serv Res* 2021;21(1):202. doi: 10.1186/s12913-021-06194-w

Fisher KA, Griffith LE, Gruneir A, et al. Effect of socio-demographic and health factors on the association between multimorbidity and acute care service use: population-based survey linked to health administrative data. *BMC Health Serv Res* 2021;21(1):62. doi: 10.1186/s12913-020-06032-5

Fortuna D, Berti E, Moro ML. Multimorbidity epidemiology and health care utilization through combined healthcare administrative databases. *Epidemiol Prev* 2021;45(1-2):62-71. doi: 10.19191/EP21.1-2.P062.040

Stafford M, Deeny SR, Dreyer K, et al. Multiple long-term conditions within households and use of health and social care: a retrospective cohort study. *BJGP Open* 2021;5(2) doi: 10.3399/BJGPO.2020.0134

Zhao Y, Zhang P, Oldenburg B, et al. The impact of mental and physical multimorbidity on healthcare utilization and health spending in China: A nationwide longitudinal population-based study. *Int J Geriatr Psychiatry* 2021;36(4):500-10. doi: 10.1002/gps.5445

Zhao Q, Wang J, Nicholas S, et al. Health-Related Quality of Life and Health Service Use among Multimorbid Middle-Aged and Older-Aged Adults in China: A Cross-Sectional Study in Shandong Province. *Int J Environ Res Public Health* 2020;17(24) doi: 10.3390/ijerph17249261

de Souza ASS, Braga JU. Trends in the use of health services and their relationship with multimorbidity in Brazil, 1998-2013. *BMC Health Serv Res* 2020;20(1):1080. doi: 10.1186/s12913-020-05938-4

Zhao Y, Zhang P, Oldenburg B, et al. The impact of mental and physical multimorbidity on healthcare utilization and health spending in China: A nationwide longitudinal population-based study. *Int J Geriatr Psychiatry* 2020 doi: 10.1002/gps.5445

Stafford M, Deeny S, Dreyer K, et al. Multimorbidity within households and use of health and social care. *BJGP Open* 2020 doi: 10.3399/BJGPO.2020.0134

Briongos-Figuero LS, Cobos-Siles M, Gabella-Martin M, et al. Evaluation and characterization of multimorbidity profiles, resource consumption and healthcare needs in extremely elderly people. *Int J Qual Health Care* 2020;32(4):266-70. doi: 10.1093/intqhc/mzaa022

Aubert CE, Schnipper JL, Roumet M, et al. Best Definitions of Multimorbidity to Identify Patients With High Health Care Resource Utilization. *Mayo Clin Proc Innov Qual Outcomes*

2020;**4**(1):40-49. doi: 10.1016/j.mayocpiqo.2019.09.002

Li C, Zhou R, Yao N, et al. Health Care Utilization and Unmet Needs in Chinese Older Adults With Multimorbidity and Functional Impairment. *J Am Med Dir Assoc* 2020 doi: 10.1016/j.jamda.2020.02.010

Pati S, Swain S, Knottnerus JA, et al. Magnitude and determinants of multimorbidity and health care utilization among patients attending public versus private primary care: a cross-sectional study from Odisha, India. *Int J Equity Health* 2020;**19**(1):57. doi: 10.1186/s12939-020-01170-y

Briongos-Figuero LS, Cobos-Siles M, Gabella-Martin M, et al. Evaluation and characterization of multimorbidity profiles, resource consumption and healthcare needs in extremely elderly people. *Int J Qual Health Care* 2020;**32**(4):266-70. doi: 10.1093/intqhc/mzaa022

Wang Z, Boulanger L, Berger D, et al. Development and internal validation of a multimorbidity index that predicts healthcare utilisation using the Canadian Longitudinal Study on Aging. *BMJ Open* 2020;**10**(4):e033974. doi: 10.1136/bmjopen-2019-033974

Wang C, Kuo HC, Cheng SF, et al. Continuity of care and multiple chronic conditions impact frequent use of outpatient services. *Health Informatics J* 2020;**26**(1):318-27. doi: 10.1177/1460458218824720

Quinaz Romana G, Kislaya I, Cunha Goncalves S, et al. Healthcare use in patients with multimorbidity. *Eur J Public Health* 2020;**30**(1):16-22. doi: 10.1093/eurpub/ckz118

Sum G, Ishida M, Koh GC, et al. Implications of multimorbidity on healthcare utilisation and work productivity by socioeconomic groups: Cross-sectional analyses of Australia and Japan. *PLoS One* 2020;**15**(4):e0232281. doi: 10.1371/journal.pone.0232281

Zhu Y, Edwards D, Mant J, et al. Characteristics, service use and mortality of clusters of multimorbid patients in England: a population-based study. *BMC Med* 2020;**18**(1):78. doi: 10.1186/s12916-020-01543-8

Monterde D, Vela E, Cleries M, et al. Multimorbidity as a predictor of health service utilization in primary care: a registry-based study of the Catalan population. *BMC Fam Pract* 2020;**21**(1):39. doi: 10.1186/s12875-020-01104-1

Perez-Ardanaz B, Morales-Asencio JM, Garcia-Pinero JM, et al. Socioeconomic Status and Health Services Utilization for Children With Complex Chronic Conditions Liable to Receive Nurse-Led Services: A Cross-Sectional Study. *J Nurs Scholarsh* 2019;**51**(5):518-25. doi: 10.1111/jnu.12499

Aubert CE, Fankhauser N, Marques-Vidal P, et al. Multimorbidity and healthcare resource utilization in Switzerland: a multicentre cohort study. *BMC Health Serv Res* 2019;**19**(1):708. doi: 10.1186/s12913-019-4575-2

Sum G, Salisbury C, Koh GC, et al. Implications of multimorbidity patterns on health care utilisation and quality of life in middle-income countries: cross-sectional analysis. *J Glob Health* 2019;**9**(2):020413. doi: 10.7189/jogh.09.020413

Wagner E, Patrick DL, Khandelwal N, et al. The Influence of Multimorbidity on Health Care Utilization at the End of Life for Patients with Chronic Conditions. *J Palliat Med* 2019;**22**(10):1260-65. doi: 10.1089/jpm.2018.0349

Griffith LE, Gruneir A, Fisher K, et al. Insights on multimorbidity and associated health service use and costs from three population-based studies of older adults in Ontario with diabetes, dementia and stroke. *BMC Health Serv Res* 2019;**19**(1):313. doi: 10.1186/s12913-019-4149-3

Kwon I, Shin O, Park S, et al. Multi-Morbid Health Profiles and Specialty Healthcare Service Use: A Moderating Role of Poverty. *Int J Environ Res Public Health* 2019;**16**(11) doi: 10.3390/ijerph16111956

Frolich A, Ghith N, Schiotez M, et al. Multimorbidity, healthcare utilization and socioeconomic status: A register-based study in Denmark. *PLoS One* 2019;**14**(8):e0214183. doi: 10.1371/journal.pone.0214183

Ensrud KE, Lui LY, Langsetmo L, et al. Effects of Mobility and Multimorbidity on Inpatient and Postacute Health Care Utilization. *J Gerontol A Biol Sci Med Sci* 2018;**73**(10):1343-49. doi: 10.1093/gerona/glx128

O'Connor S, Deaton C, Nolan F, et al. Nursing in an age of multimorbidity. *BMC Nurs* 2018;**17**:49. doi: 10.1186/s12912-018-0321-z

Cheung JTK, Yu R, Wu Z, et al. Geriatric syndromes, multimorbidity, and disability overlap and increase healthcare use among older Chinese. *BMC Geriatr* 2018;**18**(1):147. doi: 10.1186/s12877-018-0840-1.

Jankovic J, Mirkovic M, Jovic-Vranes A, et al. Association between non-communicable disease multimorbidity and health care utilization in a middle-income country: population-based study. *Public Health* 2018;**155**:35-42. doi: 10.1016/j.puhe.2017.11.014.

Jankovic J, Siljak S, Marinkovic J, et al. Patterns of Health Care Utilization for Noncommunicable Diseases in a Transitional European Country: Results From the National Health Survey. *Int J Health Serv* 2018:20731418762717. doi: 10.1177/0020731418762717.

Fryer AK, Friedberg MW, Thompson RW, Singer SJ. patient perceptions of integrated care and their relationship to utilization of emergency, inpatient and outpatient services. *Healthc (Amst)*. 2017;**5**(4):183-193.

Wang L, Palmer AJ, Otahal P, Cocker F, Sanderson K. Multimorbidity and Health Care Service Utilization in the Australian Workforce: Findings From the National Health Survey. *J Occup Environ Med*. 2017;**59**(8):795-802. doi: 10.1097/JOM.0000000000001089.

Fryer AK, Friedberg MW, Thompson RW, Singer SJ. patient perceptions of integrated care and their relationship to utilization of emergency, inpatient and outpatient services. *Healthc (Amst)*. 2017.

Ward BW. Barriers to Health Care for Adults With Multiple Chronic Conditions: United States, 2012-2015. *NCHS Data Brief*. **2017**(275):1-8.

Mondor L, Maxwell CJ, Hogan DB, et al. Multimorbidity and healthcare utilization among home care clients with dementia in Ontario, Canada: A retrospective analysis of a population-based cohort. *PLoS Med*. 2017;**14**(3):e1002249.

Schiltz NK, Warner DF, Sun J, et al. Identifying Specific Combinations of Multimorbidity that Contribute to Health Care Resource Utilization: An Analytic Approach. *Med Care*.

2017;**55**(3):276-284.

Hopman P, Heins MJ, Korevaar JC, Rijken M, Schellevis FG. Health care utilization of patients with multiple chronic diseases in the Netherlands: Differences and underlying factors. *Eur J Intern Med.* 2016;**35**:44-50.

van der Zee-Neuen A, Putrik P, Ramiro S, et al. Impact of Chronic Diseases and Multimorbidity on Health and Health Care Costs: The Additional Role of Musculoskeletal Disorders. *Arthritis Care Res (Hoboken).* 2016;**68**(12):1823-1831.

Palladino R, Tayu Lee J, Ashworth M, Triassi M, Millett C. Associations between multimorbidity, healthcare utilisation and health status: evidence from 16 European countries. *Age Ageing.* 2016;**45**:431-5.

Zulman DM, Pal Chee C, Wagner TH, et al. Multimorbidity and healthcare utilisation among high-cost patients in the US Veterans Affairs Health Care System. *BMJ Open.* 2015;**5**(4):e007771.

Hopman P, Heins MJ, Rijken M, Schellevis FG. Health care utilization of patients with multiple chronic diseases in The Netherlands: Differences and underlying factors. *Eur J Intern Med.* Apr 2015;**26**(3):190-196.

Bahler C, Huber CA, Brungger B, Reich O. Multimorbidity, health care utilization and costs in an elderly community-dwelling population: a claims data based observational study. *BMC Health Serv Res.* Jan 22 2015;**15**(1):23.

Surate Solaligue DE, Hederman L, Martin CM. What weekday? How acute? An analysis of reported planned and unplanned GP visits by older multi-morbid patients in the Patient Journey Record System database. *J Eval Clin Pract.* Aug 2014;**20**(4):522-526.

Smits FT, Brouwer HJ, Zwinderman AH, Mohrs J, Schene AH, van Weert HC, Ter Riet G. Why do they keep coming back? Psychosocial etiology of persistence of frequent attendance in primary care: A prospective cohort study. *J Psychosom Res.* Aug 21 2014.

Ranstad K, Midlov P, Halling A. Importance of healthcare utilization and multimorbidity level in choosing a primary care provider in Sweden. *Scand J Prim Health Care.* Jun 2014;**32**(2):99-105.

Foguet-Boreu Q, Violan C, Roso-Llorach A, Rodriguez-Blanco T, Pons-Vigues M, Munoz-Perez MA, Pujol-Ribera E, Valderas JM. Impact of multimorbidity: acute morbidity, area of residency and use of health services across the life span in a region of south Europe. *BMC Fam Pract.* 2014;**15**:55.

van Oostrom SH, Picavet HS, de Bruin SR, Stirbu I, Korevaar JC, Schellevis FG, Baan CA. Multimorbidity of chronic diseases and health care utilization in general practice. *BMC Fam Pract.* 2014;**15**(1):61.

Hauswaldt J, Hummers-Pradier E, Junius-Walker U. Health service use among patients with chronic or multiple illnesses, and frequent attenders: secondary analysis of routine primary care data from 1996 to 2006. *Dtsch Arztebl Int.* Nov 2012;**109**(47):814-820.

van den Bussche, H., et al., Patterns of ambulatory medical care utilization in elderly patients with special reference to chronic diseases and multimorbidity - Results from a claims data based observational study in Germany. *BMC Geriatrics*, 2011. **11**: p. 54.

Beasley, J.W., et al., How many problems do family physicians manage at each encounter? A WReN study. *Ann Fam Med*, 2004. **2**: p. 405-10.

Beddhu, S., et al., The effects of comorbid conditions on the outcomes of patients

- undergoing peritoneal dialysis. *American Journal of Medicine.*, 2002. **112**(9): p. 696-701.
- Blumenthal, D., et al., The duration of ambulatory visits to physicians. *Journal of Family Practice.*, 1999. **48**(4): p. 264-71.
- Buntinx, F., et al., Evaluation of Charlson's comorbidity index in elderly living in nursing homes. *Journal of Clinical Epidemiology.*, 2002. **55**(11): p. 1144-7.
- Elixhauser, A., et al., Comorbidity measures for use with administrative data.[comment]. *Medical Care.*, 1998. **36**(1): p. 8-27.
- Fan, V.S., et al., Using quality of life to predict hospitalization and mortality in patients with obstructive lung diseases. *Chest*, 2002. **122**(2): p. 429-36.
- Flocke, S.A., S.H. Frank, and D.A. Wenger, Addressing multiple problems in the family practice office visit. *J Fam Pract*, 2001. **50**: p. 211-6.
- Fryback, D.G., et al., The Beaver Dam Health Outcomes Study: initial catalog of health-state quality factors. *Med Decis Making.*, 1993. **13**(2): p. 89-102.
- Fuchs, Z., et al., Morbidity, comorbidity, and their association with disability among community-dwelling oldest-old in Israel. *Journals of Gerontology Series A-Biological Sciences & Medical Sciences.*, 1998. **53**(6): p. M447-55.
- Grau, L. and C. Kovner, Comorbidity, age, and hospital use among elderly Medicare patients. *Journal of Aging & Health.*, 1991. **3**(3): p. 352-67.
- Hansagi, H., et al., Frequent use of the hospital emergency department is indicative of high use of other health care services. *Ann Emerg Med*, 2001. **37**: p. 561-7.
- Iron, K.S., D.G. Manuel, and J. Williams, Using a linked data set to determine the factors associated with utilization and costs of family physician services in Ontario: effects of self-reported chronic conditions. p. 124-32, 2003.
- Østbye, T., et al., Is there time for management of patients with chronic diseases in primary care? *Ann Fam Med*, 2005. **3**: p. 209-214.
- Payne, S.M., et al., Utilization of medical services by Veterans Health Study (VHS) respondents. *Journal of Ambulatory Care Management*, 2005. **28**(2): p. 125-40.
- Rapoport, J., et al., Refining the measurement of the economic burden of chronic diseases in Canada. *Chronic Diseases in Canada*, 2004. **25**(1): p. 13-21.
- Schellevis, F.G., et al., Consultation rates and incidence of intercurrent morbidity among patients with chronic disease in general practice. *British Journal of General Practice.*, 1994. **44**(383): p. 259-62.
- Stafford, R.S., et al., Trends in adult visits to primary care physicians in the United States.[see comment]. *Archives of Family Medicine.*, 1999. **8**(1): p. 26-32.
- Stange, K.C., et al., The value of a family physician. *Journal of Family Practice*, 1998. **46**(5): p. 363-8.
- Stange, K.C., et al., Illuminating the 'black box'. A description of 4454 patient visits to 138 family physicians. *Journal of Family Practice*, 1998. **46**(5): p. 377-89.
- Starfield, B., et al., Comorbidity: Implications for the importance of primary care in "case" management. *Ann Fam Med*, 2003. **1**: p. 8-14.
- Starfield, B., et al., Comorbidity and the use of primary care and specialist care in the

elderly. *Ann Fam Med*, 2005. **3**: p. 215-22.

Starfield, B., et al., Ambulatory care groups: a categorization of diagnoses for research and management. *Health Services Research*, 1991. **26**(1): p. 53-74.

Vozechova, S., et al., Trends in primary health care consumption by the elderly. *Acta Medica Austriaca*, 2003. **30**(2): p. 48-50.

Westert, G.P., et al., Patterns of comorbidity and the use of health services in the Dutch population. *European Journal of Public Health*, 2001. **11**(4): p. 365-72.

Wyke, S., et al., Frequent attendance, socioeconomic status and burden of ill health. An investigation in the west of Scotland.[comment]. *European Journal of General Practice*, 2003. **9**(2): p. 48-55.

van den Bos, G.A., The burden of chronic diseases in terms of disability, use of health care and healthy life expectancies. *Eur J Public Health*, 1995. **5**: p. 29-34.

Hoffman, C., D. Rice, and H.Y. Sung, Persons with chronic conditions. Their prevalence and costs. *JAMA*, 1996. **276**(18): p. 1473-1479.

Wolff, J.L., B. Starfield, and G. Anderson, Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Archives of Internal Medicine*, 2002. **162**: p. 2269-76.

Xakellis, G.C., Are patients who use a generalist physician healthier than those who seek specialty care directly? *Family Medicine*, 2005. **37**(10): p. 719-26.

Zailinawati, A.H., et al., Why do patients with chronic illnesses fail to keep their appointments? A telephone interview. *Asia-Pacific Journal of Public Health*, 2006. **18**(1): p. 10-5.

3.8 QUALITY OF LIFE AND FUNCTIONAL LEVEL

Aubert CE, Kabeto M, Kumar N, Wei MY. Multimorbidity and long-term disability and physical functioning decline in middle-aged and older Americans: an observational study. *BMC Geriatr.* 2022;22(1):910.

Botoseneanu A, Elman MR, Allore HG, Dorr DA, Newsom JT, Nagel CL, et al. Depressive Multimorbidity and Trajectories of Functional Status among Older Americans: Differences by Racial/Ethnic Group. *J Am Med Dir Assoc.* 2022.

Cobb S, Najand B, Gravidez T, Navarro B, Herrerramos A, Bazargan M. Number of Chronic Medical Conditions and Quality of Life of Ethnic Minority Older Adults. *Geriatrics (Basel).* 2022;7(5).

Honda Y, Nakamura M, Aoki T, Ojima T. Multimorbidity patterns and the relation to self-rated health among older Japanese people: a nationwide cross-sectional study. *BMJ Open.* 2022;12(9):e063729.

Landré B, Gil-Salcedo A, Jacob L, Schnitzler A, Dugravot A, Sabia S, et al. The role of age, sex, and multimorbidity in 7-year change in prevalence of limitations in adults 60-94 years. *Sci Rep.* 2022;12(1):18270.

Li T, Hu W, Zhou L, Peng L, Cao L, Feng Z, et al. Moderated-mediation analysis of multimorbidity and health-related quality of life among the Chinese elderly: The role of functional status and cognitive function. *Front Psychol.* 2022;13:978488.

Olanrewaju O, Trott M, Smith L, López Sánchez GF, Carmichael C, Oh H, et al. Chronic physical conditions, physical multimorbidity, and quality of life among adults aged ≥ 50 years from six low- and middle-income countries. *Qual Life Res.* 2022.

Pan T, Anindya K, Devlin N, Mercer SW, McPake B, van Heusden A, et al. The impact of depression and physical multimorbidity on health-related quality of life in China: a national longitudinal quantile regression study. *Sci Rep.* 2022;12(1):21620.

Pengpid S, Peltzer K, Anantanasuwong D. Bidirectional association between functional disability and multimorbidity among middle-aged and older adults in Thailand. *Front Public Health.* 2022;10:1055699.

Seong H, Lashley H, Bowers K, Holmes S, Fortinsky RH, Zhu S, et al. Resilience in relation to older adults with multimorbidity: A scoping review. *Geriatr Nurs.* 2022;48:85-93.

Shin Y, Choi EJ, Park B, Lee HA, Lee EK, Park H. Multimorbidity adjusted years lost to disability rates calculated through Monte-Carlo simulation in Korea. *Epidemiol Health.* 2022;44:e2022090.

Shirazi D, Haudenschild C, Lynch DH, Fanous M, Kahkoska AR, Jimenez D, et al. Obesity, multiple chronic conditions, and the relationship with physical function: Data from the national health and aging trends survey. *Arch Gerontol Geriatr.* 2022;107:104913.

Tran TN, Lee S, Oh CM, Cho H. Multimorbidity patterns by health-related quality of life status in older adults: An association rules and network analysis utilizing Korean National Health and Nutrition Examination Survey. *Epidemiol Health.* 2022:e2022113.

Lv, J., Li, R., Yuan, L., Yang, X., Wang, Y., Ye, Z.-W. and Huang, F.-M. (2022). Research on the frailty status and adverse outcomes of elderly patients with multimorbidity. *BMC Geriatrics*, 22(1). doi:10.1186/s12877-022-03194-1.

Han, E.-J., Song, M.K. and Lee, Y. (2022). The 10-year multimorbidity trajectory and mortality risk in older people with long-term care needs. *Archives of Gerontology and Geriatrics*, 103, p.104775. doi:10.1016/j.archger.2022.104775.

Jennings, E.L.M., O'Mahony, D. and Gallagher, P.F. (2021). Medication-related quality of life (MRQoL) in ambulatory older adults with multi-morbidity and polypharmacy. *European Geriatric Medicine*. doi:10.1007/s41999-021-00573-6.

O'Loughlin, R., Hiscock, H., Pan, T., Devlin, N. and Dalziel, K. (2022). The relationship between physical and mental health multimorbidity and children's health-related quality of life. *Quality of Life Research*. doi:10.1007/s11136-022-03095-1.

Chamberlain, A.M., St Sauver, J.L., Boyd, C.M., Finney Rutten, L.J., Fan, C., Jacobson, D.J. and Rocca, W.A. (2022). Multi-morbidity and patient-reported functional limitations: a population-based cohort study. *Journal of Multimorbidity and Comorbidity*, 12, p.263355652211054. doi:10.1177/26335565221105448.

Paukkonen, L., Oikarinen, A., Kähkönen, O. and Kaakinen, P. (2022). Patient activation for self-management among adult patients with multimorbidity in primary healthcare settings. *Health Science Reports*, [online] 5(4), p.e735. doi:10.1002/hsr2.735.

Van Wilder, L., Devleeschauwer, B., Clays, E., Pype, P., Vandepitte, S. and De Smedt, D. (2022). Polypharmacy and Health-Related Quality of Life/Psychological Distress Among Patients With Chronic Disease. *Preventing Chronic Disease*, 19. doi:10.5888/pcd19.220062.

Wu, Y.-T., Kingston, A., Houlden, V. and Franklin, R. (2022). The longitudinal associations between proximity to local grocery shops and functional ability in the very old living with and without multimorbidity: Results from the Newcastle 85+ study. *Archives of Gerontology and Geriatrics*, 101, p.104703. doi:10.1016/j.archger.2022.104703.

Van Wilder L, Devleeschauwer B, Clays E, De Buyser S, Van der Heyden J, Charafeddine R, et al. The impact of multimorbidity patterns on health-related quality of life in the general population: results of the Belgian Health Interview Survey. *Qual Life Res* 2022;31(2):551-65. doi: 10.1007/s11136-021-02951-w

10.1007/s11136-021-02951-w [pii]

Alfano P, Cuttitta G, Audino P, Fazio G, La Grutta S, Marcantonio S, et al. Relationship between Multimorbidity and Quality of Life in a Primary Care Setting: The Mediating Role of Dyspnea. *J Clin Med* 2022;11(3). doi: jcm11030656 [pii]10.3390/jcm11030656

O'Loughlin R, Hiscock H, Pan T, Devlin N, Dalziel K. The relationship between physical and mental health multimorbidity and children's health-related quality of life. *Qual Life Res* 2022. doi: 10.1007/s11136-022-03095-1 10.1007/s11136-022-03095-1 [pii]

Hussain MH, Jilanee DA, Aziz S, et al. Predictors of Quality of Life Among People Living With Multimorbidity in Karachi, Pakistan: A Cross-Sectional Study. *Cureus* 2021;13(10):e18803. doi: 10.7759/cureus.18803

Gontijo Guerra S, Berbiche D, Vasiliadis HM. Changes in instrumental activities of daily living functioning associated with concurrent common mental disorders and physical multimorbidity in older adults. *Disabil Rehabil* 2021;43(25):3663-71.

doi:10.1080/09638288.2020.1745303

Lang C, Roessler M, Schmitt J, et al. Health-related quality of life in elderly, multimorbid individuals with and without depression and/or mild cognitive impairment using a telemonitoring application. *Qual Life Res* 2021;30(10):2829-41. doi: 10.1007/s11136-021-02848-8

Ferro MA, Qureshi SA, Shanahan L, et al. Health-related quality of life in children with and without physical-mental multimorbidity. *Qual Life Res* 2021;30(12):3449-61. doi: 10.1007/s11136-021-02963-6

Yen KH, Hsu CC, Yu PC, et al. Determinants of improved quality of life among older adults with multimorbidity receiving integrated outpatient services: A hospital-based retrospective cohort study. *Arch Gerontol Geriatr* 2021;97:104475. doi: 10.1016/j.archger.2021.104475

Aoki T, Fukuhara S, Fujinuma Y, et al. Effect of multimorbidity patterns on the decline in health-related quality of life: a nationwide prospective cohort study in Japan. *BMJ Open* 2021;11(6):e047812. doi: 10.1136/bmjopen-2020-047812

Bennett HQ, Kingston A, Lourida I, et al. The contribution of multiple long-term conditions to widening inequalities in disability-free life expectancy over two decades: Longitudinal analysis of two cohorts using the Cognitive Function and Ageing Studies. *EClinicalMedicine* 2021;39:101041. doi: 10.1016/j.eclinm.2021.101041

Ahn YE, Koh CK. Effects of Living Alone and Sedentary Behavior on Quality of Life in Patients With Multimorbidities: A Secondary Analysis of Cross-Sectional Survey Data Obtained From the National Community Database. *J Nurs Res* 2021;29(5):e173. doi: 10.1097/JNR.0000000000000448

Li HW, Lee WJ, Lin MH, et al. Quality of Life among Community-Dwelling Middle-Aged and Older Adults: Function Matters More than Multimorbidity. *Arch Gerontol Geriatr* 2021;95:104423. doi: 10.1016/j.archger.2021.104423

Abdulazeez ZU, Grema BA, Michael GC, et al. Multimorbidity and Functional Status of the Elderly in a Primary Care Setting of Northern Nigeria: A Cross-Sectional Study. *West Afr J Med* 2021;38(7):620-28.

Bishop NJ, Ullevig SL, Wang K, et al. Dietary quality modifies the association between multimorbidity and change in mobility limitations among older Americans. *Prev Med* 2021;153:106721. doi: 10.1016/j.ypmed.2021.106721

Van Wilder L, Devleeschauwer B, Clays E, et al. The impact of multimorbidity patterns on health-related quality of life in the general population: results of the Belgian Health Interview Survey. *Qual Life Res* 2021 doi: 10.1007/s11136-021-02951-w

Ferro MA, Qureshi SA, Shanahan L, et al. Health-related quality of life in children with and without physical-mental multimorbidity. *Qual Life Res* 2021 doi: 10.1007/s11136-021-02963-6

Qiao Y, Liu S, Li G, et al. Longitudinal Follow-Up Studies on the Bidirectional Association between ADL/IADL Disability and Multimorbidity: Results from Two National Sample Cohorts of Middle-Aged and Elderly Adults. *Gerontology* 2021;67(5):563-71. doi: 10.1159/000513930

Klinedinst TC, Terhorst L, Rodakowski J. Multimorbidity groups based on numbers of chronic conditions are associated with daily activity. *Chronic Illn*

2021:17423953211023964. doi: 10.1177/17423953211023964

Lee E, Cha S, Kim GM. Factors Affecting Health-Related Quality of Life in Multimorbidity. *Healthcare (Basel)* 2021;9(3) doi: 10.3390/healthcare9030334

Li HW, Lee WJ, Lin MH, et al. Quality of Life among Community-Dwelling Middle-Aged and Older Adults: Function Matters More than Multimorbidity. *Arch Gerontol Geriatr* 2021;95:104423. doi: 10.1016/j.archger.2021.104423

Xiong S, Liu S, Qiao Y, et al. Estimation of losses of quality-adjusted life expectancy attributed to the combination of cognitive impairment and multimorbidity among Chinese adults aged 45 years and older. *BMC Public Health* 2021;21(1):24. doi: 10.1186/s12889-020-10069-w

Wang Z, Peng W, Li M, et al. Association between multimorbidity patterns and disability among older people covered by long-term care insurance in Shanghai, China. *BMC Public Health* 2021;21(1):418. doi: 10.1186/s12889-021-10463-y

Pengpid S, Peltzer K. Chronic conditions, multimorbidity, and quality of life among patients attending monk healers and primary care clinics in Thailand. *Health Qual Life Outcomes* 2021;19(1):61. doi: 10.1186/s12955-021-01707-x

Gonzalez-Gonzalez AI, Meid AD, Dinh TS, et al. A prognostic model predicted deterioration in health-related quality of life in older patients with multimorbidity and polypharmacy. *J Clin Epidemiol* 2021;130:1-12. doi: 10.1016/j.jclinepi.2020.10.006

Jiao D, Watanabe K, Sawada Y, et al. Multimorbidity and functional limitation: the role of social relationships. *Arch Gerontol Geriatr* 2021;92:104249. doi: 10.1016/j.archger.2020.104249

Gonzalez-Gonzalez AI, Meid AD, Dinh TS, et al. A prognostic model predicted deterioration in health-related quality of life in older patients with multimorbidity and polypharmacy. *J Clin Epidemiol* 2021;130:1-12. doi: 10.1016/j.jclinepi.2020.10.006

Makovski TT, Le Coroller G, Putrik P, et al. Role of clinical, functional and social factors in the association between multimorbidity and quality of life: Findings from the Survey of Health, Ageing and Retirement in Europe (SHARE). *PLoS One* 2020;15(10):e0240024. doi: 10.1371/journal.pone.0240024

Kang E, Kim S, Rhee YE, et al. Self-management strategies and comorbidities in chronic disease patients: associations with quality of life and depression. *Psychol Health Med* 2020:1-13. doi: 10.1080/13548506.2020.183858

Jiao D, Watanabe K, Sawada Y, et al. Multimorbidity and functional limitation: the role of social relationships. *Arch Gerontol Geriatr* 2021;92:104249. doi: 10.1016/j.archger.2020.104249

Li C, Zhou R, Yao N, et al. Health Care Utilization and Unmet Needs in Chinese Older Adults With Multimorbidity and Functional Impairment. *J Am Med Dir Assoc* 2020;21(6):806-10. doi: 10.1016/j.jamda.2020.02.010

Peng X, Bao X, Xie Y, et al. The mediating effect of pain on the association between multimorbidity and disability and impaired physical performance among community-dwelling older adults in southern China. *Aging Clin Exp Res* 2020;32(7):1327-34. doi: 10.1007/s40520-019-01324-1

Lee HJ, Yun J. Health-related quality of life in South Korean community-dwelling older adults with multimorbidity: a convergent parallel mixed-methods approach. *Qual Life Res* 2020;**29**(3):721-32. doi: 10.1007/s11136-019-02360-0

Machon M, Mateo-Abad M, Clerencia-Sierra M, et al. Multimorbidity and functional status in older people: a cluster analysis. *Eur Geriatr Med* 2020;**11**(2):321-32. doi: 10.1007/s41999-020-00291-5

Clynes MA, Bevilacqua G, Jameson KA, et al. Does self-report of multimorbidity in later life predict impaired physical functioning, and might this be useful in clinical practice? *Aging Clin Exp Res* 2020 doi: 10.1007/s40520-020-01500-8

Cheng C, Yang CY, Inder K, et al. Illness Perceptions, Coping Strategies, and Quality of Life in People With Multiple Chronic Conditions. *J Nurs Scholarsh* 2020;**52**(2):145-54. doi: 10.1111/jnu.12540

Storeng SH, Vinjerui KH, Sund ER, et al. Associations between complex multimorbidity, activities of daily living and mortality among older Norwegians. A prospective cohort study: the HUNT Study, Norway. *BMC Geriatr* 2020;**20**(1):21. doi: 10.1186/s12877-020-1425-3

Zheng DD, McCollister KE, Christ SL, et al. Chronic condition patterns in the US population and their association with health related quality of life. *Prev Med* 2020;**136**:106102. doi: 10.1016/j.ypmed.2020.106102

Scharf AC, Gronewold J, Dahlmann C, et al. Clinical and functional patient characteristics predict medical needs in older patients at risk of functional decline. *BMC Geriatr* 2020;**20**(1):75. doi: 10.1186/s12877-020-1443-1

Mueller-Schotte S, Zuithoff NPA, Van der Schouw YT, et al. Trends in Risk of Limitations in Instrumental Activities of Daily Living Over Age in Older Persons With and Without Multiple Chronic Conditions. *J Gerontol A Biol Sci Med Sci* 2020;**75**(1):197-203. doi: 10.1093/gerona/glz049

Pivetta NRS, Marincolo JCS, Neri AL, et al. Multimorbidity, frailty and functional disability in octogenarians: A structural equation analysis of relationship. *Arch Gerontol Geriatr* 2020;**86**:103931. doi: 10.1016/j.archger.2019.103931

Raina P, Gilsing A, Mayhew AJ, et al. Individual and population level impact of chronic conditions on functional disability in older adults. *PLoS One* 2020;**15**(2):e0229160. doi: 10.1371/journal.pone.0229160

Sirois C, Lunghi C, Berthelot W, et al. Benefits, risks and impacts on quality of life of medications used in multimorbid older adults: a Delphi study. *Int J Clin Pharm* 2020;**42**(1):40-50. doi: 10.1007/s11096-019-00935-y

Gontijo Guerra S, Berbiche D, Vasiliadis HM. Changes in instrumental activities of daily living functioning associated with concurrent common mental disorders and physical multimorbidity in older adults. *Disabil Rehabil* 2020:1-9. doi: 10.1080/09638288.2020.1745303

Gonzalez-Chica DA, Hoon E, Stocks N. Multimorbidity, health-related quality of life and health service use among individuals with mental health problems: Urban-rural differences in South Australia. *Aust J Rural Health* **10**(5):256-61 2020;**28**(2):110-19. doi:

10.1111/ajr.12621

Schuttner L, Reddy A, Rosland AM, et al. Association of the Implementation of the Patient-Centered Medical Home with Quality of Life in Patients with Multimorbidity. *J Gen Intern Med* 2020;**35**(1):119-25. doi: 10.1007/s11606-019-05429-1

Chamberlain AM, Rutten LJJ, Jacobson DJ, et al. Multimorbidity, functional limitations, and outcomes: Interactions in a population-based cohort of older adults. *J Comorb* 2019;**9**:2235042X19873486. doi: 10.1177/2235042X19873486

Bowling CB, Deng L, Sakhuja S, et al. Prevalence of Activity Limitations and Association with Multimorbidity Among US Adults 50 to 64 Years Old. *J Gen Intern Med* 2019;**34**(11):2390-96. doi: 10.1007/s11606-019-05244-8

Peng X, Bao X, Xie Y, et al. The mediating effect of pain on the association between multimorbidity and disability and impaired physical performance among community-dwelling older adults in southern China. *Aging Clin Exp Res* 2019 doi: 10.1007/s40520-019-01324-1

Wong ELY, Xu RH, Cheung AWL. Measuring the impact of chronic conditions and associated multimorbidity on health-related quality of life in the general population in Hong Kong SAR, China: A cross-sectional study. *PLoS One* 2019;**14**(11):e0224970. doi: 10.1371/journal.pone.0224970

Yu T, Enkh-Amgalan N, Zorigt G, et al. Gender differences and burden of chronic conditions: impact on quality of life among the elderly in Taiwan. *Aging Clin Exp Res* 2019;**31**(11):1625-33. doi: 10.1007/s40520-018-1099-2

She R, Yan Z, Jiang H, et al. Multimorbidity and Health-Related Quality of Life in Old Age: Role of Functional Dependence and Depressive Symptoms. *J Am Med Dir Assoc* 2019;**20**(9):1143-49. doi: 10.1016/j.jamda.2019.02.024

Suriyawongpaisal P, Aekplakorn W, Leerapan B, et al. Assessing system-based trainings for primary care teams and quality-of-life of patients with multimorbidity in Thailand: patient and provider surveys. *BMC Fam Pract* 2019;**20**(1):85. doi: 10.1186/s12875-019-0951-6

Bao XY, Xie YX, Zhang XX, et al. The association between multimorbidity and health-related quality of life: a cross-sectional survey among community middle-aged and elderly residents in southern China. *Health Qual Life Outcomes* 2019;**17**(1):107. doi: 10.1186/s12955-019-1175-0

Pati S, Swain S, Knottnerus JA, et al. Health related quality of life in multimorbidity: a primary-care based study from Odisha, India. *Health Qual Life Outcomes* 2019;**17**(1):116. doi: 10.1186/s12955-019-1180-3

Klompstra L, Ekdahl AW, Krevers B, et al. Factors related to health-related quality of life in older people with multimorbidity and high health care consumption over a two-year period. *BMC Geriatr* 2019;**19**(1):187. doi: 10.1186/s12877-019-1194-z

Ishizaki T, Kobayashi E, Fukaya T, et al. Association of physical performance and self-rated health with multimorbidity among older adults: Results from a nationwide survey in Japan. *Arch Gerontol Geriatr* 2019;**84**:103904. doi: 10.1016/j.archger.2019.103904

Wang C, Pu R, Li Z, et al. Subjective health and quality of life among elderly people living with chronic multimorbidity and difficulty in activities of daily living in rural South Africa. *Clinical interventions in aging* 2019;**14**:1285-96. doi: 10.2147/CIA.S205734

Bowling CB, Deng L, Sakhuja S, et al. Prevalence of Activity Limitations and Association with Multimorbidity Among US Adults 50 to 64 Years Old. *J Gen Intern Med* 2019 doi: 10.1007/s11606-019-05244-8

Milla-Perseguer M, Guadalajara-Olmeda N, Vivas-Consuelo D, et al. Measurement of health-related quality by multimorbidity groups in primary health care. *Health Qual Life Outcomes* 2019;**17**(1):8. doi: 10.1186/s12955-018-1063-z

Peters M, Potter CM, Kelly L, et al. Self-efficacy and health-related quality of life: a cross-sectional study of primary care patients with multi-morbidity. *Health Qual Life Outcomes* 2019;**17**(1):37. doi: 10.1186/s12955-019-1103-3

St John PD, Tyas SL, Menec V, et al. Multimorbidity predicts functional decline in community-dwelling older adults: Prospective cohort study. *Can Fam Physician* 2019;**65**(2):e56-e63.

Mueller-Schotte S, Zuithoff NPA, van der Schouw YT, et al. Trends in risk of limitations in instrumental activities of daily living over age in older persons with and without multiple chronic conditions. *J Gerontol A Biol Sci Med Sci* 2019 doi: 10.1093/gerona/glz049

Reinke LF, Vig EK, Tartaglione EV, et al. Symptom Burden and Palliative Care Needs Among High-Risk Veterans With Multimorbidity. *J Pain Symptom Manage* 2019;**57**(5):880-89. doi: 10.1016/j.jpainsymman.2019.02.011

Cook R, Lamont T, Taft R, et al. Patient centred care for multimorbidity improves patient experience, but quality of life is unchanged. *BMJ* 2019;**364**:k4439. doi: 10.1136/bmj.k4439

She R, Yan Z, Jiang H, et al. Multimorbidity and Health-Related Quality of Life in Old Age: Role of Functional Dependence and Depressive Symptoms. *J Am Med Dir Assoc* 2019 doi: 10.1016/j.jamda.2019.02.024

Tyack Z, Kuys S, Cornwell P, et al. Health-related quality of life of people with multimorbidity at a community-based, interprofessional student-assisted clinic: Implications for assessment and intervention. *Chronic Illn* 2018;**14**(3):169-81. doi: 10.1177/1742395317724849

Valdivieso B, Garcia-Sempere A, Sanfelix-Gimeno G, et al. The effect of telehealth, telephone support or usual care on quality of life, mortality and healthcare utilization in elderly high-risk patients with multiple chronic conditions. A prospective study. *Med Clin (Barc)* 2018;**151**(8):308-14. doi: 10.1016/j.medcli.2018.03.013

Huang W, Rose AJ, Bayliss E, et al. Adapting summary scores for the PROMIS-29 v2.0 for use among older adults with multiple chronic conditions. *Qual Life Res* 2019;**28**(1):199-210. doi: 10.1007/s11136-018-1988-z

Park B, Ock M, Lee HA, et al. Multimorbidity and health-related quality of life in Koreans aged 50 or older using KNHANES 2013-2014. *Health Qual Life Outcomes* 2018;**16**(1):186. doi: 10.1186/s12955-018-1016-6

Amaral TLM, Amaral CA, Lima NS, et al. Multimorbidity, depression and quality of life

among elderly people assisted in the Family Health Strategy in Senador Guimard, Acre, Brazil. *Cien Saude Colet* 2018;**23**(9):3077-84. doi: 10.1590/1413-81232018239.22532016

Rivera-Almaraz A, Manrique-Espinoza B, Avila-Funes JA, et al. Disability, quality of life and all-cause mortality in older Mexican adults: association with multimorbidity and frailty. *BMC Geriatr* 2018;**18**(1):236. doi: 10.1186/s12877-018-0928-7

Wei MY, Mukamal KJ. Multimorbidity and Mental Health-Related Quality of Life and Risk of Completed Suicide. *J Am Geriatr Soc* 2018 doi: 10.1111/jgs.15678

Ge L, Ong R, Yap CW, et al. Effects of chronic diseases on health-related quality of life and self-rated health among three adult age groups. *Nurs Health Sci* 2018 doi: 10.1111/nhs.12585

Rose AJ, Bayliss E, Huang W, et al. Evaluating the PROMIS-29 v2.0 for use among older adults with multiple chronic conditions. *Qual Life Res* 2018;**27**(11):2935-44. doi: 10.1007/s11136-018-1958-5.

Martin Lesende I, Mendibil Crespo LI, Castano Manzanares S, et al. Functional decline and associated factors in patients with multimorbidity at 8 months of follow-up in primary care: the functionality in pluripathological patients (FUNCIPLUR) longitudinal descriptive study. *BMJ Open* 2018;**8**(7):e022377. doi: 10.1136/bmjopen-2018-022377.

Ge L, Yap CW, Heng BH. Sex differences in associations between multimorbidity and physical function domains among community-dwelling adults in Singapore. *PLoS One* 2018;**13**(5):e0197443. doi: 10.1371/journal.pone.0197443.

Quinones AR, Markwardt S, Thielke S, et al. Prospective Disability in Different Combinations of Somatic and Mental Multimorbidity. *J Gerontol A Biol Sci Med Sci* 2018;**73**(2):204-10. doi: 10.1093/gerona/glx100.

Clay OJ, Perkins M, Wallace G, et al. Associations of Multimorbid Medical Conditions and Health-Related Quality of Life Among Older African American Men. *J Gerontol B Psychol Sci Soc Sci* 2018;**73**(2):258-66. doi: 10.1093/geronb/gbx090.

Ortiz PJ, Tello T, Aliaga EG, et al. Effect of multimorbidity on gait speed in well-functioning older people: A population-based study in Peru. *Geriatr Gerontol Int* 2018;**18**(2):293-300. doi: 10.1111/ggi.13182.

Gu J, Chao J, Chen W, et al. Multimorbidity and health-related quality of life among the community-dwelling elderly: A longitudinal study. *Arch Gerontol Geriatr* 2018;**74**:133-40. doi: 10.1016/j.archger.2017.10.019.

Wei MY, Mukamal KJ. Multimorbidity, Mortality, and Long-Term Physical Functioning in 3 Prospective Cohorts of Community-Dwelling Adults. *Am J Epidemiol* 2018;**187**(1):103-12. doi: 10.1093/aje/kwx198.

Botes R, Vermeulen KM, Correia J, et al. Relative contribution of various chronic diseases and multi-morbidity to potential disability among Dutch elderly. *BMC Health Serv Res* 2018;**18**(1):24. doi: 10.1186/s12913-017-2820-0.

Kaneva M, Gerry CJ, Baidin V. The effect of chronic conditions and multi-morbidity on self-assessed health in Russia. *Scand J Public Health* 2018:1403494817746283. doi: 10.1177/1403494817746283.

- Renne I, Gobbens RJ. Effects of frailty and chronic diseases on quality of life in Dutch community-dwelling older adults: a cross-sectional study. *Clinical interventions in aging* 2018;**13**:325-34. doi: 10.2147/CIA.S156116.
- Wei MY, Kabeto MU, Galecki AT, et al. Physical Functioning Decline and Mortality in Older Adults with Multimorbidity: Joint Modeling of Longitudinal and Survival Data. *J Gerontol A Biol Sci Med Sci* 2018 doi: 10.1093/gerona/gly038.
- Portz JD, Kutner JS, Blatchford PJ, Ritchie CS. High Symptom Burden and Low Functional Status in the Setting of Multimorbidity. *J Am Geriatr Soc.* 2017;**65**(10):2285-2289.
- Quah JHM, Wang P, Ng RRG, Luo N, Tan NC. Health-related quality of life of older Asian patients with multimorbidity in primary care in a developed nation. *Geriatr Gerontol Int.* 2017;**17**(10):1429-1437.
- Vancampfort D, Stubbs B, Koyanagi A. Physical chronic conditions, multimorbidity and sedentary behavior amongst middle-aged and older adults in six low- and middle-income countries. *Int J Behav Nutr Phys Act.* 2017;**14**(1):147.
- McAvay G, Allore HG, Cohen AB, Gnjdic D, Murphy TE, Tinetti ME. Guideline-Recommended Medications and Physical Function in Older Adults with Multiple Chronic Conditions. *J Am Geriatr Soc.* 2017;**65**(12):2619-2626.
- N'Goran AA, Deruaz-Luyet A, Haller DM, et al. Comparing the self-perceived quality of life of multimorbid patients and the general population using the EQ-5D-3L. *PLoS One.* 2017;**12**(12):e0188499.
- Gonzalez-Chica DA, Hill CL, Gill TK, Hay P, Haag D, Stocks N. Individual diseases or clustering of health conditions? Association between multiple chronic diseases and health-related quality of life in adults. *Health Qual Life Outcomes.* 2017;**15**(1):244.
- Gu J, Chao J, Chen W, et al. Multimorbidity and health-related quality of life among the community-dwelling elderly: A longitudinal study. *Arch Gerontol Geriatr.* 2018;**74**:133-140.
- Rizzuto D, Melis RJF, Angleman S, Qiu C, Marengoni A. Effect of Chronic Diseases and Multimorbidity on Survival and Functioning in Elderly Adults. *J Am Geriatr Soc.* 2017;**65**(5):1056-1060. doi: 10.1111/jgs.14868.
- Clay OJ, Perkins M, Wallace G, Crowe M, Sawyer P, Brown CJ. Associations of Multimorbid Medical Conditions and Health-Related Quality of Life Among Older African American Men. *J Gerontol B Psychol Sci Soc Sci.* 2017. doi: 10.1093/geronb/gbx090.
- Taype-Rondan A, Abbs ES, Lazo-Porrás M, et al. Association between chronic conditions and health-related quality of life: differences by level of urbanization in Peru. *Qual Life Res.* 2017. doi: 10.1007/s11136-017-1649-7.
- Portz JD, Kutner JS, Blatchford PJ, Ritchie CS. High Symptom Burden and Low Functional Status in the Setting of Multimorbidity. *J Am Geriatr Soc.* 2017. doi: 10.1111/jgs.15045.
- Waterhouse P, van der Wielen N, Banda PC, Channon AA. The impact of multi-morbidity on disability among older adults in South Africa: do hypertension and socio-demographic characteristics matter? *Int J Equity Health.* 2017;**16**(1):62.
- Muller F, Hagedoorn M, Tuinman MA. Chronic multimorbidity impairs role functioning in middle-aged and older individuals mostly when non-partnered or living alone. *PLoS One.*

2017;**12**(2):e0170525.

Rizzuto D, Melis RJF, Angleman S, Qiu C, Marengoni A. Effect of Chronic Diseases and Multimorbidity on Survival and Functioning in Elderly Adults. *J Am Geriatr Soc*. 2017;**65**(5):1056-1060.

Wang L, Palmer AJ, Cocker F, Sanderson K. Multimorbidity and health-related quality of life (HRQoL) in a nationally representative population sample: implications of count versus cluster method for defining multimorbidity on HRQoL. *Health Qual Life Outcomes*. 2017;**15**(1):7.

Wang XX, Lin WQ, Chen XJ, et al. Multimorbidity associated with functional independence among community-dwelling older people: a cross-sectional study in Southern China. *Health Qual Life Outcomes*. 2017;**15**(1):73.

Tyack Z, Frakes KA, Barnett A, Cornwell P, Kuys S, McPhail S. Predictors of health-related quality of life in people with a complex chronic disease including multimorbidity: a longitudinal cohort study. *Qual Life Res*. 2016;**25**(10):2579-2592.

Mondor L, Maxwell CJ, Bronskill SE, Gruneir A, Wodchis WP. The relative impact of chronic conditions and multimorbidity on health-related quality of life in Ontario long-stay home care clients. *Qual Life Res*. 2016;**25**(10):2619-2632.

Su P, Ding H, Zhang W, et al. The association of multimorbidity and disability in a community-based sample of elderly aged 80 or older in Shanghai, China. *BMC Geriatr*. 2016;**16**(1):178.

Prazeres F, Santiago L. Relationship between health-related quality of life, perceived family support and unmet health needs in adult patients with multimorbidity attending primary care in Portugal: a multicentre cross-sectional study. *Health Qual Life Outcomes*. 2016;**14**(1):156.

Jindai K, Nielson CM, Vorderstrasse BA, Quinones AR. Multimorbidity and Functional Limitations Among Adults 65 or Older, NHANES 2005-2012. *Prev Chronic Dis*. 2016;**13**:E151.

Walker V, Perret-Guillaume C, Kesse-Guyot E, et al. Effect of Multimorbidity on Health-Related Quality of Life in Adults Aged 55 Years or Older: Results from the SU.VI.MAX 2 Cohort. *PLoS One*. 2016;**11**(12):e0169282.

Dhalwani NN, Zaccardi F, O'Donovan G, et al. Association Between Lifestyle Factors and the Incidence of Multimorbidity in an Older English Population. *J Gerontol A Biol Sci Med Sci*. 2016.

Williams JS, Egede LE. The Association Between Multimorbidity and Quality of Life, Health Status and Functional Disability. *Am J Med Sci*. 2016;**352**:45-52.

Wei MY, Kawachi I, Okereke OI, Mukamal KJ. Diverse Cumulative Impact of Chronic Diseases on Physical Health-Related Quality of Life: Implications for a Measure of Multimorbidity. *Am J Epidemiol*. 2016;**184**:357-65.

Quah JH, Wang P, Ng RR, Luo N, Tan NC. Health-related quality of life of older Asian patients with multimorbidity in primary care in a developed nation. *Geriatr Gerontol Int*. 2016.

Tyack Z, Frakes KA, Barnett A, Cornwell P, Kuys S, McPhail S. Predictors of health-related quality of life in people with a complex chronic disease including multimorbidity: a

longitudinal cohort study. *Qual Life Res.* 2016.

Mondor L, Maxwell CJ, Bronskill SE, Gruneir A, Wodchis WP. The relative impact of chronic conditions and multimorbidity on health-related quality of life in Ontario long-stay home care clients. *Qual Life Res.* 2016.

Ramond-Roquin A, Haggerty J, Lambert M, Almirall J, Fortin M. Different Multimorbidity Measures Result in Varying Estimated Levels of Physical Quality of Life in Individuals with Multimorbidity: A Cross-Sectional Study in the General Population. *Biomed Res Int.* 2016;**2016**:7845438.

Chin WY, Choi EP, Wan EY, Lam CL: Health-related quality of life mediates associations between multi-morbidity and depressive symptoms in Chinese primary care patients. *Fam Pract.* 2016;**33**(1):61-68.

Hopman P, Schellevis FG, Rijken M. Health-related needs of people with multiple chronic diseases: differences and underlying factors. *Qual Life Res.* 2016;**25**:651-60.

Heins MJ, Korevaar JC, Hopman PE, Donker GA, Schellevis FG, Rijken MP: Health-related quality of life and health care use in cancer survivors compared with patients with chronic diseases. *Cancer.* 2016.

Lang K, Alexander IM, Simon J, et al. The impact of multimorbidity on quality of life among midlife women: findings from a U.S. nationally representative survey. *J Womens Health (Larchmt).* May 2015;**24**(5):374-383.

Alonso-Moran E, Nuno-Solinis R, Orueta JF, Fernandez-Ruanova B, Alday-Jurado A, Gutierrez-Fraile E. Health-related quality of life and multimorbidity in community-dwelling telecare-assisted elders in the Basque Country. *Eur J Intern Med.* Apr 2015;**26**(3):169-175.

Forjaz MJ, Rodriguez-Blazquez C, Ayala A, et al. Chronic conditions, disability, and quality of life in older adults with multimorbidity in Spain. *Eur J Intern Med.* Apr 2015;**26**(3):176-181.

Garin N, Olaya B, Moneta MV, et al. Impact of multimorbidity on disability and quality of life in the Spanish older population. *PLoS One.* 2014;**9**(11):e111498.

Aguiar LB, Baccaro LF, de Souza Santos Machado V, Pinto-Neto AM, Costa-Paiva L. Disability and multimorbidity in women older than 50 years: a population-based household survey. *Menopause.* Nov 6 2014.

Mujica-Mota RE, Roberts M, Abel G, Elliott M, Lyratzopoulos G, Roland M, Campbell J. Common patterns of morbidity and multi-morbidity and their impact on health-related quality of life: evidence from a national survey. *Qual Life Res.* Oct 26 2014.

Parker L, Moran GM, Roberts LM, Calvert M, McCahon D. The burden of common chronic disease on health-related quality of life in an elderly community-dwelling population in the UK. *Fam Pract.* Oct 2014;**31**(5):557-563.

Marventano S, Ayala A, Gonzalez N, Rodriguez-Blazquez C, Garcia-Gutierrez S, Forjaz MJ. Multimorbidity and functional status in community-dwelling older adults. *Eur J Intern Med.* Sep 2014;**25**(7):610-616.

Agborsangaya CB, Lahtinen M, Cooke T, Johnson JA. Comparing the EQ-5D 3L and 5L: measurement properties and association with chronic conditions and multimorbidity in the general population. *Health Qual Life Outcomes.* 2014;**12**:74

- Wicke FS, Guthlin C, Mergenthal K, Gensichen J, Loffler C, Bickel H, Maier W, Riedel-Heller SG, Weyerer S, Wiese B, Konig HH, Schon G, Hansen H, van den Bussche H, Scherer M, Dahlhaus A. Depressive mood mediates the influence of social support on health-related quality of life in elderly, multimorbid patients. *BMC Fam Pract*. 2014;**15**:62.
- Nutzel A, Dahlhaus A, Fuchs A, Gensichen J, Konig HH, Riedel-Heller S, Maier W, Schafer I, Schon G, Weyerer S, Wiese B, Scherer M, van den Bussche H, Bickel H. Self-rated health in multimorbid older general practice patients: a cross-sectional study in Germany. *BMC Fam Pract*. 2014;**15**:1.
- Dy SM, Pfoh ER, Salive ME, Boyd CM. Health-related quality of life and functional status quality indicators for older persons with multiple chronic conditions. *J Am Geriatr Soc*. Dec 2013;**61**(12):2120-2127.
- Agborsangaya CB, Lau D, Lahtinen M, Cooke T, Johnson JA. Health-related quality of life and healthcare utilization in multimorbidity: results of a cross-sectional survey. *Qual Life Res*. May 2013;**22**(4):791-799.
- McDaid O, Hanly MJ, Richardson K, Kee F, Kenny RA, Savva GM. The effect of multiple chronic conditions on self-rated health, disability and quality of life among the older populations of Northern Ireland and the Republic of Ireland: a comparison of two nationally representative cross-sectional surveys. *BMJ Open*. 2013;**3**(6).
- Brettschneider C, Leicht H, Bickel H, et al. Relative impact of multimorbid chronic conditions on health-related quality of life--results from the MultiCare Cohort Study. *PLoS One*. 2013;**8**(6):e66742.
- Lawson KD, Mercer SW, Wyke S, et al. Double trouble: the impact of multimorbidity and deprivation on preference-weighted health related quality of life a cross sectional analysis of the Scottish Health Survey. *Int J Equity Health*. 2013;**12**(1):67.
- Aarts S, den Akker M, Bosma H, et al. The effect of multimorbidity on health related functioning: temporary or persistent? Results from a longitudinal cohort study. *J Psychosom Res*. Sep 2012;**73**(3):211-217.
- Kim KI, Lee JH, Kim CH. Impaired health-related quality of life in elderly women is associated with multimorbidity: results from the Korean National Health and Nutrition Examination Survey. *Gend Med*. Oct 2012;**9**(5):309-318.
- Wijlhuizen GJ, Perenboom RJ, Garre FG, Heerkens YF, van Meeteren N. Impact of multimorbidity on functioning: evaluating the ICF Core Set approach in an empirical study of people with rheumatic diseases. *J Rehabil Med*. Jul 2012;**44**(8):664-668.
- Vogel I, Miksch A, Goetz K, Ose D, Szecsenyi J, Freund T. The impact of perceived social support and sense of coherence on health-related quality of life in multimorbid primary care patients. *Chronic Illn*. 2012 **8**(4):296-307.
- Hunger, M., et al., Multimorbidity and health-related quality of life in the older population: results from the German KORA-age study. *Health Qual Life Outcomes*, 2011. **9**: p. 53.
- Drewes YM, den Elzen WP, Mooijaart SP, de Craen AJ, Assendelft WJ, Gussekloo J. The effect of cognitive impairment on the predictive value of multimorbidity for the increase in disability in the oldest old: the Leiden 85-plus Study. *Age Ageing* 2011;**40**:352-7.
- Warner LM et al. Giving and taking--differential effects of providing, receiving and anticipating emotional support on quality of life in adults with multiple illnesses. *J Health Psychol*. 2010. **15**(5):660-70.

Hodek JM, Ruhe AK, Greiner W. Relationship Between Health-Related Quality of Life and Multimorbidity. *Gesundheitswesen*. 2009 Sep 29. [Epub ahead of print]

Heyworth IT, Hazell ML, Linehan MF, Frank TL. How do common chronic conditions affect health-related quality of life? *Br J Gen Pract*. 2009. **59**:e353-8.

Miranda de Nóbrega TC, Jaluul O, Machado AN, Paschoal SM, Jacob Filho W. Quality of life and multimorbidity of elderly outpatients. *Clinics*. 2009. **64**(1):45-50.

Kadam UT, Schellevis FG, Lewis M, van der Windt DA, de Vet HC, Bouter LM, Croft PR. Does age modify the relationship between morbidity severity and physical health in English and Dutch family practice populations?. *Qual Life Res*. 2009. **18**(2):209-20.

Marengoni A, von Strauss E, Rizzuto D, Winblad B, Fratiglioni L. The impact of chronic multimorbidity and disability on functional decline and survival in elderly persons. A community-based, longitudinal study. *J Intern Med*. 2009. **265**(2):288-95.

Bayliss, E. A., J. L. Ellis, et al. "Barriers to self-management and quality-of-life outcomes in seniors with multimorbidities." *Annals of Family Medicine* 2007. **5**(5): 395-402.

Kadam, U. T., P. R. Croft, et al. "Clinical multimorbidity and physical function in older adults: a record and health status linkage study in general practice." *Family Practice* 2007. **24**(5): 412-9

Takayama, M., N. Hirose, et al. "Morbidity of Tokyo-area centenarians and its relationship to functional status." *Journals of Gerontology Series A-Biological Sciences & Medical Sciences* 2007. **62**(7): 774-82.

Walker, A. E. "Multiple chronic diseases and quality of life: patterns emerging from a large national sample, Australia." *Chronic Illness* 2007. **3**(3): 202-18.

Bounthavong M, Law AV. Identifying health-related quality of life (HRQL) domains for multiple chronic conditions (diabetes, hypertension and dyslipidemia): patient and provider perspectives. *J Eval Clin Pract*. 2008. **14**(6):1002-11.

Adams, R.J., et al., Coexistent chronic conditions and asthma quality of life: a population-based study. *Chest*, 2006. **129**: p. 285-91.

Alonso, J., et al., Health-related quality of life associated with chronic conditions in eight countries: results from the International Quality of Life Assessment (IQOLA) Project. *Quality of Life Research*, 2004. **13**(2): p. 283-98.

Baumeister, H., K. Balke, and M. Harter, Psychiatric and somatic comorbidities are negatively associated with quality of life in physically ill patients. *Journal of Clinical Epidemiology*, 2005. **58**(11): p. 1090-100.

Bayliss, E.A., et al., Predicting declines in physical function in persons with multiple chronic medical conditions: what we can learn from the medical problem list. *Health Qual Life Outcomes*, 2004. **2**: p. 47.

Bayliss, E.A., J.L. Ellis, and J.F. Steiner, Subjective assessments of comorbidity correlate with quality of life health outcomes: Initial validation of a comorbidity assessment instrument. *Health and Quality of life Outcomes*, 2005. **3**: p. 51.

Berardi, D., et al., Mental, physical and functional status in primary care attenders. *International Journal of Psychiatry in Medicine*, 1999. **29**(2): p. 133-48.

Chen, A.Y., J. Daley, and G.E. Thibault, Angina patients' ratings of current health and health without angina: associations with severity of angina and comorbidity.[see

comment]. *Medical Decision Making*, 1996. **16**(2): p. 169-77.

Cheng, L., et al., Health related quality of life in pregeriatric patients with chronic diseases at urban, public supported clinics. *Health and Quality of Life Outcomes*, 2003. **1**:63.

Crabtree, H.L., et al., The Comorbidity Symptom Scale: a combined disease inventory and assessment of symptom severity. *Journal of the American Geriatrics Society*, 2000. **48**(12): p. 1674-8.

Cuijpers, P., P. van Lammeren, and B. Duzijn, Relation between quality of life and chronic illnesses in elderly living in residential homes: a prospective study. *Int Psychogeriatr*, 1999. **11**: p. 445-54

Doll, H.A., S.E. Petersen, and S.L. Stewart-Brown, Obesity and physical and emotional well-being: associations between body mass index, chronic illness, and the physical and mental components of the SF-36 questionnaire. *Obesity Research*, 2000. **8**(2): p. 160-70.

Erickson, S.R., et al., Relationship between patient and disease characteristics, and health-related quality of life in adults with asthma. *Respiratory Medicine*, 2002. **96**(6): p. 450-460.

Ettinger, W.H., et al., Long-term physical functioning in persons with knee osteoarthritis from NHANES. I: Effects of comorbid medical conditions. *Journal of Clinical Epidemiology*, 1994. **47**(7): p. 809-15.

Ferrer, M., et al., Chronic obstructive pulmonary disease stage and health-related quality of life. The Quality of Life of Chronic Obstructive Pulmonary Disease Study Group. *Annals of Internal Medicine*, 1997. **127**(12): p. 1072-9.

Fortin M, Bravo G, Hudon C, Lapointe L, Almirall J, Dubois M-F, Vanasse A. Relationship between multimorbidity and health-related quality of life of patients in primary care. *Qual Life Res* 2006;**15**:83-91.

Fortin M, Lapointe L, Hudon C, Vanasse A, Ntetu AL, Maltais D. Multimorbidity and quality of life in primary care: a systematic review. *Health Qual Life Outcomes* 2004;**2**:51.

Fried, L.P., et al., Association of comorbidity with disability in older women: the Women's Health and Aging Study. *J Clin Epidemiol*, 1999. **52**: p. 27-37.

Fried, L.P. and J.M. Guralnik, Disability in older adults: evidence regarding significance, etiology, and risk. *Journal of the American Geriatrics Society*, 1997. **45**(1): p. 92-100.

Fryback, D.G., et al., The Beaver Dam Health Outcomes Study: initial catalog of health-state quality factors. *Med Decis Making*, 1993. **13**(2): p. 89-102.

Fuchs, Z., et al., Morbidity, comorbidity, and their association with disability among community-dwelling oldest-old in Israel. *Journals of Gerontology Series A-Biological Sciences & Medical Sciences*, 1998. **53**(6): p. M447-55.

Glasgow, R.E., et al., Quality of life and associated characteristics in a large national sample of adults with diabetes. *Diabetes Care*, 1997. **20**(4): p. 562-7.

Grimby, A. and A. Svanborg, Morbidity and health-related quality of life among ambulant elderly citizens. *Aging Clin Exp Res*, 1997. **9**: p. 356-64.

Haan, M.N. and M. Weldon, The influence of diabetes, hypertension, and stroke on ethnic differences in physical and cognitive functioning in an ethnically diverse older

population. *Annals of Epidemiology*., 1996. **6**(5): p. 392-8.

Hoffman, C., D. Rice, and H.Y. Sung, Persons with chronic conditions. Their prevalence and costs. *JAMA*, 1996. **276**(18): p. 1473-1479.

Katz, D.A. and C.A. McHorney, The relationship between insomnia and health-related quality of life in patients with chronic illness. *Journal of Family Practice*., 2002. **51**(3): p. 229-35.

Katz, D.A., C.A. McHorney, and R.L. Atkinson, Impact of obesity on health-related quality of life in patients with chronic illness. *Journal of General Internal Medicine*., 2000. **15**(11): p. 789-96.

Kempen, G.I., M. Jelcic, and J. Ormel, Personality, chronic medical morbidity, and health-related quality of life among older persons. *Health Psychol*, 1997. **16**(6): p. 539-46.

Kempen, G.I., et al., Adaptive responses among Dutch elderly: the impact of eight chronic medical conditions on health-related quality of life.[see comment]. *American Journal of Public Health*., 1997. **87**(1): p. 38-44.

Kusek, J.W., et al., Cross-sectional study of health-related quality of life in African Americans with chronic renal insufficiency: the African American Study of Kidney Disease and Hypertension Trial. *American Journal of Kidney Diseases*., 2002. **39**(3): p. 513-24.

Lahad, A. and Y. Yodfat, Impact of comorbidity on well-being in hypertension: case control study. *Journal of Human Hypertension*., 1993. **7**(6): p. 611-4.

Lam, C.L.K., Reliability and construct validity of the Chinese (Hong Kong) SF-36 patients in primary care. *Hong Kong Practitioner*, 2003. **25**(10): p. 468-475.

Lyketsos, C.G., et al., Medical comorbidity in psychiatric inpatients: relation to clinical outcomes and hospital length of stay. *Psychosomatics*., 2002. **43**(1): p. 24-30.

Maddigan, S.L., D.H. Feeny, and J.A. Johnson, Health-related quality of life deficits associated with diabetes and comorbidities in a Canadian National Population Health Survey. *Qual Life Res*, 2005. **14**: p. 1311-20.

Merkus, M.P., et al., Quality of life in patients on chronic dialysis: self-assessment 3 months after the start of treatment. The Necosad Study Group. *American Journal of Kidney Diseases*, 1997. **29**(4): p. 584-92.

Michelson, H., C. Bolund, and Y. Brandberg, Multiple chronic health problems are negatively associated with health related quality of life (HRQoL) irrespective of age. *Qual Life Res*, 2000. **9**: p. 1093-104.

Miller, R.R., et al., Effect of medical conditions on improvement in self-reported and observed functional performance of elders. *Journal of the American Geriatrics Society*, 2004. **52**(2): p. 217-23.

Noel, P.H., et al., Depression and comorbid illness in elderly primary care patients: impact on multiple domains of health status and well-being. p. 555-**62**, 2004 Nov-Dec.

Oldridge, N.B., et al., Prevalence and outcomes of comorbid metabolic and cardiovascular conditions in middle- and older-age adults. *Journal of Clinical Epidemiology*, 2001. **54**(9): p. 928-934.

Orwelius, L., et al., Role of preexisting disease in patients' perceptions of health-related quality of life after intensive care.[see comment]. *Critical Care Medicine*, 2005. **33**(7): p. 1557-64.

- Osterhaus, J.T., et al., Measuring the functional status and well-being of patients with migraine headache. *Headache*, 1994. **34**(6): p. 337-343.
- Rice, D.P. and M.P. LaPlante, Chronic illness, disability and increasing longevity, in *Ethics and economics of long term care.*, E.-L.M. Sullivan S., Editor. 1988. p. 9-55.
- Rigler, S.K., et al., Co-morbidity adjustment for functional outcomes in community-dwelling older adults. *Clinical Rehabilitation.*, 2002. **16**(4): p. 420-8.
- Rijken, M., et al., Comorbidity of chronic diseases: effects of disease pairs on physical and mental functioning. *Qual Life Res*, 2005. **14**: p. 45-55.
- Rozzini, R., et al., Geriatric Index of Comorbidity: validation and comparison with other measures of comorbidity. *Age Ageing*, 2002. **31**(4): p. 277-85.
- Sapp, A.L., et al., Social networks and quality of life among female long-term colorectal cancer survivors. *Cancer*, 2003. **98**(8): p. 1749-1758.
- Small, G.W., et al., Impact of physical illness on quality of life and antidepressant response in geriatric major depression. Fluoxetine Collaborative Study Group. *Journal of the American Geriatrics Society.*, 1996. **44**(10): p. 1220-5.
- Sprangers, M.A., et al., Which chronic conditions are associated with better or poorer quality of life? *Journal of Clinical Epidemiology.*, 2000. **53**(9): p. 895-907.
- Stein, M.B. and E. Barrett-Connor, Quality of life in older adults receiving medications for anxiety, depression, or insomnia: Findings from a community-based study. *American Journal of Geriatric Psychiatry*, 2002. **10**(5): p. 568-574.
- Stewart, A.L., et al., Functional status and well-being of patients with chronic conditions. Results from the Medical Outcomes Study. *JAMA*, 1989. **262**: p. 907-13.
- Sturm, R. and K.B. Wells, Does obesity contribute as much to morbidity as poverty or smoking? *Public Health*, 2001. **115**(3): p. 229-235.
- Talamo, J., et al., Use of the short form 36 (SF36) for health status measurement in rheumatoid arthritis. *British Journal of Rheumatology.*, 1997. **36**(4): p. 463-9.
- Vacek, P.M., et al., Factors influencing quality of life in breast cancer survivors. *Quality of Life Research*, 2003. **12**(5): p. 527-37.
- van den Bos, G.A., The burden of chronic diseases in terms of disability, use of health care and healthy life expectancies. *Eur J Public Health*, 1995. **5**: p. 29-34.
- Van Manen, J.G., et al., The influence of COPD on health-related quality of life independent of the influence of comorbidity. *Journal of Clinical Epidemiology*, 2003. **56**(12): p. 1177-1184.
- van Manen, J.G., et al., Added value of co-morbidity in predicting health-related quality of life in COPD patients. *Respiratory Medicine*, 2001. **95**(6): p. 496-504.
- Verbrugge, L.M., J.M. Lepkowski, and Y. Imanaka, Comorbidity and its impact on disability. *Milbank Quarterly*, 1989. **67**: p. 450-84.
- Wang, S.J., et al., Quality of life differs among headache diagnoses: analysis of SF-36 survey in 901 headache patients. *Pain.*, 2001. **89**(2-3): p. 285-92.
- Wensing, M., E. Vingerhoets, and R. Grol, Functional status, health problems, age and comorbidity in primary care patients. *Qual Life Res*, 2001. **10**: p. 141-8.
- Xuan, J., et al., Effects of comorbidity on health-related quality-of-life scores: an analysis of clinical trial data. *Clin Ther*, 1999. **21**(2): p. 383-403.

3.9 PSYCHOLOGICAL DISTRESS, DEPRESSION, COGNITION AND MENTAL ILLNESS

Bonnell LN, Clifton J, Rose GL, Waddell EN, Littenberg B. Urban-Rural Differences in Mental and Physical Health among Primary Care Patients with Multiple Chronic Conditions: A Secondary Analysis from a Randomized Clinical Trial. *Int J Environ Res Public Health*. 2022;19(23).

Calvin CM, Conroy MC, Moore SF, Kuzma E, Littlejohns TJ. Association of Multimorbidity, Disease Clusters, and Modification by Genetic Factors With Risk of Dementia. *JAMA Netw Open*. 2022;5(9):e2232124.

Castro-de-Araujo LFS, Cortes F, de Siqueira Filha NT, Rodrigues EDS, Machado DB, de Araujo JAP, et al. Patterns of multimorbidity and some psychiatric disorders: A systematic review of the literature. *Front Psychol*. 2022;13:940978.

Chen H, Zhou Y, Huang L, Xu X, Yuan C. Multimorbidity burden and developmental trajectory in relation to later-life dementia: A prospective study. *Alzheimers Dement*. 2022.

Felez-Nobrega M, Haro JM, Koyanagi A. Multimorbidity, depression with anxiety symptoms, and decrements in health in 47 low- and middle-income countries. *J Affect Disord*. 2022;317:176-84.

Mindlis I, Revenson TA, Erbllich J, Fernández Sedano B. Multimorbidity and Depressive Symptoms in Older Adults: A Contextual Approach. *Gerontologist*. 2022.

Singh S, Shri N, Dwivedi LK. An association between multi-morbidity and depressive symptoms among Indian adults based on propensity score matching. *Sci Rep*. 2022;12(1):15518.

Smith L, Shin JI, Haro JM, Jacob L, López Sánchez GF, Tully MA, et al. Physical multimorbidity and wish to die among adults aged ≥ 65 years: A cross-sectional analysis of the Irish Longitudinal Study on Ageing. *J Affect Disord*. 2022;313:263-9.

Smith L, Shin JI, Lee S, Oh JW, López Sánchez GF, Kostev K, et al. The association of physical multimorbidity with suicidal ideation and suicide attempts in England: A mediation analysis of influential factors. *Int J Soc Psychiatry*. 2022:207640221137993.

Cheng, C., Yang, C., Inder, K. and Chan, S.W. (2021). Psychometric properties of Brief Coping Orientation to Problems Experienced in patients with multiple chronic conditions: A preliminary study. *International Journal of Nursing Practice*. doi:10.1111/ijn.12955.

Gan, D.R.Y., Wister, A.V. and Best, J.R. (2022). Environmental Influences on Life Satisfaction and Depressive Symptoms Among Older Adults with Multimorbidity: Path Analysis Through Loneliness in the Canadian Longitudinal Study on Aging. *The Gerontologist*. doi:10.1093/geront/gnac004.

Ferro, M.A., Qureshi, S., Van Lieshout, R.J., Lipman, E.L., Georgiades, K., Gorter, J.W., Timmons, B.W. and Shanahan, L. (2022). Prevalence and Correlates of Physical-mental Multimorbidity in Outpatient Children From a Pediatric Hospital in Canada. *Canadian Journal of Psychiatry*. *Revue Canadienne De Psychiatrie*, [online] 67(8), pp.626–637. doi:10.1177/07067437221074430.

- O'Loughlin, R., Hiscock, H., Pan, T., Devlin, N. and Dalziel, K. (2022). The relationship between physical and mental health multimorbidity and children's health-related quality of life. *Quality of Life Research*. doi:10.1007/s11136-022-03095-1.
- Yin, J., Ma, T., Li, J., Zhang, G., Cheng, X. and Bai, Y. (2022). Association of mood disorder with cardiometabolic multimorbidity trajectory and life expectancy, a prospective cohort study. *Journal of Affective Disorders*, [online] 312, pp.1–8. doi:10.1016/j.jad.2022.06.003.
- Langer, N., Plomecka, M.B., Tröndle, M., Negi, A., Popov, T., Milham, M. and Haufe, S. (2022). A benchmark for prediction of psychiatric multimorbidity from resting EEG data in a large pediatric sample. *NeuroImage*, [online] 258, p.119348. doi:10.1016/j.neuroimage.2022.119348.
- Smith, L., Shin, J.I., Haro, J.M., Jacob, L., López Sánchez, G.F., Tully, M.A., Oh, H., Carvalho, A.F., Barnett, Y., Butler, L. and Koyanagi, A. (2022). Physical multimorbidity and wish to die among adults aged ≥ 65 years: A cross-sectional analysis of the Irish Longitudinal Study on Ageing. *Journal of Affective Disorders*, [online] 313, pp.263–269. doi:10.1016/j.jad.2022.06.063.
- Liu, H., Zhang, X., Chen, B., Fang, B., Lou, V.W.Q. and Hu, J. (2022). The Differential Impact of Multimorbidity Patterns and Subsequent Accumulation on Longitudinal Trajectories of Physical Function Decline in a Population-Based Cohort of Older People. *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, [online] 77(8), pp.1629–1636. doi:10.1093/gerona/glab384.
- Gan DRY, Wister AV, Best JR. Environmental Influences on Life Satisfaction and Depressive Symptoms Among Older Adults with Multimorbidity: Path Analysis Through Loneliness in the Canadian Longitudinal Study on Aging. *Gerontologist* 2022. doi: 6508998 [pii]10.1093/geront/gnac004
- Liang Y, Lai FTT, Kwan JLY, Chan W, Yeoh EK. Sport and Recreational Physical Activities Attenuate the Predictive Association of Multimorbidity With Increased Geriatric Depressive Symptoms: A 14-Year Follow-Up Study of Community-Dwelling Older Adults. *J Aging Phys Act* 2022;30(2):252-60. doi: 10.1123/japa.2021-0070 japa.2021-0070 [pii]
- Quinones AR, Chen S, Nagel CL, Botosaneanu A, Allore HG, Newsom JT, et al. Trajectories of cognitive functioning in later life: Disparities by race/ethnicity, educational attainment, sex, and multimorbidity combinations. *SSM Popul Health* 2022;18:101084. doi: 10.1016/j.ssmph.2022.101084
- S2352-8273(22)00063-5 [pii]
- Asante D, Rio J, Stanaway F, Worley P, Isaac V. Psychological distress, multimorbidity and health services among older adults in rural South Australia. *J Affect Disord* 2022;309:453-60. doi: S0165-0327(22)00484-0 [pii]
- 10.1016/j.jad.2022.04.140
- Ronaldson A, Arias de la Torre J, Bendayan R, Yadegarfar ME, Rhead R, Douiri A, et al. Physical multimorbidity, depressive symptoms, and social participation in adults over 50 years of age: findings from the English Longitudinal Study of Ageing. *Aging Ment Health* 2022:1-11. doi: 10.1080/13607863.2021.2017847

Ben Hassen C, Fayosse A, Landre B, Raggi M, Bloomberg M, Sabia S, et al. Association between age at onset of multimorbidity and incidence of dementia: 30 year follow-up in Whitehall II prospective cohort study. *BMJ* 2022;376:e068005. doi: 10.1136/bmj-2021-068005

Smith L, Shin JI, Butler L, Barnett Y, Oh H, Jacob L, et al. Physical multimorbidity and depression: A mediation analysis of influential factors among 34,129 adults aged ≥ 50 years from low- and middle-income countries. *Depress Anxiety* 2022;39(5):376-86. doi: 10.1002/da.23250

Li C, Peng W, Li M, Li X, Yang T, Yan H, et al. Exploring the relationship between depression and different multimorbidity patterns among older people covered by long-term care insurance in Shanghai, China. *Psychogeriatrics* 2022;22(1):99-107. doi: 10.1111/psyg.12783

Huang ZT, Luo Y, Han L, Wang K, Yao SS, Su HX, et al. Patterns of cardiometabolic multimorbidity and the risk of depressive symptoms in a longitudinal cohort of middle-aged and older Chinese. *J Affect Disord* 2022;301:1-7. doi: S0165-0327(22)00037-4 [pii]

10.1016/j.jad.2022.01.030

Cheng C, Du Y, Bai J. Physical multimorbidity and psychological distress among Chinese older adults: Findings from Chinese Longitudinal Healthy Longevity Survey. *Asian J Psychiatr* 2022;70:103022. doi: S1876-2018(22)00020-X [pii]

10.1016/j.ajp.2022.103022

Qiao Y, Liu S, Zhang Y, Wu Y, Shen Y, Ke C. Bidirectional association between depression and multimorbidity in middle-aged and elderly Chinese adults: a longitudinal cohort study. *Aging Ment Health* 2022;26(4):784-90. doi: 10.1080/13607863.2021.1877609

Demirer I, Kuhhirt M, Karbach U, Pfaff H. Does positive affect mediate the association of multimorbidity on depressive symptoms? *Aging Ment Health* 2022;26(1):65-76. doi: 10.1080/13607863.2020.1870209

Smith L, Shin JI, Jacob L, Schuch F, Pizzol D, Lopez Sanchez GF, et al. Physical multimorbidity predicts the onset and persistence of anxiety: A prospective analysis of the Irish Longitudinal Study on Ageing. *J Affect Disord* 2022;309:71-76. doi: S0165-0327(22)00359-7 [pii]

10.1016/j.jad.2022.04.022

Ye B, Xie R, Mishra SR, et al. Bidirectional association between physical multimorbidity and subclinical depression in Chinese older adults: Findings from a prospective cohort

study. *J Affect Disord* 2022;296:169-74. doi: 10.1016/j.jad.2021.09.067

Lin H, Xiao S, Shi L, et al. Impact of Multimorbidity on Symptoms of Depression, Anxiety, and Stress in Older Adults: Is There a Sex Difference? *Front Psychol* 2021;12:762310. doi: 10.3389/fpsyg.2021.762310

Li C, Peng W, Li M, et al. Exploring the relationship between depression and different multimorbidity patterns among older people covered by long-term care insurance in Shanghai, China. *Psychogeriatrics* 2022;22(1):99-107. doi: 10.1111/psyg.12783

Kabashi S, Gamboa D, Vindenes V, et al. Multimorbidity, psychoactive substance use and psychological distress among acute medically ill patients: a cross-sectional study. *BMJ Open* 2021;11(11):e052428. doi: 10.1136/bmjopen-2021-052428

Meher T, Muhammad T, Gharge S. The association between single and multiple chronic conditions and depression among older population in India: A comparative study between men and women. *Int J Geriatr Psychiatry* 2022;37(1) doi: 10.1002/gps.5639

Erving CL, Frazier C. The Association between Multiple Chronic Conditions and Depressive Symptoms: Intersectional Distinctions by Race, Nativity, and Gender. *J Health Soc Behav* 2021;62(4):599-617. doi: 10.1177/00221465211040174

Cheng C, Inder K, Chan SW. The relationship between coping strategies and psychological distress in Chinese older adults with multiple chronic conditions. *Australas J Ageing* 2021;40(4):397-405. doi: 10.1111/ajag.12946

Tong L, Pu L, Guo X, et al. Multimorbidity study with different levels of depression status. *J Affect Disord* 2021;292:30-35. doi: 10.1016/j.jad.2021.05.039

Peng S, Wang S, Feng XL. Multimorbidity, depressive symptoms and disability in activities of daily living amongst middle-aged and older Chinese: Evidence from the China Health and Retirement Longitudinal Study. *J Affect Disord* 2021;295:703-10. doi: 10.1016/j.jad.2021.08.072

Read JR, Sharpe L, Burton AL, et al. Preventing depression in older people with multimorbidity: 24-month follow-up of a trial of internet-delivered cognitive behaviour therapy. *Age Ageing* 2021;50(6):2254-58. doi: 10.1093/ageing/afab145

Yan C, Liao H, Ma Y, et al. Association among multimorbidity, physical disability and depression trajectories: a study of urban-rural differences in China. *Qual Life Res* 2021;30(8):2149-60. doi: 10.1007/s11136-021-02807-3

Li A, Rosella LC, Kurdyak P, et al. Depression as a Risk Factor for Physical Illness and Multimorbidity in a Cohort with No Prior Comorbidity. *Can J Psychiatry* 2021;66(8):726-36. doi: 10.1177/0706743720974832

Tong L, Pu L, Guo X, et al. Multimorbidity study with different levels of depression status. *J Affect Disord* 2021;292:30-35. doi: 10.1016/j.jad.2021.05.039

Fisher K, Griffith LE, Gruneir A, et al. Functional limitations in people with multimorbidity and the association with mental health conditions: Baseline data from the Canadian Longitudinal Study on Aging (CLSA). *PLoS One* 2021;16(8):e0255907. doi: 10.1371/journal.pone.0255907

Lee Y, Cho CC. Examining the effects of multiple chronic conditions on cognitive decline and potential moderators among older Koreans: Findings from the Korean Longitudinal Study of Ageing 2006-2016. *Arch Gerontol Geriatr* 2021;95:104424. doi: 10.1016/j.archger.2021.104424

Han BH, Williams BA, Palamar JJ. Medical Multimorbidity, Mental Illness, and Substance Use Disorder among Middle-Aged and Older Justice-Involved Adults in the USA, 2015-2018. *J Gen Intern Med* 2021;36(5):1258-63. doi: 10.1007/s11606-020-06297-w

Grande G, Marengoni A, Vetrano DL, et al. Multimorbidity burden and dementia risk in older adults: The role of inflammation and genetics. *Alzheimers Dement* 2021;17(5):768-76. doi: 10.1002/alz.12237

Lee Y, Cho Y, Oh H. Multiple chronic conditions and risk of cognitive impairment and dementia among older Americans: findings from the Aging, Demographics, and Memory Study (ADAMS). *Neuropsychol Dev Cogn B Aging Neuropsychol Cogn* 2021;28(4):493-507. doi: 10.1080/13825585.2020.1790492

Qiao Y, Liu S, Zhang Y, et al. Bidirectional association between depression and multimorbidity in middle-aged and elderly Chinese adults: a longitudinal cohort study. *Aging Ment Health* 2021:1-7. doi: 10.1080/13607863.2021.1877609

Wicke FS, Dinh TS, Riedel-Heller S, et al. Predictors of change in depressive symptoms in older and multimorbid patients: a longitudinal analysis of the multicare cohort. *Aging Ment Health* 2021:1-10. doi: 10.1080/13607863.2021.1902470

Demirer I, Kuhhirt M, Karbach U, et al. Does positive affect mediate the association of multimorbidity on depressive symptoms? *Aging Ment Health* 2021:1-12. doi: 10.1080/13607863.2020.1870209

Yan C, Liao H, Ma Y, et al. Association among multimorbidity, physical disability and depression trajectories: a study of urban-rural differences in China. *Qual Life Res* 2021 doi: 10.1007/s11136-021-02807-3

Cheng C, Inder K, Chan SW. The relationship between coping strategies and psychological distress in Chinese older adults with multiple chronic conditions. *Australas J Ageing* 2021 doi: 10.1111/ajag.12946

Johnson PJ, Mentzer KM, Jou J, et al. Unmet healthcare needs among midlife adults with mental distress and multiple chronic conditions. *Aging Ment Health* 2021;1-9. doi: 10.1080/13607863.2021.1904830

Pati S, Mahapatra P, Dwivedi R, et al. Multimorbidity and Its Outcomes Among Patients Attending Psychiatric Care Settings: An Observational Study From Odisha, India. *Front Public Health* 2020;8:616480. doi: 10.3389/fpubh.2020.616480

Zhao YW, Haregu TN, He L, et al. The effect of multimorbidity on functional limitations and depression amongst middle-aged and older population in China: a nationwide longitudinal study. *Age Ageing* 2021;50(1):190-97. doi: 10.1093/ageing/afaa117

Grande G, Marengoni A, Vetrano DL, et al. Multimorbidity burden and dementia risk in older adults: The role of inflammation and genetics. *Alzheimers Dement* 2021;17(5):768-76. doi: 10.1002/alz.12237

Jiao C, Leng A, Nicholas S, et al. Multimorbidity and Mental Health: The Role of Gender among Disease-Causing Poverty, Rural, Aged Households in China. *Int J Environ Res Public Health* 2020;17(23) doi: 10.3390/ijerph17238855

Ishida M, Hulse ES, Mahar RK, et al. The Joint Effect of Physical Multimorbidity and Mental Health Conditions Among Adults in Australia. *Prev Chronic Dis* 2020;17:E157. doi: 10.5888/pcd17.200155

Cho S, Hamler TC. Depressive Symptoms and Multimorbidity: Is There an Association for Older Black Americans? *J Aging Health* 2020;898264320981244. doi: 10.1177/0898264320981244

MacNeil-Vroomen JL, Thompson M, Leo-Summers L, et al. Health-care use and cost for multimorbid persons with dementia in the National Health and Aging Trends Study. *Alzheimers Dement* 2020;16(9):1224-33. doi: 10.1002/alz.12094

Stirland LE, Gregory S, Russ TC, et al. Associations between midlife chronic conditions and medication use with anxiety and depression: A cross-sectional analysis of the PREVENT Dementia study. *J Comorb* 2020;10:2235042X20920443. doi: 10.1177/2235042X20920443

Yadav UN, Thapa TB, Mistry SK, et al. Socio-demographic characteristics, lifestyle factors, multi-morbid conditions and depressive symptoms among Nepalese older adults. *BMC Psychiatry* 2020;20(1):261. doi: 10.1186/s12888-020-02680-3

Lee Y, Cho Y, Oh H. Multiple chronic conditions and risk of cognitive impairment and dementia among older Americans: findings from the Aging, Demographics, and Memory Study (ADAMS). *Neuropsychol Dev Cogn B Aging Neuropsychol Cogn* 2020:1-15. doi: 10.1080/13825585.2020.1790492

Wei MY, Levine DA, Zahodne LB, et al. Multimorbidity and Cognitive Decline Over 14 Years in Older Americans. *J Gerontol A Biol Sci Med Sci* 2020;75(6):1206-13. doi: 10.1093/gerona/glz147

Iovino P, De Maria M, Matarese M, et al. Depression and self-care in older adults with multiple chronic conditions: A multivariate analysis. *J Adv Nurs* 2020;76(7):1668-78. doi: 10.1111/jan.14385

Turuba R, Pirkle C, Belanger E, et al. Assessing the relationship between multimorbidity and depression in older men and women: the International Mobility in Aging Study (IMIAS). *Aging Ment Health* 2020;24(5):747-57. doi: 10.1080/13607863.2019.1571018

Hussain R, Wark S, Janicki MP, et al. Multimorbidity in older people with intellectual disability. *J Appl Res Intellect Disabil* 2020 doi: 10.1111/jar.12743

Andrade-Lima A, Werneck AO, Szwarcwald CL, et al. The role of physical activity in the association between multimorbidity and depressive symptoms: Data from 60,202 adults from the Brazilian National Health Survey. *J Psychosom Res* 2020;134:110122. doi: 10.1016/j.jpsychores.2020.110122

Aoki T, Yamamoto Y, Shimizu S, et al. Physical multimorbidity patterns and depressive symptoms: a nationwide cross-sectional study in Japan. *Fam Med Community Health* 2020;8(1):e000234. doi: 10.1136/fmch-2019-000234

Chudasama YV, Zaccardi F, Gillies CL, et al. Leisure-time physical activity and life expectancy in people with cardiometabolic multimorbidity and depression. *J Intern Med* 2020;287(1):87-99. doi: 10.1111/joim.12987

Iovino P, De Maria M, Matarese M, et al. Depression and self-care in older adults with multiple chronic conditions: A multivariate analysis. *J Adv Nurs* 2020 doi: 10.1111/jan.14385

Stickley A, Koyanagi A, Ueda M, et al. Physical multimorbidity and suicidal behavior in the general population in the United States. *J Affect Disord* 2020;260:604-09. doi: 10.1016/j.jad.2019.09.042

Yao SS, Cao GY, Han L, et al. Associations Between Somatic Multimorbidity Patterns and Depression in a Longitudinal Cohort of Middle-Aged and Older Chinese. *J Am Med Dir Assoc* 2020 doi: 10.1016/j.jamda.2019.11.028

Canevelli M, Raganato R, Remiddi F, et al. Counting deficits or diseases? The agreement between frailty and multimorbidity in subjects with cognitive disturbances. *Aging Clin Exp Res* 2020;32(1):179-82. doi: 10.1007/s40520-019-01161-2

Cheng C, Yang CY, Inder K, et al. Urban-rural differences in mental health among Chinese patients with multiple chronic conditions. *Int J Ment Health Nurs* 2020;29(2):224-34. doi: 10.1111/inm.12666

Vicinanza R, Bersani FS, D'Ottavio E, et al. Adherence to Mediterranean diet moderates the association between multimorbidity and depressive symptoms in older adults. *Arch Gerontol Geriatr* 2020;88:104022. doi: 10.1016/j.archger.2020.104022

Xu Z, Zhang D, Sit RWS, et al. Incidence of and Risk factors for Mild Cognitive Impairment in Chinese Older Adults with Multimorbidity in Hong Kong. *Sci Rep* 2020;10(1):4137. doi: 10.1038/s41598-020-60901-x

Read J, Sharpe L, Burton AL, et al. A randomized controlled trial of internet-delivered cognitive behaviour therapy to prevent the development of depressive disorders in older adults with multimorbidity. *J Affect Disord* 2020;**264**:464-73. doi: 10.1016/j.jad.2019.11.077

Calderon-Larranaga A, Vetrano DL, Welmer AK, et al. Psychological correlates of multimorbidity and disability accumulation in older adults. *Age Ageing* 2019;**48**(6):789-96. doi: 10.1093/ageing/afz117

Cheng C, Yang CY, Inder K, et al. Urban-rural differences in mental health among Chinese patients with multiple chronic conditions. *Int J Ment Health Nurs* 2019 doi: 10.1111/inm.12666

Farooq S, Khan T, Zaheer S, et al. Prevalence of anxiety and depressive symptoms and their association with multimorbidity and demographic factors: a community-based, cross-sectional survey in Karachi, Pakistan. *BMJ Open* 2019;**9**(11):e029315. doi: 10.1136/bmjopen-2019-029315

Polenick CA, Birditt KS, Turkelson A, et al. Discordant Chronic Conditions and Depressive Symptoms: Longitudinal Associations Among Middle-Aged and Older Couples. *J Gerontol B Psychol Sci Soc Sci* 2019 doi: 10.1093/geronb/gbz137

Ferro MA, Lipman EL, Van Lieshout RJ, et al. Mental-Physical Multimorbidity in Youth: Associations with Individual, Family, and Health Service Use Outcomes. *Child Psychiatry Hum Dev* 2019;**50**(3):400-10. doi: 10.1007/s10578-018-0848-y

Reaume SV, Ferro MA. Chronicity of mental comorbidity in children with new-onset physical illness. *Child: care, health and development* 2019;**45**(4):559-67. doi: 10.1111/cch.12667

Bazargan M, Smith J, Saqib M, et al. Associations between Polypharmacy, Self-Rated Health, and Depression in African American Older Adults; Mediators and Moderators. *Int J Environ Res Public Health* 2019;**16**(9) doi: 10.3390/ijerph16091574

Assari S, Smith J, Bazargan M. Depression Fully Mediates the Effect of Multimorbidity on Self-Rated Health for Economically Disadvantaged African American Men but Not Women. *Int J Environ Res Public Health* 2019;**16**(10) doi: 10.3390/ijerph16101670

Xu X, Mishra GD, Jones M. Depressive symptoms and the development and progression of physical multimorbidity in a national cohort of Australian women. *Health Psychol* 2019;**38**(9):812-21. doi: 10.1037/hea0000738

Wei MY, Levine DA, Zahodne LB, et al. Multimorbidity and cognitive decline over 14 years in older Americans. *J Gerontol A Biol Sci Med Sci* 2019 doi: 10.1093/gerona/glz147

Jacob L, Haro JM, Koyanagi A. Physical multimorbidity and subjective cognitive complaints among adults in the United Kingdom: a cross-sectional community-based study. *Sci Rep* 2019;**9**(1):12417. doi: 10.1038/s41598-019-48894-8

Tyrer F, Dunkley AJ, Singh J, et al. Multimorbidity and lifestyle factors among adults with intellectual disabilities: a cross-sectional analysis of a UK cohort. *Journal of intellectual disability research : JIDR* 2019;**63**(3):255-65. doi: 10.1111/jir.12571

- Turuba R, Pirkle C, Belanger E, et al. Assessing the relationship between multimorbidity and depression in older men and women: the International Mobility in Aging Study (IMIAS). *Aging Ment Health* 2019;1-11. doi: 10.1080/13607863.2019.1571018
- Canevelli M, Raganato R, Remiddi F, et al. Counting deficits or diseases? The agreement between frailty and multimorbidity in subjects with cognitive disturbances. *Aging Clin Exp Res* 2019 doi: 10.1007/s40520-019-01161-2
- Birk JL, Kronish IM, Moise N, et al. Depression and multimorbidity: Considering temporal characteristics of the associations between depression and multiple chronic diseases. *Health Psychol* 2019 doi: 10.1037/hea0000737
- Ferro MA, Lipman EL, Van Lieshout RJ, et al. Mental-Physical Multimorbidity in Youth: Associations with Individual, Family, and Health Service Use Outcomes. *Child Psychiatry Hum Dev* 2018 doi: 10.1007/s10578-018-0848-y
- Tyrer F, Dunkley AJ, Singh J, et al. Multimorbidity and lifestyle factors among adults with intellectual disabilities: a cross-sectional analysis of a UK cohort. *Journal of intellectual disability research : JIDR* 2019;**63**(3):255-65. doi: 10.1111/jir.12571
- Bratzke LC, Carlson BA, Moon C, et al. Multiple chronic conditions: Implications for cognition - Findings from the Wisconsin Registry for Alzheimer's Prevention (WRAP). *Appl Nurs Res* 2018;**42**:56-61. doi: 10.1016/j.apnr.2018.06.004.
- Jacob L, Haro JM, Koyanagi A. Post-traumatic stress symptoms are associated with physical multimorbidity: Findings from the Adult Psychiatric Morbidity Survey 2007. *J Affect Disord* 2018;**232**:385-92. doi: 10.1016/j.jad.2018.02.063.
- Stubbs B, Vancampfort D, Veronese N, et al. Multimorbidity and perceived stress: a population-based cross-sectional study among older adults across six low- and middle-income countries. *Maturitas* 2018;**107**:84-91. doi: 10.1016/j.maturitas.2017.10.007.
- Ullrich P, Werner C, Bongartz M, et al. Validation of a Modified Life-Space Assessment in Multimorbid Older Persons With Cognitive Impairment. *Gerontologist* 2018 doi: 10.1093/geront/gnx214.
- Koyanagi A, Lara E, Stubbs B, et al. Chronic Physical Conditions, Multimorbidity, and Mild Cognitive Impairment in Low- and Middle-Income Countries. *J Am Geriatr Soc* 2018;**66**(4):721-27. doi: 10.1111/jgs.15288.
- Prior A, Vestergaard M, Larsen KK, et al. Association between perceived stress, multimorbidity and primary care health services: a Danish population-based cohort study. *BMJ Open* 2018;**8**(2):e018323. doi: 10.1136/bmjopen-2017-018323.
- Jacob L, Haro JM, Koyanagi A. Post-traumatic stress symptoms are associated with physical multimorbidity: Findings from the Adult Psychiatric Morbidity Survey 2007. *J Affect Disord* 2018;**232**:385-92. doi: 10.1016/j.jad.2018.02.063.
- Alhussain K, Meraya AM, Sambamoorthi U. Serious Psychological Distress and Emergency Room Use among Adults with Multimorbidity in the United States. *Psychiatry J.* 2017;**2017**:8565186.

Stubbs B, Vancampfort D, Veronese N, et al. Depression and physical health multimorbidity: primary data and country-wide meta-analysis of population data from 190 593 people across 43 low- and middle-income countries. *Psychol Med*. 2017;**47**(12):2107-2117.

Quirk SE, Stuart AL, Berk M, et al. Personality disorder is an excess risk factor for physical multimorbidity among women with mental state disorders. *Psychiatry Res*. 2017;**257**:546-549.

Petersen I, Rathod S, Kathree T, Selohilwe O, Bhana A. Risk correlates for physical-mental multimorbidities in South Africa: a cross-sectional study. *Epidemiol Psychiatr Sci*. 2017:1-9.

Bhalla IP, Rosenheck RA. A Change in Perspective: From Dual Diagnosis to Multimorbidity. *Psychiatr Serv*. 2018;**69**(1):112-116.

Stubbs B, Vancampfort D, Veronese N, et al. Multimorbidity and perceived stress: a population-based cross-sectional study among older adults across six low- and middle-income countries. *Maturitas*. 2018;**107**:84-91.

DiNapoli EA, Bramoweth AD, Whiteman KL, Hanusa BH, Kasckow J. Mood Disorders in Middle-Aged and Older Veterans With Multimorbidity. *J Aging Health*. 2017;**29**(4):657-668. doi: 10.1177/0898264316641082.

Vancampfort D, Koyanagi A, Ward PB, et al. Perceived Stress and Its Relationship With Chronic Medical Conditions and Multimorbidity Among 229,293 Community-Dwelling Adults in 44 Low- and Middle-Income Countries. *Am J Epidemiol*. 2017;**186**(8):979-989.

Holvast F, van Hattem BA, Sinnige J, et al. Late-life depression and the association with multimorbidity and polypharmacy: a cross-sectional study. *Fam Pract*. 2017;**34**(5):539-545.

Vancampfort D, Koyanagi A, Hallgren M, Probst M, Stubbs B. The relationship between chronic physical conditions, multimorbidity and anxiety in the general population: A global perspective across 42 countries. *Gen Hosp Psychiatry*. 2017;**45**:1-6.

Bustos-Vazquez E, Fernandez-Nino JA, Astudillo-Garcia CI. Self-rated health, multimorbidity and depression in Mexican older adults: Proposal and evaluation of a simple conceptual model. *Biomedica*. 2017;**37**(0):92-103.

Stubbs B, Koyanagi A, Veronese N, et al. Physical multimorbidity and psychosis: comprehensive cross sectional analysis including 242,952 people across 48 low- and middle-income countries. *BMC Med*. 2016;**14**(1):189.

Kavalidou K, Smith DJ, O'Connor RC. The role of physical and mental health multimorbidity in suicidal ideation. *J Affect Disord*. 2017;**209**:80-85.

Prior A, Fenger-Gron M, Larsen KK, et al. The Association Between Perceived Stress and Mortality Among People With Multimorbidity: A Prospective Population-Based Cohort Study. *Am J Epidemiol*. 2016;**184**:199-210.

Gould CE, O'Hara R, Goldstein MK, Beaudreau SA. Multimorbidity is associated with anxiety in older adults in the Health and Retirement Study. *Int J Geriatr Psychiatry*. 2016;**31**:1105-15.

- Gallo JJ, Hwang S, Joo JH, et al. Multimorbidity, Depression, and Mortality in Primary Care: Randomized Clinical Trial of an Evidence-Based Depression Care Management Program on Mortality Risk. *J Gen Intern Med*. 2016;**31**:380-6.
- Ekdahl AW, Odzakovic E, Hellstrom I. Living Unnoticed: Cognitive Impairment in Older People with Multimorbidity. *J Nutr Health Aging*. 2016;**20**:275-9.
- Pruchno RA, Wilson-Genderson M, Heid AR. Multiple Chronic Condition Combinations and Depression in Community-Dwelling Older Adults. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:910-5.
- Thomeer MB. Multiple Chronic Conditions, Spouse's Depressive Symptoms, and Gender within Marriage. *J Health Soc Behav*. 2016;**57**:59-76.
- Fabrizi E, An Y, Zoli M, et al. Association Between Accelerated Multimorbidity and Age-Related Cognitive Decline in Older Baltimore Longitudinal Study of Aging Participants without Dementia. *J Am Geriatr Soc*. 2016;**64**:965-72.
- Vassilaki M, Aakre JA, Cha RH, Kremers WK, St Sauver JL, Mielke MM *et al*: Multimorbidity and Risk of Mild Cognitive Impairment. *J Am Geriatr Soc*. 2015;**63**(9):1783-1790.
- Gallo JJ, Hwang S, Joo JH, Bogner HR, Morales KH, Bruce ML *et al*: Multimorbidity, Depression, and Mortality in Primary Care: Randomized Clinical Trial of an Evidence-Based Depression Care Management Program on Mortality Risk. *J Gen Intern Med*. 2015.
- Loprinzi PD: Multimorbidity, cognitive function, and physical activity. *Age (Dordr)*. 2016;**38**(1):8.
- Villarreal AE, Grajales S, Lopez L, Britton GB, Initiative PA: Cognitive Impairment, Depression, and Cooccurrence of Both among the Elderly in Panama: Differential Associations with Multimorbidity and Functional Limitations. *Biomed Res Int*. 2015;**2015**:718701.
- Cooper SA, McLean G, Guthrie B, et al. Multiple physical and mental health comorbidity in adults with intellectual disabilities: population-based cross-sectional analysis. *BMC Fam Pract*. 2015;**16**:110.
- Vassilaki M, Aakre JA, Cha RH, et al. Multimorbidity and Risk of Mild Cognitive Impairment. *J Am Geriatr Soc*. Sep 2015;**63**(9):1783-1790.
- Smith DJ, Court H, McLean G, et al. Depression and multimorbidity: a cross-sectional study of 1,751,841 patients in primary care. *The Journal of clinical psychiatry*. Nov 2014;**75**(11):1202-1208; quiz 1208.
- Swartz JA, Jantz I. Association between nonspecific severe psychological distress as an indicator of serious mental illness and increasing levels of medical multimorbidity. *Am J Public Health*. Dec 2014;**104**(12):2350-2358.
- Bock JO, Luppia M, Brettschneider C, Riedel-Heller S, Bickel H, Fuchs A, Gensichen J, Maier W, Mergenthal K, Schafer I, Schon G, Weyerer S, Wiese B, van den Bussche H, Scherer M, Konig HH. Impact of depression on health care utilization and costs among multimorbid patients--from the MultiCare Cohort Study. *PLoS One*. 2014;**9**(3):e91973.

- Hill N, Joubert L, Epstein I. Encouraging self-management in chronically ill patients with co-morbid symptoms of depression and anxiety: an emergency department study and response. *Soc Work Health Care*. 2013;**52**(2-3):207-221.
- Gunn JM, Ayton DR, Densley K, et al. The association between chronic illness, multimorbidity and depressive symptoms in an Australian primary care cohort. *Soc Psychiatry Psychiatr Epidemiol*. Feb 2012;**47**(2):175-184.
- Spangenberg L, Forkmann T, Brähler E, Glaesmer H. The association of depression and multimorbidity in the elderly: implications for the assessment of depression. *Psychogeriatrics*. 2011;**11**:227-34.
- Vyas, A. and U. Sambamoorthi, Multimorbidity and depression treatment. *Gen Hosp Psychiatry*, 2011. **33**: p. 238-45.
- Findley, P., C. Shen, and U. Sambamoorthi, Multimorbidity and persistent depression among veterans with diabetes, heart disease, and hypertension. *Health Soc Work*, 2011. **36**: p. 109-19.
- Gunn JM, Ayton DR, Densley K, et al. The association between chronic illness, multimorbidity and depressive symptoms in an Australian primary care cohort. *Soc Psychiatry Psychiatr Epidemiol* Dec 25 [Epub ahead of print] 2010.
- Fortin M, Hudon C, Bayliss EA, Soubhi H, Lapointe L. Caring for Body and Soul: The Importance of Recognizing and Managing Psychological Distress in Persons with Multimorbidity. *Int'l J Psychiatry in Medicine* 2007; **37**: 1-9.
- Brown, C., H.C. Schulberg, and H.G. Prigerson, Factors associated with symptomatic improvement and recovery from major depression in primary care patients. *General Hospital Psychiatry*, 2000. **22**(4): p. 242-50.
- Coulehan, J.L., et al., Depressive symptomatology and medical co-morbidity in a primary care clinic. *International Journal of Psychiatry in Medicine*, 1990. **20**(4): p. 335-47.
- Coulehan, J.L., et al., Medical comorbidity of major depressive disorder in a primary medical practice. *Archives of Internal Medicine*, 1990. **150**(11): p. 2363-7.
- Druss, B. and H. Pincus, Suicidal ideation and suicide attempts in general medical illnesses. *Arch Intern Med*, 2000. **160**: p. 1522-6.
- Fortin M, Bravo G, Hudon C, Lapointe L, Dubois M-F, Almirall J. Psychological Distress and Multimorbidity in Primary Care. *Ann Fam Med* 2006;**4**:417-22.
- Goodwin, R.D., A. Marusic, and C.W. Hoven, Suicide attempts in the United States: the role of physical illness. *Soc Sci Med*, 2003. **56**: p. 1783-8.
- Johnson, E.H. and A. Arbor, Psychiatric morbidity and health problems among black Americans: a national survey. *Journal of the National Medical Association*, 1989. **81**: p. 1217-23.
- Joshi, K., R. Kumar, and A. Avasthi, Morbidity profile and its relationship with disability and psychological distress among elderly people in Northern India. *International Journal of Epidemiology*, 2003. **32**: p. 978-87.
- Katon, W., et al., Behavioral and clinical factors associated with depression among individuals with diabetes. *Diabetes Care*, 2004. **27**(4): p. 914-20.

Leentjens AFG, van den Akker M, Metsemakers JFM, Lousberg R, Verhey FRJ. Higher incidence of depression preceding the onset of Parkinson's disease: a register study. *Mov Disord* 2003;**18**:414-18.

Lowe, B., et al., Predictors of psychiatric comorbidity in medical outpatients. *Psychosomatic Medicine*, 2003. **65**(5): p. 764-70.

Lyketsos, C.G., et al., Medical comorbidity in psychiatric inpatients: relation to clinical outcomes and hospital length of stay. *Psychosomatics.*, 2002. **43**(1): p. 24-30.

Nuyen, J., et al., Accuracy of diagnosing depression in primary care: the impact of chronic somatic and psychiatric co-morbidity. *Psychological Medicine*, 2005. **35**(8): p. 1185-95.

Rabinowitz, J., et al., Primary care physicians' detection of psychological distress among elderly patients. *Am J Geriatr Psychiatry*, 2005. **13**: p. 773-80.

Schuurman AG, van den Akker M, Ensink KTJL, Metsemakers JFM, Knottnerus JA, Leentjens AFG, Buntinx F. Increased risk of Parkinson's disease after depression: a retrospective cohort study. *Neurology* 2002;**58**:1501-4.

Seeman, T.E., et al., The health consequences of multiple morbidity in the elderly. The Alameda County study. *Journal of Aging & Health*, 1989. **1**(1): p. 50-66.

Thurston-Hicks, A., et al., Functional impairment associated with psychological distress and medical severity in rural primary care patients. *Psychiatric Services*, 1998. **49**(7): p. 951-5.

van den Akker M, Schuurman A, Metsemakers J, Buntinx F. Is depression related to subsequent diabetes mellitus? *Acta Psychiatrica Scandinavica* 2004;**110**:178-83.

3.10 MEDICATION

Almutairi AS, Alhazmi TM, Alotaibi YH, Alfraidi AA, Alsaad AM, Matrood RA, et al. Medication Adherence Among Multimorbid Patients With Polypharmacy and Its Relation to Social Support at National Guard Primary Health Care Centers, Riyadh. *Cureus*. 2022;14(10):e30679.

Belialov F. Drug classification for patients with comorbidities. *J Pharm Policy Pract*. 2022;15(1):56.

Błaszcyńska-Marunowska E, Jagiełło K, Grodzicki T, Wierucki Ł, Sznitowska M, Kalarus Z, et al. Polypharmacy among elderly patients in Poland: prevalence, predisposing factors, and management strategies. *Pol Arch Intern Med*. 2022;132(12).

Chen J, Tian Y, Yin M, Lin W, Tuersun Y, Li L, et al. Relationship between self-efficacy and adherence to self-management and medication among patients with chronic diseases in China: A multicentre cross-sectional study. *J Psychosom Res*. 2023;164:111105.

Gharekhani A, Somi M, Ostadrahimi A, Hatefi A, Haji Kamanaj A, Hassannezhad S, et al. Prevalence and Predicting Risk Factors of Polypharmacy in Azar Cohort Population. *Iran J Pharm Res*. 2022;21(1):e126922.

Kirwan C, Hynes L, Hart N, Mulligan S, Leathem C, McQuillan L, et al. The multimorbidity collaborative medication review and decision making (MyComrade) study: a pilot cluster randomised trial in two healthcare systems. *Pilot Feasibility Stud*. 2022;8(1):225.

Lleal M, Baré M, Ortonobes S, Sevilla-Sánchez D, Jordana R, Herranz S, et al. Comprehensive Multimorbidity Patterns in Older Patients Are Associated with Quality Indicators of Medication-MoPIM Cohort Study. *Int J Environ Res Public Health*. 2022;19(23).

McCarthy C, Flood M, Clyne B, Smith SM, Wallace E, Boland F, et al. Medication changes and potentially inappropriate prescribing in older patients with significant polypharmacy. *Int J Clin Pharm*. 2022.

Mertens V, Jacobs L, Knops N, Alemzadeh SM, Vandeven K, Swartenbroekx J, et al. Bedside medication review with cognitive and depression screening by a clinical pharmacist as part of a comprehensive geriatric assessment in hospitalized older patients with polypharmacy: A pilot study. *PLoS One*. 2022;17(10):e0276402.

Sallevelt B, Egberts TCG, Huibers CJA, Ietswaart J, Drenth-van Maanen AC, Jennings E, et al. Detectability of Medication Errors With a STOPP/START-Based Medication Review in Older People Prior to a Potentially Preventable Drug-Related Hospital Admission. *Drug Saf*. 2022;45(12):1501-16.

Suzuki Y, Shiraishi N, Komiya H, Sakakibara M, Akishita M, Kuzuya M. Potentially inappropriate medications increase while prevalence of polypharmacy/hyperpolypharmacy decreases in Japan: A comparison of nationwide prescribing data. *Arch Gerontol Geriatr*. 2022;102:104733.

Tang Q, Wan L, Lu J, Wu W, Wu H, Liu Z, et al. Rational medication management mode and its implementation effect for the elderly with multimorbidity: A prospective cohort study in China. *Front Public Health*. 2022;10:992959.

Vickery AW, Roth S, Ernenwein T, Kennedy J, Washer P. A large Australian longitudinal cohort registry demonstrates sustained safety and efficacy of oral medicinal cannabis for at least two years. *PLoS One*. 2022;17(11):e0272241.

Walker LE, Abuzour AS, Bollegala D, Clegg A, Gabbay M, Griffiths A, et al. The DynAIRx Project Protocol: Artificial Intelligence for dynamic prescribing optimisation and care integration in multimorbidity. *J Multimorb Comorb*. 2022;12:26335565221145493.

Molist-Brunet, N., Sevilla-Sánchez, D., Puigoriol-Juventeny, E., Barneto-Soto, M., González-Bueno, J. and Espauella-Panicot, J. (2022). Improving individualized prescription in patients with multimorbidity through medication review. *BMC Geriatrics*, 22(1). doi:10.1186/s12877-022-03107-2.

Franchi, C., Ludergrani, M., Merlino, L., Nobili, A., Fortino, I., Leoni, O. and Ardoino, I. (2022). Multiple Medication Adherence and Related Outcomes in Community-Dwelling Older People on Chronic Polypharmacy: A Retrospective Cohort Study on Administrative Claims Data. *International Journal of Environmental Research and Public Health*, 19(9), p.5692. doi:10.3390/ijerph19095692.

Allaham, K., Feyasa, M.B., Govender, R.D., Musa, A., AlKaabi, A.J., ElBarazi, I., AlSheryani, S.D., Al Falasi, R.J. and Khan, M.A. (2022). Medication Adherence Among Patients with Multimorbidity in the United Arab Emirates. *Patient Preference and Adherence*, Volume 16, pp.1187–1200. doi:10.2147/ppa.s355891.

Jennings, E.L.M., O'Mahony, D. and Gallagher, P.F. (2021). Medication-related quality of life (MRQoL) in ambulatory older adults with multi-morbidity and polypharmacy. *European Geriatric Medicine*. doi:10.1007/s41999-021-00573-6.

Brooks, C.F., Argyropoulos, A., Matheson-Monnet, C.B. and Kryl, D. (2022). Evaluating the impact of a polypharmacy Action Learning Sets tool on healthcare practitioners' confidence, perceptions and experiences of stopping inappropriate medicines. *BMC medical education*, [online] 22(1), p.499. doi:10.1186/s12909-022-03556-8.

Randles, M.A., O'Mahony, D. and Gallagher, P.F. (2022). Frailty and Potentially Inappropriate Prescribing in Older People with Polypharmacy: A Bi-Directional Relationship? *Drugs & Aging*, [online] 39(8), pp.597–606. doi:10.1007/s40266-022-00952-z.

Hughes, C.M. (2022). One size fits all? How to optimize the prescribing of appropriate polypharmacy in chronic diseases, using a behavioral approach - a United Kingdom perspective. *Expert Review of Clinical Pharmacology*, [online] 15(5), pp.497–499. doi:10.1080/17512433.2022.2094767.

Reeve, J., Maden, M., Hill, R., Turk, A., Mahtani, K., Wong, G., Lasserson, D., Krska, J., Mangin, D., Byng, R., Wallace, E. and Ranson, E. (2022). Deprescribing medicines in older people living with multimorbidity and polypharmacy: the TAILOR evidence synthesis. *Health Technology Assessment (Winchester, England)*, [online] 26(32), pp.1–148. doi:10.3310/AAFO2475.

Schmidt, M.G., Franken, D.L., Olinto, M.T.A., da Costa, J.S.D. and Paniz, V.M.V. (2022). Impact of multimorbidity on the use of sleep medications among women: a population-based study in Southern Brazil. *Sleep & Breathing = Schlaf & Atmung*. [online] doi:10.1007/s11325-022-02672-5.

Patel, S., Kumar, M., Beavers, C.J., Karamat, S. and Alenezi, F. (2022). Polypharmacy and Cardiovascular Diseases: Consideration for Older Adults and Women. *Current Atherosclerosis Reports*. doi:10.1007/s11883-022-01055-1.

Molist-Brunet N, Sevilla-Sanchez D, Puigoriol-Juventeny E, Bajo-Penas L, Cantizano-Baldo I, Cabanas-Collell L, et al. Individualized Medication Review in Older People with Multimorbidity: A Comparative Analysis between Patients Living at Home and in a Nursing Home. *Int J Environ Res Public Health* 2022;19(6). doi: ijerph19063423 [pii]

10.3390/ijerph19063423

McCarthy C, Clyne B, Boland F, Moriarty F, Flood M, Wallace E, et al. GP-delivered medication review of polypharmacy, deprescribing, and patient priorities in older people with multimorbidity in Irish primary care (SPPIRE Study): A cluster randomised controlled trial. *PLoS Med* 2022;19(1):e1003862. doi: 10.1371/journal.pmed.1003862

PMEDICINE-D-21-02234 [pii]

Aoki T, Fujinuma Y, Matsushima M. Associations of primary care structures with polypharmacy and patient-reported indicators in patients with complex multimorbidity: a multicentre cross-sectional study in Japan. *BMJ Open* 2022;12(1):e054348. doi: bmjopen-2021-054348 [pii]

10.1136/bmjopen-2021-054348

Gonzalez-Bueno J, Sevilla-Sanchez D, Puigoriol-Juventeny E, Molist-Brunet N, Codina-Jane C, Espauella-Panicot J. Improving medication adherence and effective prescribing through a patient-centered prescription model in patients with multimorbidity. *Eur J Clin Pharmacol* 2022;78(1):127-37. doi: 10.1007/s00228-021-03207-9

10.1007/s00228-021-03207-9 [pii]

Vos R, Boesten J, van den Akker M. Fifteen-year trajectories of multimorbidity and polypharmacy in Dutch primary care-A longitudinal analysis of age and sex patterns. *PLoS One* 2022;17(2):e0264343. doi: 10.1371/journal.pone.0264343 PONE-D-21-20231 [pii]

Tian F, Liao S, Chen Z, et al. The prevalence and risk factors of potentially inappropriate medication use in older Chinese inpatients with multimorbidity and polypharmacy: a cross-sectional study. *Ann Transl Med* 2021;9(18):1483. doi: 10.21037/atm-21-4238

Gonzalez-Bueno J, Sevilla-Sanchez D, Puigoriol-Juventeny E, et al. Factors Associated with Medication Non-Adherence among Patients with Multimorbidity and Polypharmacy Admitted to an Intermediate Care Center. *Int J Environ Res Public Health* 2021;18(18) doi: 10.3390/ijerph18189606

- Felix IB, Henriques A. Medication adherence and related determinants in older people with multimorbidity: A cross-sectional study. *Nurs Forum* 2021;56(4):834-43. doi: 10.1111/nuf.12619
- Jennings ELM, O'Mahony D, Gallagher PF. Medication-related quality of life (MRQoL) in ambulatory older adults with multi-morbidity and polypharmacy. *Eur Geriatr Med* 2021 doi: 10.1007/s41999-021-00573-6
- Stafford G, Villen N, Roso-Llorach A, et al. Combined Multimorbidity and Polypharmacy Patterns in the Elderly: A Cross-Sectional Study in Primary Health Care. *Int J Environ Res Public Health* 2021;18(17) doi: 10.3390/ijerph18179216
- Matthias AT, Fernando G, Somathilake B, et al. Predictors and patterns of polypharmacy in chronic diseases in a middle-income country. *Int J Physiol Pathophysiol Pharmacol* 2021;13(6):158-65.
- Gonzalez-Bueno J, Sevilla-Sanchez D, Puigoriol-Juvanteny E, et al. Improving medication adherence and effective prescribing through a patient-centered prescription model in patients with multimorbidity. *Eur J Clin Pharmacol* 2021 doi: 10.1007/s00228-021-03207-9
- O'Connor R, Eifler M, Russell AM, et al. Caregiver involvement in managing medications among older adults with multiple chronic conditions. *J Am Geriatr Soc* 2021;69(10):2916-22. doi: 10.1111/jgs.17337
- Ukhanova M, Markwardt S, Furuno JP, et al. Are there sex differences in potentially inappropriate prescribing in adults with multimorbidity? *J Am Geriatr Soc* 2021;69(8):2163-75. doi: 10.1111/jgs.17194
- Schneider J, Algharably EAE, Budnick A, et al. High Prevalence of Multimorbidity and Polypharmacy in Elderly Patients With Chronic Pain Receiving Home Care are Associated With Multiple Medication-Related Problems. *Front Pharmacol* 2021;12:686990. doi: 10.3389/fphar.2021.686990
- Troncoso-Marino A, Roso-Llorach A, Lopez-Jimenez T, et al. Medication-Related Problems in Older People with Multimorbidity in Catalonia: A Real-World Data Study with 5 Years' Follow-Up. *J Clin Med* 2021;10(4) doi: 10.3390/jcm10040709
- Poon IO, Skelton F, Bean LR, et al. Building Community-Engaged Multidisciplinary Partnerships to Improve Medication Management in Elderly Patients With Multiple Chronic Conditions. *J Patient Cent Res Rev* 2021;8(2):113-20.
- Jungo KT, Streit S, Lauffenburger JC. Patient factors associated with new prescribing of potentially inappropriate medications in multimorbid US older adults using multiple medications. *BMC Geriatr* 2021;21(1):163. doi: 10.1186/s12877-021-02089-x
- Jungo KT, Mantelli S, Rozsnyai Z, et al. General practitioners' deprescribing decisions in older adults with polypharmacy: a case vignette study in 31 countries. *BMC Geriatr* 2021;21(1):19. doi: 10.1186/s12877-020-01953-6
- Mucherino S, Gimeno-Miguel A, Carmona-Pirez J, et al. Changes in Multimorbidity and Polypharmacy Patterns in Young and Adult Population over a 4-Year Period: A 2011-2015 Comparison Using Real-World Data. *Int J Environ Res Public Health* 2021;18(9) doi: 10.3390/ijerph18094422
- Delgado J, Jones L, Bradley MC, et al. Potentially inappropriate prescribing in dementia, multi-morbidity and incidence of adverse health outcomes. *Age Ageing* 2021;50(2):457-64. doi: 10.1093/ageing/afaa147

Walsh CA, Cahir C, Bennett KE. Longitudinal Medication Adherence in Older Adults With Multimorbidity and Association With Health Care Utilization: Results From the Irish Longitudinal Study on Ageing. *Ann Pharmacother* 2021;55(1):5-14. doi: 10.1177/1060028020937996

Jungo KT, Streit S, Lauffenburger JC. Utilization and Spending on Potentially Inappropriate Medications by US Older Adults with Multiple Chronic Conditions using Multiple Medications. *Arch Gerontol Geriatr* 2021;93:104326. doi: 10.1016/j.archger.2020.104326

San-Jose A, Perez-Bocanegra C, Agusti A, et al. Integrated health intervention on polypharmacy and inappropriate prescribing in elderly people with multimorbidity: Results at the end of the intervention and at 6 months after the intervention. *Med Clin (Barc)* 2021;156(6):263-69. doi: 10.1016/j.medcli.2020.04.030

Zechmann S, Senn O, Valeri F, et al. Effect of a patient-centred deprescribing procedure in older multimorbid patients in Swiss primary care - A cluster-randomised clinical trial. *BMC Geriatr* 2020;20(1):471. doi: 10.1186/s12877-020-01870-8

Muller BS, Uhlmann L, Ihle P, et al. Development and internal validation of prognostic models to predict negative health outcomes in older patients with multimorbidity and polypharmacy in general practice. *BMJ Open* 2020;10(10):e039747. doi: 10.1136/bmjopen-2020-039747

Rozsnyai Z, Jungo KT, Reeve E, et al. What do older adults with multimorbidity and polypharmacy think about deprescribing? The LESS study - a primary care-based survey. *BMC Geriatr* 2020;20(1):435. doi: 10.1186/s12877-020-01843-x

Delgado J, Jones L, Bradley MC, et al. Potentially inappropriate prescribing in dementia, multi-morbidity and incidence of adverse health outcomes. *Age Ageing* 2020 doi: 10.1093/ageing/afaa147

Doherty AJ, Boland P, Reed J, et al. Barriers and facilitators to deprescribing in primary care: a systematic review. *BJGP Open* 2020;4(3) doi: 10.3399/bjgpopen20X101096

Maffoni M, Traversoni S, Costa E, et al. Medication adherence in the older adults with chronic multimorbidity: a systematic review of qualitative studies on patient's experience. *Eur Geriatr Med* 2020;11(3):369-81. doi: 10.1007/s41999-020-00313-2

Khezrian M, McNeil CJ, Murray AD, et al. An overview of prevalence, determinants and health outcomes of polypharmacy. *Ther Adv Drug Saf* 2020;11:2042098620933741. doi: 10.1177/2042098620933741

San-Jose A, Perez-Bocanegra C, Agusti A, et al. Integrated health intervention on polypharmacy and inappropriate prescribing in elderly people with multimorbidity: Results at the end of the intervention and at 6 months after the intervention. *Med Clin (Barc)* 2020 doi: 10.1016/j.medcli.2020.04.030

Lopez-Rodriguez JA, Rogero-Blanco E, Aza-Pascual-Salcedo M, et al. Potentially inappropriate prescriptions according to explicit and implicit criteria in patients with multimorbidity and polypharmacy. MULTIPAP: A cross-sectional study. *PLoS One* 2020;15(8):e0237186. doi: 10.1371/journal.pone.0237186

Villen N, Guisado-Clavero M, Fernandez-Bertolin S, et al. Multimorbidity patterns, polypharmacy and their association with liver and kidney abnormalities in people over 65 years of age: a longitudinal study. *BMC Geriatr* 2020;20(1):206. doi: 10.1186/s12877-020-01580-1

Forslund T, Carlsson AC, Ljunggren G, et al. Patterns of multimorbidity and pharmacotherapy: a total population cross-sectional study. *Fam Pract* 2020 doi: 10.1093/fampra/cmaa056

Cheung JTK, Yu R, Woo J. Is polypharmacy beneficial or detrimental for older adults with cardiometabolic multimorbidity? Pooled analysis of studies from Hong Kong and Europe. *Fam Pract* 2020 doi: 10.1093/fampra/cmaa062

Walsh CA, Cahir C, Bennett KE. Longitudinal Medication Adherence in Older Adults With Multimorbidity and Association With Health Care Utilization: Results From the Irish Longitudinal Study on Ageing. *Ann Pharmacother* 2020:1060028020937996. doi: 10.1177/1060028020937996

Ermogenous C, Green C, Jackson T, et al. Treating age-related multimorbidity: the drug discovery challenge. *Drug Discov Today* 2020;25(8):1403-15. doi: 10.1016/j.drudis.2020.06.016

Ritchie CS, Garrett SB, Thompson N, et al. Unintended Consequences of Opioid Regulations in Older Adults with Multiple Chronic Conditions. *Gerontologist* 2020 doi: 10.1093/geront/gnaa016

Laba TL, Cheng L, Kolhatkar A, et al. Cost-related nonadherence to medicines in people with multiple chronic conditions. *Res Social Adm Pharm* 2020;16(3):415-21. doi: 10.1016/j.sapharm.2019.06.008

Scheer S, Patel K, Deng LX, et al. Multimorbidity and Opioid Prescribing in Hospitalized Older Adults. *J Palliat Med* 2020;23(4):475-82. doi: 10.1089/jpm.2019.0260

Rodriguez-Perez A, Alfaro-Lara ER, Sierra-Torres MI, et al. Validation of the LESS-CHRON criteria: reliability study of a tool for deprescribing in patients with multimorbidity. *Eur J Hosp Pharm* 2019;26(6):334-38. doi: 10.1136/ejhpharm-2017-001476

Nguyen TN, Ngangue P, Haggerty J, et al. Multimorbidity, polypharmacy and primary prevention in community-dwelling adults in Quebec: a cross-sectional study. *Fam Pract* 2019;36(6):706-12. doi: 10.1093/fampra/cmz023

Sirois C, Lunghi C, Laroche ML, et al. The delicate choice of optimal basic therapy for multimorbid older adults: A cross-sectional survey. *Res Social Adm Pharm* 2019;15(6):761-66. doi: 10.1016/j.sapharm.2018.09.008

Fernandez-Lazaro CI, Adams DP, Fernandez-Lazaro D, et al. Medication adherence and barriers among low-income, uninsured patients with multiple chronic conditions. *Res Social Adm Pharm* 2019;15(6):744-53. doi: 10.1016/j.sapharm.2018.09.006

Millar E, Gurney J, Stanley J, et al. Pill for this and a pill for that: A cross-sectional survey of use and understanding of medication among adults with multimorbidity. *Australas J Ageing* 2019;38(2):91-97. doi: 10.1111/ajag.12606

Rhee TG, Rosenheck RA. Psychotropic polypharmacy reconsidered: Between-class polypharmacy in the context of multimorbidity in the treatment of depressive disorders. *J*

Affect Disord 2019;**252**:450-57. doi: 10.1016/j.jad.2019.04.018

Zechmann S, Trueb C, Valeri F, et al. Barriers and enablers for deprescribing among older, multimorbid patients with polypharmacy: an explorative study from Switzerland. *BMC Fam Pract* 2019;**20**(1):64. doi: 10.1186/s12875-019-0953-4

Nguyen TN, Ngangue P, Haggerty J, et al. Multimorbidity, polypharmacy and primary prevention in community-dwelling adults in Quebec: a cross-sectional study. *Fam Pract* 2019 doi: 10.1093/fampra/cmz023

Guisado-Clavero M, Violan C, Lopez-Jimenez T, et al. Medication patterns in older adults with multimorbidity: a cluster analysis of primary care patients. *BMC Fam Pract* 2019;**20**(1):82. doi: 10.1186/s12875-019-0969-9

Herzig L, Zeller A, Pasquier J, et al. Factors associated with patients' and GPs' assessment of the burden of treatment in multimorbid patients: a cross-sectional study in primary care. *BMC Fam Pract* 2019;**20**(1):88. doi: 10.1186/s12875-019-0974-z

Laba TL, Cheng L, Kolhatkar A, et al. Cost-related nonadherence to medicines in people with multiple chronic conditions. *Res Social Adm Pharm* 2019 doi: 10.1016/j.sapharm.2019.06.008

Whittaker CF, Nelson SAW, Tom SE. Impact of the Pharmacists' Patient Care Process on Medication Adherence in Older Adults With Multimorbidity. *Sr Care Pharm* 2019;**34**(7):456-63. doi: 10.4140/TCP.n.2019.456.

Curtin D, Dukelow T, James K, et al. Deprescribing in multi-morbid older people with polypharmacy: agreement between STOPPFrail explicit criteria and gold standard deprescribing using 100 standardized clinical cases. *Eur J Clin Pharmacol* 2019;**75**(3):427-32. doi: 10.1007/s00228-018-2598-y

Menditto E, Gimeno Miguel A, Moreno Juste A, et al. Patterns of multimorbidity and polypharmacy in young and adult population: Systematic associations among chronic diseases and drugs using factor analysis. *PLoS One* 2019;**14**(2):e0210701. doi: 10.1371/journal.pone.0210701

van den Akker M, Vaes B, Goderis G, et al. Trends in multimorbidity and polypharmacy in the Flemish-Belgian population between 2000 and 2015. *PLoS One* 2019;**14**(2):e0212046. doi: 10.1371/journal.pone.0212046

Carrier H, Zaytseva A, Bocquier A, et al. GPs' management of polypharmacy and therapeutic dilemma in patients with multimorbidity: a cross-sectional survey of GPs in France. *Br J Gen Pract* 2019;**69**(681):e270-e78. doi: 10.3399/bjgp19X701801

Fernandez-Lazaro CI, Adams DP, Fernandez-Lazaro D, et al. Medication adherence and barriers among low-income, uninsured patients with multiple chronic conditions. *Res Social Adm Pharm* 2018 doi: 10.1016/j.sapharm.2018.09.006

Sirois C, Lunghi C, Laroche ML, et al. The delicate choice of optimal basic therapy for multimorbid older adults: A cross-sectional survey. *Res Social Adm Pharm* 2018 doi: 10.1016/j.sapharm.2018.09.008

Castro-Rodriguez A, Machado-Duque ME, Gaviria-Mendoza A, et al. Factors related to

excessive polypharmacy (≥ 15 medications) in an outpatient population from Colombia. *Int J Clin Pract* 2018:e13278. doi: 10.1111/ijcp.13278

Mantelli S, Jungo KT, Rozsnyai Z, et al. How general practitioners would deprescribe in frail oldest-old with polypharmacy - the LESS study. *BMC Fam Pract* 2018;**19**(1):169. doi: 10.1186/s12875-018-0856-9

Schiotz ML, Frolich A, Jensen AK, et al. Polypharmacy and medication deprescribing: A survey among multimorbid older adults in Denmark. *Pharmacol Res Perspect* 2018;**6**(6):e00431. doi: 10.1002/prp2.431

Toscano Guzman MD, Galvan Banqueri M, Otero MJ, et al. Validating a Trigger Tool for Detecting Adverse Drug Events in Elderly Patients With Multimorbidity (TRIGGER-CHRON). *J Patient Saf* 2018 doi: 10.1097/PTS.0000000000000552

Curtin D, Dukelow T, James K, et al. Deprescribing in multi-morbid older people with polypharmacy: agreement between STOPPFrail explicit criteria and gold standard deprescribing using 100 standardized clinical cases. *Eur J Clin Pharmacol* 2018 doi: 10.1007/s00228-018-2598-y

Todd A, Jansen J, Colvin J, et al. The deprescribing rainbow: a conceptual framework highlighting the importance of patient context when stopping medication in older people. *BMC Geriatr* 2018;**18**(1):295. doi: 10.1186/s12877-018-0978-x

Wastesson JW, Morin L, Tan ECK, et al. An update on the clinical consequences of polypharmacy in older adults: a narrative review. *Expert Opin Drug Saf* 2018;**17**(12):1185-96. doi: 10.1080/14740338.2018.1546841

Millar E, Gurney J, Stanley J, et al. Pill for this and a pill for that: A cross-sectional survey of use and understanding of medication among adults with multimorbidity. *Australas J Ageing* 2018 doi: 10.1111/ajag.12606

Ofori-Asenso R, Ilomaki J, Curtis AJ, et al. Patterns of Medication Dispensation for Multiple Comorbidities among Older Adults in Australia. *Pharmacy (Basel)* 2018;**6**(4) doi: 10.3390/pharmacy6040134

Zidan A, Awaisu A, El-Hajj MS, et al. Medication-Related Burden among Patients with Chronic Disease Conditions: Perspectives of Patients Attending Non-Communicable Disease Clinics in a Primary Healthcare Setting in Qatar. *Pharmacy (Basel)* 2018;**6**(3) doi: 10.3390/pharmacy6030085.

Mannucci PM, Nobili A, Pasina L, et al. Polypharmacy in older people: lessons from 10 years of experience with the REPOSI register. *Intern Emerg Med* 2018 doi: 10.1007/s11739-018-1941-8.

Rieckert A, Trampisch US, Klaassen-Mielke R, et al. Polypharmacy in older patients with chronic diseases: a cross-sectional analysis of factors associated with excessive polypharmacy. *BMC Fam Pract* 2018;**19**(1):113. doi: 10.1186/s12875-018-0795-5.

Caughey GE, Hillen JB, Bacon S, et al. Implementation of medication-related indicators of potentially preventable hospitalizations in a national chronic disease management program for older patients with multimorbidity. *Int J Qual Health Care* 2018 doi: 10.1093/intqhc/mzy133.

von Buedingen F, Hammer MS, Meid AD, et al. Changes in prescribed medicines in older patients with multimorbidity and polypharmacy in general practice. *BMC Fam Pract* 2018;19(1):131. doi: 10.1186/s12875-018-0825-3.

Schoufour JD, Oppewal A, van der Maarl HJK, et al. Multimorbidity and Polypharmacy Are Independently Associated With Mortality in Older People With Intellectual Disabilities: A 5-Year Follow-Up From the HA-ID Study. *Am J Intellect Dev Disabil* 2018;123(1):72-82. doi: 10.1352/1944-7558-123.1.72.

Feng X, Tan X, Riley B, et al. Polypharmacy and Multimorbidity Among Medicaid Enrollees: A Multistate Analysis. *Popul Health Manag* 2018;21(2):123-29. doi: 10.1089/pop.2017.0065.

Kim S, Bennett K, Wallace E, et al. Measuring medication adherence in older community-dwelling patients with multimorbidity. *Eur J Clin Pharmacol* 2018;74(3):357-64. doi: 10.1007/s00228-017-2388-y.

Bien B, Bien-Barkowska K. Prescribing or deprescribing in older persons: what are the real-life concerns in geriatric practice? *Pol Arch Intern Med* 2018;128(4):200-08. doi: 10.20452/pamw.4206.

Muth C, Uhlmann L, Haefeli WE, et al. Effectiveness of a complex intervention on Prioritising Multimедication in Multimorbidity (PRIMUM) in primary care: results of a pragmatic cluster randomised controlled trial. *BMJ Open* 2018;8(2):e017740. doi: 10.1136/bmjopen-2017-017740.

Aoki T, Yamamoto Y, Ikenoue T, et al. Multimorbidity patterns in relation to polypharmacy and dosage frequency: a nationwide, cross-sectional study in a Japanese population. *Sci Rep* 2018;8(1):3806. doi: 10.1038/s41598-018-21917-6.

Riordan DO, Aubert CE, Walsh KA, et al. Prevalence of potentially inappropriate prescribing in a subpopulation of older European clinical trial participants: a cross-sectional study. *BMJ Open* 2018;8(3):e019003. doi: 10.1136/bmjopen-2017-019003.

Villalba-Moreno AM, Alfaro-Lara ER, Rodriguez-Perez A, et al. Association Between Drug Burden Index and Functional and Cognitive Function in Patients with Multimorbidity. *Curr Pharm Des* 2018 doi: 10.2174/1381612824666180327154239.

Inauen J, Bierbauer W, Luscher J, et al. Assessing adherence to multiple medications and in daily life among patients with multimorbidity. *Psychol Health*. 2017;32(10):1233-1248.

Bachmann M, Kool J, Oesch P, Weber M, Bachmann S. Association of potentially inappropriate medications with outcomes of inpatient geriatric rehabilitation : A prospective cohort study. *Z Gerontol Geriatr*. 2017.

Rodriguez-Perez A, Alfaro-Lara ER, Albinana-Perez S, et al. Novel tool for deprescribing in chronic patients with multimorbidity: List of Evidence-Based Deprescribing for Chronic Patients criteria. *Geriatr Gerontol Int*. 2017;17(11):2200-2207.

Ihle A, Inauen J, Scholz U, et al. Prospective and retrospective memory are differentially related to self-rated omission and commission errors in medication adherence in multimorbidity. *Appl Neuropsychol Adult*. 2017;24(6):505-511.

Storms H, Marquet K, Aertgeerts B, Claes N. Prevalence of inappropriate medication use in residential long-term care facilities for the elderly: A systematic review. *Eur J Gen*

Pract. 2017;**23**(1):69-77.

Narayan SW, Nishtala PS. Development and validation of a Medicines Comorbidity Index for older people. *Eur J Clin Pharmacol.* 2017;**73**(12):1665-1672.

Gorup EC, Ster MP. Number of medications or number of diseases: what influences underprescribing? *Eur J Clin Pharmacol.* 2017;**73**(12):1673-1679.

Kim S, Bennett K, Wallace E, Fahey T, Cahir C. Measuring medication adherence in older community-dwelling patients with multimorbidity. *Eur J Clin Pharmacol.* 2017.

Fredericksen RJ, Gibbons L, Brown S, et al. Medication understanding among patients living with multiple chronic conditions: Implications for patient-reported measures of adherence. *Res Social Adm Pharm.* 2017. doi: 10.1016/j.sapharm.2017.06.009.

Toscano Guzman MD, Galvan Banqueri M, Otero MJ, Alfaro Lara ER, Casajus Lagranja P, Santos Ramos B. Development of a Trigger Tool to Identify Adverse Drug Events in Elderly Patients With Multimorbidity. *J Patient Saf.* 2017. doi: 10.1097/PTS.0000000000000389.

van Summeren JJ, Schuling J, Haaijer-Ruskamp FM, Denig P. Outcome prioritisation tool for medication review in older patients with multimorbidity: a pilot study in general practice. *Br J Gen Pract.* 2017;**67**(660):e501-e506. doi: 10.3399/bjgp17X690485.

Feng X, Tan X, Riley B, Zheng T, Bias T, Sambamoorthi U. Polypharmacy and Multimorbidity Among Medicaid Enrollees: A Multistate Analysis. *Popul Health Manag.* 2017. doi: 10.1089/pop.2017.0065.

McCarthy C, Clyne B, Corrigan D, et al. Supporting prescribing in older people with multimorbidity and significant polypharmacy in primary care (SPPiRE): a cluster randomised controlled trial protocol and pilot. *Implement Sci.* 2017;**12**(1):99. doi: 10.1186/s13012-017-0629-1.

Schottker B, Saum KU, Muhlack DC, Hoppe LK, Holleczeck B, Brenner H. Polypharmacy and mortality: new insights from a large cohort of older adults by detection of effect modification by multi-morbidity and comprehensive correction of confounding by indication. *Eur J Clin Pharmacol.* 2017;**73**(8):1041-1048. doi: 10.1007/s00228-017-2266-7.

Caughey GE, Tait K, Vitry AI, Shakib S. Influence of medication risks and benefits on treatment preferences in older patients with multimorbidity. *Patient Prefer Adherence.* 2017;**11**:131-140.

Inauen J, Bierbauer W, Luscher J, et al. Assessing adherence to multiple medications and in daily life among patients with multimorbidity. *Psychol Health.* 2017:1-16.

Sanchez-Fidalgo S, Guzman-Ramos MI, Galvan-Banqueri M, Bernabeu-Wittel M, Santos-Ramos B. Prevalence of drug interactions in elderly patients with multimorbidity in primary care. *Int J Clin Pharm.* 2017;**39**(2):343-353.

Jager C, Freund T, Steinhauser J, et al. Impact of a tailored program on the implementation of evidence-based recommendations for multimorbid patients with polypharmacy in primary care practices-results of a cluster-randomized controlled trial.

Implement Sci. 2017;**12**(1):8.

Surbhi S, Munshi KD, Bell PC, Bailey JE. Drug therapy problems and medication discrepancies during care transitions in super-utilizers. *J Am Pharm Assoc* (2003). 2016;**56**(6):633-642 e631.

Aubert CE, Streit S, Da Costa BR, et al. Polypharmacy and specific comorbidities in university primary care settings. *Eur J Intern Med*. 2016;**35**:35-42.

Allore HG, Zhan Y, Cohen AB, Tinetti ME, Trentalange M, McAvay G. Methodology to Estimate the Longitudinal Average Attributable Fraction of Guideline-recommended Medications for Death in Older Adults With Multiple Chronic Conditions. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:1113-6.

Sinnige J, Braspenning JC, Schellevis FG, et al. Inter-practice variation in polypharmacy prevalence amongst older patients in primary care. *Pharmacoepidemiol Drug Saf*. 2016;**25**:1033-41.

Sinnige J, Korevaar JC, van Lieshout J, Westert GP, Schellevis FG, Braspenning JC. Medication management strategy for older people with polypharmacy in general practice: a qualitative study on prescribing behaviour in primary care. *Br J Gen Pract*. 2016;**66**:e540-51.

Linnet K, Gudmundsson LS, Birgisdottir FG, et al. Multimorbidity and use of hypnotic and anxiolytic drugs: cross-sectional and follow-up study in primary healthcare in Iceland. *BMC Fam Pract*. 2016;**17**:69.

[No authors listed]. Frailty, polypharmacy and deprescribing. *Drug Ther Bull*. 2016;**54**:69-72.

Aubert CE, Streit S, Da Costa BR, et al. Polypharmacy and specific comorbidities in university primary care settings. *Eur J Intern Med*. 2016.

Delcher A, Hily S, Boureau AS, Chapelet G, Berrut G, de Decker L: Multimorbidities and Overprescription of Proton Pump Inhibitors in Older Patients. *PLoS One*. 2015;**10**(11):e0141779.

Kersten H, Hvidsten LT, Gloersen G, Wyller TB, Wang-Hansen MS: Clinical impact of potentially inappropriate medications during hospitalization of acutely ill older patients with multimorbidity. *Scand J Prim Health Care*. 2015;**33**(4):243-251.

Cooper JA, Moriarty F, Ryan C, Smith SM, Bennett K, Fahey T *et al*: Potentially inappropriate prescribing in two populations with differing socio-economic profiles: a cross-sectional database study using the PROMPT criteria. *Eur J Clin Pharmacol*. 2016.

Mudge A, Radnedge K, Kasper K, et al. Effects of a pilot multidisciplinary clinic for frequent attending elderly patients on deprescribing. *Aust Health Rev*. Jul 6 2015.

Hansen RA, Voils CI, Farley JF, et al. Prescriber continuity and medication adherence for complex patients. *Ann Pharmacother*. Mar 2015;**49**(3):293-302.

Reich O, Rosemann T, Rapold R, Blozik E, Senn O. Potentially inappropriate medication use in older patients in Swiss managed care plans: prevalence, determinants and association with hospitalization. *PLoS One*. 2014;**9**(8):e105425.

Mannucci PM, Nobili A. Multimorbidity and polypharmacy in the elderly: lessons from REPOSI. *Intern Emerg Med*. Oct 2014;**9**(7):723-734.

Doos L, Roberts EO, Corp N, Kadam UT. Multi-drug therapy in chronic condition multimorbidity: a systematic review. *Fam Pract*. 2014;**31**(6):654-63.

Stock S, Redaelli M, Simic D, Siegel M, Henschel F. Risk factors for the prescription of potentially inappropriate medication (PIM) in the elderly : An analysis of sickness fund routine claims data from Germany. *Wien Klin Wochenschr*. Oct 2014;**126**(19-20):604-612.

Payne RA, Abel GA, Avery AJ, Mercer SW, Roland MO. Is polypharmacy always hazardous? A retrospective cohort analysis using linked electronic health records from primary and secondary care. *Br J Clin Pharmacol*. Jun 2014;**77**(6):1073-1082.

Payne RA, Avery AJ, Duerden M, Saunders CL, Simpson CR, Abel GA. Prevalence of polypharmacy in a Scottish primary care population. *Eur J Clin Pharmacol*. May 2014;**70**(5):575-581.

Tsoi CS, Chow JY, Choi KS, Li HW, Nie JX, Tracy CS, Wang L, Upshur RE. Medical characteristics of the oldest old: retrospective chart review of patients aged 85+ in an academic primary care centre. *BMC Res Notes*. 2014;**7**(1):340.

Lorgunpai SJ, Grammas M, Lee DS, McAvay G, Charpentier P, Tinetti ME. Potential therapeutic competition in community-living older adults in the u.s.: use of medications that may adversely affect a coexisting condition. *PLoS One*. 2014;**9**(2):e89447.

Tinetti ME, Han L, McAvay GJ, Lee DS, Peduzzi P, Dodson JA, Gross CP, Zhou B, Lin H. Anti-hypertensive medications and cardiovascular events in older adults with multiple chronic conditions. *PLoS One*. 2014;**9**(3):e90733.

Calderon-Larranaga A, Gimeno-Feliu LA, Gonzalez-Rubio F, Poblador-Plou B, Lairla-San Jose M, Abad-Diez JM, Poncel-Falco A, Prados-Torres A. Polypharmacy Patterns: Unravelling Systematic Associations between Prescribed Medications. *PLoS One*. 2013;**8**(12):e84967.

Koberlein J, Gottschall M, Czarnecki K, Thomas A, Bergmann A, Voigt K. General practitioners' views on polypharmacy and its consequences for patient health care. *BMC Fam Pract*. 2013;**14**(1):119.

Galvan-Banqueri M, de la Higuera-Vila L, Vega-Coca MD, Nieto Martin MD, Perez-Guerrero C, Santos-Ramos B. Reliability of a questionnaire for pharmacological treatment appropriateness in patients with multiple chronic conditions. *Eur J Intern Med*. Feb 18 2013.

Ose D, Mahler C, Vogel I, Ludt S, Szecsenyi J, Freund T. Let's talk about medication: concordance in rating medication adherence among multimorbid patients and their general practitioners. *Patient Prefer Adherence*. 2012;**6**:839-845.

Calderon-Larrañaga A, Poblador-Plou B, Gonzalez-Rubio F, Gimeno-Feliu LA, Abad-Diez JM, Prados-Torres A. Multimorbidity, polypharmacy, referrals, and adverse drug events: are we doing things well? *Br J Gen Pract*. Dec 2012;**62**(605):821-826.

Cherubini A, Corsonello A, Lattanzio F. Underprescription of beneficial medicines in

older people: causes, consequences and prevention. *Drugs Aging*. Jun 1 2012;**29**(6):463-475.

Vyas A, Pan X, Sambamoorthi U. Chronic Condition Clusters and Polypharmacy among Adults. *Int J Family Med*. 2012;**2012**:193168.

Heppner HJ, Christ M, Gosch M, et al. Polypharmacy in the elderly from the clinical toxicologist perspective. *Z Gerontol Geriatr*. Aug 2012;**45**(6):473-478.

Haverhals LM, Lee CA, Siek KA, Darr CA, Linnebur SA, Ruscin JM, et al. Older adults with multi-morbidity: medication management processes and design implications for personal health applications. *J Med Internet Res*. 2011;**13**:e44.

Nobili A, Marengoni A, Tettamanti M, Salerno F, Pasina L, Franchi C, et al. Association between clusters of diseases and polypharmacy in hospitalized elderly patients: results from the REPOSI study. *Eur J Intern Med*. 2011;**22**:597-602.

Richardson, K., et al., Variation over time in the association between polypharmacy and mortality in the older population. *Drugs Aging*, 2011. **28**: p.:547-60.

Schüz B, Marx C, Wurm S, et al. Medication beliefs predict medication adherence in older adults with multiple illnesses. *J Psychosom Res* 37(6):565-74 2011;70:179-87.

Jansà M et al. Multidimensional analysis of treatment adherence in patients with multiple chronic conditions. A cross-sectional study in a tertiary hospital. *Patient Educ Couns*. 2010;**81**(2):161-8.

Lewis, N. J., C. Bugdalski-Stutrud, et al. "The Medication Assessment Program: comprehensive medication assessments for persons taking multiple medications for chronic diseases." *Journal of the American Pharmacists Association: JAPhA* 2008. **48**(2): 171-80.

Lin, H. Y., C. C. Liao, et al. "Association of potentially inappropriate medication use with adverse outcomes in ambulatory elderly patients with chronic diseases: experience in a Taiwanese medical setting." *Drugs & Aging* 2008. **25**(1): 49-59.

Salazar, J. A., I. Poon, et al. "Clinical consequences of polypharmacy in elderly: expect the unexpected, think the unthinkable." *Expert Opinion on Drug Safety* 2007. **6**(6): 695-704.

Thier, S. L., K. S. Yu-Isenberg, et al. "In chronic disease, nationwide data show poor adherence by patients to medication and by physicians to guidelines." *Manag Care* 2008. **17**: 48-52, 55-7.

Bayliss, E.A., et al., Descriptions of barriers to self-care by persons with comorbid chronic diseases. *Ann Fam Med*, 2003. **1**: p. 15-21.

Biollaz, J. and T. Buclin, [Multiple diseases: should we treat them all?][French]. *Revue Medicale Suisse*, 2005. **1**(14): p. 941-7.

Froom, J. and J. Trilling, Reducing antihypertensive medication use in nursing home patients. *Archives of Family Medicine*, 2000. **9**(4): p. 378-83.

Fryback, D.G., et al., The Beaver Dam Health Outcomes Study: initial catalog of health-state quality factors. *Med Decis Making*., 1993. **13**(2): p. 89-102.

Kusek, J.W., et al., Cross-sectional study of health-related quality of life in African Americans with chronic renal insufficiency: the African American Study of Kidney Disease and Hypertension Trial. *American Journal of Kidney Diseases*., 2002. **39**(3): p. 513-24.

Retta, T.M. and O.S. Randall, Hypertension and concomitant diseases: a guide for evidence-based therapy. *Journal of the National Medical Association*, 2004. **96**(4): p. 450-60.

Wang, P.S., et al., Effects of noncardiovascular comorbidities on antihypertensive use in elderly hypertensives. *Hypertension*, 2005. **46**(2): p. 273-9.

Zhan, C., et al., Potentially inappropriate medication use in the community-dwelling elderly: findings from the 1996 Medical Expenditure Panel Survey. *JAMA*, 2001. **286**: p. 2823-9.

Stafford, R.S., et al., Trends in adult visits to primary care physicians in the United States. *Archives of Family Medicine.*, 1999. **8**(1): p. 26-32.

Stevenson, J., et al., Managing comorbidities in patients at the end of life. *BMJ*, 2004. **329**: p. 909-12.

Stuck, A.E., et al., Risk factors for functional status decline in community-living elderly people: a systematic literature review. *Social Science & Medicine.*, 1999. **48**(4): p. 445-69.

Townsend, A., K. Hunt, and S. Wyke, Managing multiple morbidity in mid-life: a qualitative study of attitudes to drug use. *BMJ*, 2003. **327**(7419): p. 837.

3.11 SOCIAL SUPPORT

Cheng C, Bai J. Coping with Multiple Chronic Conditions in the Family Context: A Meta-Synthesis. *West J Nurs Res.* 2022;44(10):972-84.

Schübbe SF, König HH, Hajek A. Multimorbidity and loneliness. Longitudinal analysis based on the GSOEP. *Arch Gerontol Geriatr.* 2023;105:104843.

Søndergaard E, Reventlow S, Mogensen HO. Episodic Relatedness in Socioeconomically Disadvantaged Families Where a Parent has Multiple Diagnoses. *Qual Health Res.* 2022;32(14):2066-77.

Sun L, Liu JE, Ji M, Wang Y, Chen S, Wang L. Coping with multiple chronic conditions among Chinese older couples: A community of shared destiny. *Geriatr Nurs.* 2022;48:214-23.

Zhang L, Shooshtari S, St John P, Menec VH. Multimorbidity and depressive symptoms in older adults and the role of social support: Evidence using Canadian Longitudinal Study on Aging (CLSA) data. *PLoS One.* 2022;17(11):e0276279.

Gurgel do Amaral, G.S., Ots, P., Brouwer, S. and van Zon, S.K.R. (2022). Multimorbidity and exit from paid employment: the effect of specific combinations of chronic health conditions. *European Journal of Public Health.* doi:10.1093/eurpub/ckac018.

Marmamula, S., Kumbham, T.R., Shidhaye, R., Modepalli, S.B., Barrenkala, N.R., Yellapragada, R. and Keeffe, J. (2022). Multimorbidity and multi-disability among the elderly in residential care in India: the Hyderabad Ocular Morbidity in Elderly Study (HOMES). *Scientific Reports*, [online] 12(1), p.11779. doi:10.1038/s41598-022-15943-8. Lozano-Hernández, C.M., López-Rodríguez, J.A., Rico-Blázquez, M., Calderón-Larrañaga, A., Leiva-Fernández, F., Prados-Torres, A., Del Cura-González, I. and MULTIPAP GROUP (2022). Sex differences in social support perceived by polymedicated older adults with multimorbidity. MULTIPAP study. *PloS One*, [online] 17(7), p.e0268218. doi:10.1371/journal.pone.0268218.

Carrasco-Ribelles, L.A., Roso-Llorach, A., Cabrera-Bean, M., Costa-Garrido, A., Zabaleta-Del-Olmo, E., Toran-Monserrat, P., Orfila Pernas, F. and Violán, C. (2022). Dynamics of multimorbidity and frailty, and their contribution to mortality, nursing home and home care need: A primary care cohort of 1 456 052 ageing people. *EClinicalMedicine*, [online] 52, p.101610. doi:10.1016/j.eclinm.2022.101610.

Mallon T, Schafer I, Fuchs A, et al. The moderating effects of social support and depressive symptoms on pain among elderly multimorbid patients-data from the multicentre, prospective, observational cohort study MultiCare. *Aging Ment Health* 2021:1-7. doi: 10.1080/13607863.2021.1916882

Singh A, Contreras Suarez D, You E, et al. Role of social support in the relationship between financial hardship and multimorbidity-a causal mediation analysis. *Eur J Public Health* 2021;31(3):482-87. doi: 10.1093/eurpub/ckab015

Demirer I, Bethge M, Spyra K, et al. Does social support mediate the effect of multimorbidity on mental wellbeing in the German working population? A longitudinal mediation analysis using structural equation modelling. *SSM Popul Health* 2021;13:100744. doi: 10.1016/j.ssmph.2021.100744

Lozano-Hernandez CM, Lopez-Rodriguez JA, Leiva-Fernandez F, et al. Social support, social context and nonadherence to treatment in young senior patients with multimorbidity and polypharmacy followed-up in primary care. MULTIPAP Study. *PLoS*

One 2020;15(6):e0235148. doi: 10.1371/journal.pone.0235148

De Maria M, Tagliabue S, Ausili D, et al. Perceived social support and health-related quality of life in older adults who have multiple chronic conditions and their caregivers: a dyadic analysis. *Soc Sci Med* 2020;262:113193. doi: 10.1016/j.socscimed.2020.113193

Olaya B, Domenech-Abella J, Moneta MV, et al. All-cause mortality and multimorbidity in older adults: The role of social support and loneliness. *Exp Gerontol.* 2017;**99**:120-126.

Kangovi S, Mitra N, Grande D, Huo H, Smith RA, Long JA. Community Health Worker Support for Disadvantaged Patients With Multiple Chronic Diseases: A Randomized Clinical Trial. *Am J Public Health.* 2017;**107**(10):1660-1667. doi: 10.2105/AJPH.2017.303985.

Ahn S, Kim S, Zhang H. Changes in Depressive Symptoms among Older Adults with Multiple Chronic Conditions: Role of Positive and Negative Social Support. *Int J Environ Res Public Health.* 2016;**14**(1).

Warner LM, Schuz B, Aiken L, et al. Interactive effects of social support and social conflict on medication adherence in multimorbid older adults. *Soc Sci Med.* Jun 2013;87:23-30.

Bayliss, E.A., et al., Descriptions of barriers to self-care by persons with comorbid chronic diseases. *Ann Fam Med*, 2003. **1**: p. 15-21.

van den Akker, M., et al., Psychosocial patient characteristics and GP-registered chronic morbidity: a prospective study. *Journal of Psychosomatic Research.*, 2001. **50**(2): p. 95-102.

van den Akker, M., et al., Marginal impact of psychosocial factors on multimorbidity: results of an explorative nested case-control study. *Social Science & Medicine.*, 2000. **50**(11): p. 1679-93.

3.12 OTHER CLINICAL VARIABLES

Davis-Ajami ML, Lu ZK, Wu J. US Older Adults with Multiple Chronic Conditions Perceptions of Provider-Patient Communication: Trends and Racial Disparities from MEPS 2013-2019. *J Gen Intern Med*. 2022.

Hoedemakers M, Karimi M, Jonker M, Tsiachristas A, Rutten-van Mólken M. Heterogeneity in preferences for outcomes of integrated care for persons with multiple chronic diseases: a latent class analysis of a discrete choice experiment. *Qual Life Res*. 2022;31(9):2775-89.

Houkpatin HO, Roderick P, Harris S, Morris JE, Smith D, Walsh B, et al. Change in treatment burden among people with multimorbidity: a follow-up survey. *Br J Gen Pract*. 2022;72(724):e816-e24.

Stanhope KK, Worrell N, Jamieson DJ, Geary FH, Boulet SL. Double, Triple, and Quadruple Jeopardy: Entering Pregnancy With Two or More Multimorbid Diagnoses and Increased Risk of Severe Maternal Morbidity and Postpartum Readmission. *Womens Health Issues*. 2022;32(6):607-14.

Wister A, Li L, Whitmore C, Ferris J, Klasa K, Linkov I. Multimorbidity resilience and health behaviors among older adults: A longitudinal study using the Canadian Longitudinal Study on Aging. *Front Public Health*. 2022;10:896312.

Miao X, Chen J, Meng W, Wu Q, Wu Z, Ren L, et al. Association Between Living Risk and Healthy Life Years Lost Due to Multimorbidity: Observations From the China Health and Retirement Longitudinal Study. *Front Med (Lausanne)* 2022;9:831544. doi: 10.3389/fmed.2022.831544

Milani SA, Raji MA, Kuo YF, Lopez DS, Markides KS, Al Snih S. Multimorbidity Is Associated With Pain Over 6 Years Among Community-Dwelling Mexican Americans Aged 80 and Older. *Front Pain Res (Lausanne)* 2022;3:830308. doi: 10.3389/fpain.2022.830308

Liu M, Liu S, Sun S, Tian H, Li S, Wu Y. Sex Differences in the Associations of Handgrip Strength and Asymmetry With Multimorbidity: Evidence From the English Longitudinal Study of Ageing. *J Am Med Dir Assoc* 2022;23(3):493-98 e1. doi: S1525-8610(21)00649-6 [pii]10.1016/j.jamda.2021.07.011

Lynch DH, Petersen CL, Fanous MM, Spangler HB, Kahkoska AR, Jimenez D, et al. The relationship between multimorbidity, obesity and functional impairment in older adults. *J Am Geriatr Soc* 2022;70(5):1442-49. doi: 10.1111/jgs.17683

Zou S, Wang Z, Bhura M, Tang K. Association of multimorbidity of non-communicable diseases with mortality: a 10-year prospective study of 0.5 million Chinese adults. *Public Health* 2022;205:63-71. doi: S0033-3506(22)00028-2 [pii]10.1016/j.puhe.2022.01.021

Hanlon P, Jani BD, Nicholl B, Lewsey J, McAllister DA, Mair FS. Associations between multimorbidity and adverse health outcomes in UK Biobank and the SAIL Databank: A comparison of longitudinal cohort studies. *PLoS Med* 2022;19(3):e1003931. doi: 10.1371/journal.pmed.1003931PMEDICINE-D-21-02504 [pii]

Jedrzejczyk M, Forys W, Czaplá M, Uchmanowicz I. Relationship between Multimorbidity and Disability in Elderly Patients with Coexisting Frailty Syndrome. *Int J Environ Res Public Health* 2022;19(6). doi: ijerph19063461 [pii]10.3390/ijerph19063461

Amankwaa I, Nelson K, Rook H, Hales C. Association between body mass index, multi-morbidity and activities of daily living among New Zealand nursing home older adults: a retrospective analysis of nationwide InterRAI data. *BMC Geriatr* 2022;22(1):62. doi: 10.1186/s12877-021-02696-8 10.1186/s12877-021-02696-8 [pii]

Miller AC, O'Reilly D, Kee F, Cruise S, Young I. Multimorbidity, activity limitation and self-reported health all predict mortality risk, but better measures were required. *J Clin Epidemiol* 2022;144:144-62. doi: S0895-4356(21)00415-7 [pii] 10.1016/j.jclinepi.2021.12.010

Kivimaki M, Strandberg T, Pentti J, Nyberg ST, Frank P, Jokela M, et al. Body-mass index and risk of obesity-related complex multimorbidity: an observational multicohort study. *Lancet Diabetes Endocrinol* 2022;10(4):253-63. doi: S2213- 8587(22)00033-X [pii]10.1016/S2213-8587(22)00033-X

Lenti MV, Klersy C, Brera AS, Ballesio A, Croce G, Padovini L, et al. Aging underlies heterogeneity between comorbidity and multimorbidity frameworks. *Intern Emerg Med* 2022. doi: 10.1007/s11739-021-02899-210.1007/s11739-021-02899-2 [pii]

Yao SS, Xu HW, Han L, Wang K, Cao GY, Li N, et al. Multimorbidity measures differentially predicted mortality among older Chinese adults. *J Clin Epidemiol* 2022;146:97-105. doi: S0895-4356(22)00063-4 [pii]10.1016/j.jclinepi.2022.03.002

Vetrano DL, Damiano C, Tazzeo C, Zucchelli A, Marengoni A, Luo H, et al. Multimorbidity Patterns and 5-Year Mortality in Institutionalized Older Adults. *J Am Med Dir Assoc* 2022. doi: S1525-8610(22)00107-4 [pii]10.1016/j.jamda.2022.01.067

Stafford M, Knight H, Hughes J, Alarilla A, Mondor L, Pefoyo Kone A, et al. Associations between multiple long-term conditions and mortality in diverse ethnic groups. *PLoS One* 2022;17(4):e0266418. doi: 10.1371/journal.pone.0266418 PONE

D-21-34987 [pii]

Fishbook BN, Brinton CD, Siever J, et al. Cardiometabolic multimorbidity and activity limitation: a cross-sectional study of adults using the Canadian Longitudinal Study on Aging data. *Fam Pract* 2021 doi: 10.1093/fampra/cmab129

Canoy D, Tran J, Zottoli M, et al. Association between cardiometabolic disease multimorbidity and all-cause mortality in 2 million women and men registered in UK general practices. *BMC Med* 2021;19(1):258. doi: 10.1186/s12916-021-02126-x

Heikkila K, Pulakka A, Metsala J, et al. Preterm birth and the risk of chronic disease multimorbidity in adolescence and early adulthood: A population-based cohort study. *PLoS One* 2021;16(12):e0261952. doi: 10.1371/journal.pone.0261952

Peterson MD, Casten K, Collins S, et al. Muscle weakness is a prognostic indicator of disability and chronic disease multimorbidity. *Exp Gerontol* 2021;152:111462. doi: 10.1016/j.exger.2021.111462

Diderichsen F, Bender AM, Lyth AC, et al. Mediating role of multimorbidity in inequality in mortality: a register study on the Danish population. *J Epidemiol Community Health* 2021 doi: 10.1136/jech-2021-218211

Hurst C, Murray JC, Granic A, et al. Long-term conditions, multimorbidity, lifestyle factors and change in grip strength over 9 years of follow-up: Findings from 44,315 UK biobank participants. *Age Ageing* 2021;50(6):2222-29. doi: 10.1093/ageing/afab195

Calderon-Larranaga A, Hu X, Guo J, et al. Body mass trajectories and multimorbidity in old age: 12-year results from a population-based study. *Clin Nutr* 2021;40(12):5764-70. doi: 10.1016/j.clnu.2021.10.012

Romano E, Ma R, Vancampfort D, et al. Multimorbidity and obesity in older adults from six low- and middle-income countries. *Prev Med* 2021;153:106816. doi: 10.1016/j.ypmed.2021.106816

McQueenie R, Jani BD, Siebert S, et al. Prevalence of chronic pain in LTCs and multimorbidity: A cross-sectional study using UK Biobank. *J Comorb* 2021;11:26335565211005870. doi: 10.1177/26335565211005870

Kato D, Kawachi I, Saito J, et al. Complex multimorbidity and mortality in Japan: a prospective propensity-matched cohort study. *BMJ Open* 2021;11(8):e046749. doi: 10.1136/bmjopen-2020-046749

Ogunrinde BJ, Adetunji AA, Muyibi SA, et al. Illness perception amongst adults with multimorbidity at primary care clinics in Southwest Nigeria. *Afr J Prim Health Care Fam Med* 2021;13(1):e1-e8. doi: 10.4102/phcfm.v13i1.2738

Morris JE, Roderick PJ, Harris S, et al. Treatment burden for patients with multimorbidity: cross-sectional study with exploration of a single-item measure. *Br J Gen Pract* 2021;71(706):e381-e90. doi: 10.3399/BJGP.2020.0883

Lin MH, Chang CY, Wu DM, et al. Relationship of Multimorbidity, Obesity Status, and Grip Strength among Older Adults in Taiwan. *Int J Environ Res Public Health* 2021;18(14) doi: 10.3390/ijerph18147540

Axon DR, Arku D. Associations of multiple (≥ 5) chronic conditions among a nationally representative sample of older United States adults with self-reported pain. *Scand J Pain* 2021;21(4):814-22. doi: 10.1515/sjpain-2021-0094

Liu M, Liu S, Sun S, et al. Sex Differences in the Associations of Handgrip Strength and Asymmetry With Multimorbidity: Evidence From the English Longitudinal Study of Ageing. *J Am Med Dir Assoc* 2021 doi: 10.1016/j.jamda.2021.07.011

Madlock-Brown CR, Reynolds RB, Bailey JE. Increases in multimorbidity with weight class in the United States. *Clin Obes* 2021;11(3):e12436. doi: 10.1111/cob.12436

Vasiliadis HM, Gontijo Guerra S, Berbiche D, et al. The Factors Associated with 3-Year Mortality Stratified by Physical and Mental Multimorbidity and Area of Residence Deprivation in Primary Care Community-Living Older Adults. *J Aging Health* 2021:898264321997715. doi: 10.1177/0898264321997715

Morris JE, Roderick PJ, Harris S, et al. Treatment burden for patients with multimorbidity: cross-sectional study with exploration of a single-item measure. *Br J Gen Pract* 2021;71(706):e381-e90. doi: 10.3399/BJGP.2020.0883

Nguyen H, Moreno-Agostino D, Chua KC, et al. Trajectories of healthy ageing among older adults with multimorbidity: A growth mixture model using harmonised data from

eight ATHLOS cohorts. *PLoS One* 2021;16(4):e0248844. doi: 10.1371/journal.pone.0248844

Botoseneanu A, Markwardt S, Nagel CL, et al. Multimorbidity Accumulation among Middle-Aged Americans: Differences by Race/Ethnicity and Body-Mass Index. *J Gerontol A Biol Sci Med Sci* 2021 doi: 10.1093/gerona/glab116

Coste J, Valderas JM, Carcaillon-Bentata L. Estimating and characterizing the burden of multimorbidity in the community: A comprehensive multistep analysis of two large nationwide representative surveys in France. *PLoS Med* 2021;18(4):e1003584. doi: 10.1371/journal.pmed.1003584

Willadsen TG, Siersma V, Nicolaisdottir DR, et al. Symptom burden in multimorbidity: a population-based combined questionnaire and registry study from Denmark. *BMJ Open* 2021;11(4):e041877. doi: 10.1136/bmjopen-2020-041877

Lee MR, Jung SM. A cross-sectional study investigating the relationship between handgrip strength with multimorbidity in Korean adults: Findings from the Korea National Health and Nutrition Examination Survey VI-VII (2014-2017). *Medicine (Baltimore)* 2021;100(1):e23994. doi: 10.1097/MD.00000000000023994

Ricci-Cabello I, Yanez-Juan AM, Fiol-deRoque MA, et al. Assessing the Impact of Multi-Morbidity and Related Constructs on Patient Reported Safety in Primary Care: Generalized Structural Equation Modelling of Observational Data. *J Clin Med* 2021;10(8) doi: 10.3390/jcm10081782

Pan T, Mercer SW, Zhao Y, et al. The association between mental-physical multimorbidity and disability, work productivity, and social participation in China: a panel data analysis. *BMC Public Health* 2021;21(1):376. doi: 10.1186/s12889-021-10414-7

Nicholson K, Griffith LE, Sohel N, et al. Examining early and late onset of multimorbidity in the Canadian Longitudinal Study on Aging. *J Am Geriatr Soc* 2021 doi: 10.1111/jgs.17096

Hu F, Xu L, Zhou J, et al. Association between Overweight, Obesity and the Prevalence of Multimorbidity among the Elderly: Evidence from a Cross-Sectional Analysis in Shandong, China. *Int J Environ Res Public Health* 2020;17(22) doi: 10.3390/ijerph17228355

Kshatri JS, Palo SK, Bhoi T, et al. Associations of multimorbidity on frailty and dependence among an elderly rural population: Findings from the AHSETS study. *Mech Ageing Dev* 2020;192:111384. doi: 10.1016/j.mad.2020.111384

Siqueira S, de Siqueira JTT, Teixeira MJ. Chronic pain, somatic unexplained complaints and multimorbidity: A multimorbidity painful syndrome? *Med Hypotheses* 2020;138:109598. doi: 10.1016/j.mehy.2020.109598

Shang X, Hodge AM, Peng W, et al. Are Leading Risk Factors for Cancer and Mental Disorders Multimorbidity Shared by These Two Individual Conditions in Community-Dwelling Middle-Aged Adults? *Cancers (Basel)* 2020;12(6) doi: 10.3390/cancers12061700

Lai FTT, Ma TW, Hou WK. How does chronic multimorbidity affect daily routines? An experience sampling study of community-dwelling adults in Hong Kong. *J Community Psychol* 2020;48(7):2326-48. doi: 10.1002/jcop.22418

Roman Lay AA, Ferreira do Nascimento C, Caba Burgos F, et al. Gender Differences

- between Multimorbidity and All-Cause Mortality among Older Adults. *Curr Gerontol Geriatr Res* 2020;2020:7816785. doi: 10.1155/2020/7816785
- Gawron LM, Sanders JN, Sward K, et al. Multi-morbidity and Highly Effective Contraception in Reproductive-Age Women in the US Intermountain West: a Retrospective Cohort Study. *J Gen Intern Med* 2020;**35**(3):637-42. doi: 10.1007/s11606-019-05425-5
- Whitney DG, Whitney RT, Kamdar NS, et al. Early-Onset Noncommunicable Disease and Multimorbidity Among Adults With Pediatric-Onset Disabilities. *Mayo Clin Proc* **67**(2):144-57 2020;95(2):274-82. doi: 10.1016/j.mayocp.2019.07.010
- Madlock-Brown C, Reynolds RB. Identifying obesity-related multimorbidity combinations in the United States. *Clin Obes* 2019;**9**(6):e12336. doi: 10.1111/cob.12336
- Montes MC, Bortolotto CC, Tomasi E, et al. Strength and multimorbidity among community-dwelling elderly from southern Brazil. *Nutrition* 2019;**71**:110636. doi: 10.1016/j.nut.2019.110636
- Jawed M, Inam S, Shah N, et al. Association of obesity measures and multimorbidity in Pakistan: findings from the IMPACT study. *Public Health* 2019;180:51-56. doi: 10.1016/j.puhe.2019.10.017
- Xu X, Mishra GD, Dobson AJ, et al. Short-term weight gain is associated with accumulation of multimorbidity in mid-aged women: a 20-year cohort study. *Int J Obes (Lond)* 2019;**43**(9):1811-21. doi: 10.1038/s41366-018-0250-7
- Reinke LF, Vig EK, Tartaglione EV, et al. Symptom Burden and Palliative Care Needs Among High-Risk Veterans With Multimorbidity. *J Pain Symptom Manage* 2019;**57**(5):880-89. doi: 10.1016/j.jpainsymman.2019.02.011
- Halonen P, Raitanen J, Jansen E, et al. Chronic conditions and multimorbidity in population aged 90 years and over: associations with mortality and long-term care admission. *Age Ageing* 2019;**48**(4):564-70. doi: 10.1093/ageing/afz019
- Jani BD, Hanlon P, Nicholl BI, et al. Relationship between multimorbidity, demographic factors and mortality: findings from the UK Biobank cohort. *BMC Med* 2019;**17**(1):74. doi: 10.1186/s12916-019-1305-x
- Bernabeu-Wittel M, Gonzalez-Molina A, Fernandez-Ojeda R, et al. Impact of Sarcopenia and Frailty in a Multicenter Cohort of Polypathological Patients. *J Clin Med* 2019;**8**(4) doi: 10.3390/jcm8040535
- Wister A, Cosco T, Mitchell B, et al. Health behaviors and multimorbidity resilience among older adults using the Canadian Longitudinal Study on Aging. *Int Psychogeriatr* 2019:1-15. doi: 10.1017/S1041610219000486
- Malecki SL, Van Mil S, Graffi J, et al. A genetic model for multimorbidity in young adults. *Genet Med* 2019 doi: 10.1038/s41436-019-0603
- Ruiz-Castell M, Makovski TT, Bocquet V, et al. Sleep duration and multimorbidity in Luxembourg: results from the European Health Examination Survey in Luxembourg, 2013-2015. *BMJ Open* 2019;9(8):e026942. doi: 10.1136/bmjopen-2018-026942
- Vancampfort D, Stubbs B, Firth J, et al. Handgrip strength, chronic physical conditions and physical multimorbidity in middle-aged and older adults in six low- and middle income countries. *Eur J Intern Med* 2019;**61**:96-102. doi: 10.1016/j.ejim.2018.11.007

Sasseville M, Smith SM, Freyne L, et al. Predicting poorer health outcomes in older community-dwelling patients with multimorbidity: prospective cohort study assessing the accuracy of different multimorbidity definitions. *BMJ Open* 2019;**9**(1):e023919. doi: 10.1136/bmjopen-2018-023919

Halonen P, Raitanen J, Jamsen E, et al. Chronic conditions and multimorbidity in population aged 90 years and over: associations with mortality and long-term care admission. *Age Ageing* 2019 doi: 10.1093/ageing/afz019

Palladino R, Pennino F, Finbarr M, et al. Multimorbidity And Health Outcomes In Older Adults In Ten European Health Systems, 2006-15. *Health Aff (Millwood)* 2019;**38**(4):613-23. doi: 10.1377/hlthaff.2018.05273

Jani BD, Hanlon P, Nicholl BI, et al. Relationship between multimorbidity, demographic factors and mortality: findings from the UK Biobank cohort. *BMC Med* 2019;**17**(1):74. doi: 10.1186/s12916-019-1305-x

Lebenbaum M, Zaric GS, Thind A, et al. Trends in obesity and multimorbidity in Canada. *Prev Med* 2018;**116**:173-79. doi: 10.1016/j.ypmed.2018.08.025

Willadsen TG, Siersma V, Nicolaisdottir DR, et al. Multimorbidity and mortality: A 15-year longitudinal registry-based nationwide Danish population study. *J Comorb* 2018;**8**(1):2235042X18804063. doi: 10.1177/2235042X18804063

Barker K, Holland AE, Lee AL, et al. Multimorbidity rehabilitation versus disease-specific rehabilitation in people with chronic diseases: a pilot randomized controlled trial. *Pilot Feasibility Stud* 2018;**4**:181. doi: 10.1186/s40814-018-0369-2

Schafer I, Kaduszkiewicz H, Nguyen TS, et al. Multimorbidity patterns and 5-year overall mortality: Results from a claims data-based observational study. *J Comorb* 2018;**8**(1):2235042X18816588. doi: 10.1177/2235042X18816588

Hanlon P, Nicholl BI, Jani BD, et al. Frailty and pre-frailty in middle-aged and older adults and its association with multimorbidity and mortality: a prospective analysis of 493 737 UK Biobank participants. *Lancet Public Health* 2018;**3**(7):e323-e32. doi: 10.1016/S2468-2667(18)30091-4.

Hussin NM, Shahar S, Din NC, et al. Incidence and predictors of multimorbidity among a multiethnic population in Malaysia: a community-based longitudinal study. *Aging Clin Exp Res* 2018 doi: 10.1007/s40520-018-1007-9.

Taleshan N, Petersen JH, Schioetz ML, et al. Multimorbidity and mortality thereof, among non-western refugees and family reunification immigrants in Denmark - a register based cohort study. *BMC Public Health* 2018;**18**(1):844. doi: 10.1186/s12889-018-5785-y.

Humphreys J, Jameson K, Cooper C, et al. Early-life predictors of future multi-morbidity: results from the Hertfordshire Cohort. *Age Ageing* 2018;**47**(3):474-78. doi: 10.1093/ageing/afy005.

Helbig AK, Stockl D, Heier M, et al. Relationship between sleep disturbances and multimorbidity among community-dwelling men and women aged 65-93 years: results from the KORA Age Study. *Sleep Med.* 2017;**33**:151-159. doi: 10.1016/j.sleep.2017.01.016.

Kivimaki M, Kuosma E, Ferrie JE, et al. Overweight, obesity, and risk of cardiometabolic multimorbidity: pooled analysis of individual-level data for 120 813 adults from 16 cohort

- studies from the USA and Europe. *Lancet Public Health*. 2017;**2**(6):e277-e285. doi: 10.1016/S2468-2667(17)30074-9.
- Yorke AM, Curtis AB, Shoemaker M, Vangsnes E. The impact of multimorbidity on grip strength in adults age 50 and older: Data from the health and retirement survey (HRS). *Arch Gerontol Geriatr*. 2017;**72**:164-168. doi: 10.1016/j.archger.2017.05.011.
- Wang YM, Song M, Wang R, et al. Insomnia and Multimorbidity in the Community Elderly in China. *J Clin Sleep Med*. 2017;**13**(4):591-597.
- Helbig AK, Stockl D, Heier M, et al. Relationship between sleep disturbances and multimorbidity among community-dwelling men and women aged 65-93 years: results from the KORA Age Study. *Sleep Med*. 2017;**33**:151-159.
- Olivares DE, Chambi FR, Chani EM, Craig WJ, Pacheco SO, Pacheco FJ. Risk Factors for Chronic Diseases and Multimorbidity in a Primary Care Context of Central Argentina: A Web-Based Interactive and Cross-Sectional Study. *Int J Environ Res Public Health*. 2017;**14**(3).
- Jovic D, Marinkovic J, Vukovic D. Association between body mass index and prevalence of multimorbidity: a cross-sectional study. *Public Health*. 2016;**139**:103-111.
- An KO, Kim J. Association of Sarcopenia and Obesity With Multimorbidity in Korean Adults: A Nationwide Cross-Sectional Study. *J Am Med Dir Assoc*. 2016;**17**(10):960 e961-967.
- Eckerblad J, Theander K, Ekdahl AW, Jaarsma T. Symptom trajectory and symptom burden in older people with multimorbidity, secondary outcome from the RCT AGE-FIT study. *J Adv Nurs*. 2016;**72**(11):2773-2783.
- Volaklis KA, Halle M, Thorand B, et al. Handgrip strength is inversely and independently associated with multimorbidity among older women: Results from the KORA-Age study. *Eur J Intern Med*. 2016;**31**:35-40.
- Eckerblad J, Theander K, Ekdahl AW, Jaarsma T. Symptom trajectory and symptom burden in older people with multimorbidity, secondary outcome from the RCT AGE-FIT study. *J Adv Nurs*. 2016.
- Fabrizi E, Tanaka T, An Y, Zoli M, Bandinelli S, Guralnik JM *et al*: Loss of Weight in Obese Older Adults: A Biomarker of Impending Expansion of Multimorbidity? *J Am Geriatr Soc*. 2015;**63**(9):1791-1797.
- Folb N, Timmerman V, Levitt NS, Steyn K, Bachmann MO, Lund C *et al*: Multimorbidity, control and treatment of noncommunicable diseases among primary healthcare attenders in the Western Cape, South Africa. *S Afr Med J*. 2015;**105**(8):642-647.
- Yokota RT, Van der Heyden J, Nusselder WJ, Robine JM, Tafforeau J, Deboosere P *et al*: Impact of Chronic Conditions and Multimorbidity on the Disability Burden in the Older Population in Belgium. *J Gerontol A Biol Sci Med Sci*. 2016.
- Laditka JN, Laditka SB. Associations of multiple chronic health conditions with active life expectancy in the United States. *Disabil Rehabil*. May 20 2015:1-8.
- Aguiar LB, Baccaro LF, de Souza Santos Machado V, Pinto-Neto AM, Costa-Paiva L. Disability and multimorbidity in women older than 50 years: a population-based

household survey. *Menopause*. Jun 2015;**22**(6):660-666.

Friedman EM, Christ SL, Mroczek DK. Inflammation Partially Mediates the Association of Multimorbidity and Functional Limitations in a National Sample of Middle-Aged and Older Adults: The MIDUS Study. *J Aging Health*. Aug 2015;**27**(5):843-863.

Koroukian SM, Warner DF, Owusu C, Given CW. Multimorbidity redefined: prospective health outcomes and the cumulative effect of co-occurring conditions. *Prev Chronic Dis*. 2015;**12**:E55.

Lu FP, Chang WC, Wu SC. Geriatric conditions, rather than multimorbidity, as predictors of disability and mortality among octogenarians: A population-based cohort study. *Geriatr Gerontol Int*. Apr 23 2015.

Emerging Risk Factors Collaboration, Di Angelantonio E, Kaptoge S, et al. Association of Cardiometabolic Multimorbidity With Mortality. *JAMA*. Jul 7 2015;**314**(1):52-60.

Jones SM, Amtmann D, Gell NM. A psychometric examination of multimorbidity and mental health in older adults. *Aging Ment Health*. Feb 12 2015:1-9.

Agborsangaya CB, Majumdar SR, Sharma AM, Gregg EW, Padwal RS. Multimorbidity in a prospective cohort: Prevalence and associations with weight loss and health status in severely obese patients. *Obesity*. Mar 2015;**23**(3):707-712.

Calderon-Larranaga A, Hernandez-Olivan P, Gonzalez-Rubio F, Gimeno-Feliu LA, Poblador-Plou B, Prados-Torres A. Multimorbidity and weight loss in obese primary care patients: longitudinal study based on electronic healthcare records. *BMJ Open*. 2015;**5**(3):e006227.

Mavaddat N, Valderas JM, van der Linde R, Khaw KT, Kinmonth AL. Association of self-rated health with multimorbidity, chronic disease and psychosocial factors in a large middle-aged and older cohort from general practice: a cross-sectional study. *BMC Fam Pract*. 2014;**15**:185.

Eckerblad J, Theander K, Ekdahl A, et al. Symptom burden in community-dwelling older people with multimorbidity: a cross-sectional study. *BMC Geriatr*. 2015;**15**(1):1.

Weir DL, Majumdar SR, McAlister FA, Marrie TJ, Eurich DT. The impact of multimorbidity on short-term events in patients with community-acquired pneumonia: prospective cohort study. *Clin Microbiol Infect*. Nov 11 2014.

Boeckxstaens P, Vaes B, Legrand D, Dalleur O, De Sutter A, Degryse JM. The relationship of multimorbidity with disability and frailty in the oldest patients: A cross-sectional analysis of three measures of multimorbidity in the BELFRAIL cohort. *Eur J Gen Pract*. Jul 1 2014:1-6.

Melis R, Marengoni A, Angleman S, Fratiglioni L. Incidence and predictors of multimorbidity in the elderly: a population-based longitudinal study. *PLoS One*. 2014;**9**(7):e103120.

Appa AA, Creasman J, Brown JS, Van Den Eeden SK, Thom DH, Subak LL, Huang AJ. The impact of multimorbidity on sexual function in middle-aged and older women: beyond the single disease perspective. *J Sex Med*. Nov 2014;**11**(11):2744-2755.

Domino ME, Beadles CA, Lichstein JC, Farley JF, Morrissey JP, Ellis AR, Dubard CA. Heterogeneity in the quality of care for patients with multiple chronic conditions by psychiatric comorbidity. *Med Care*. Mar 2014;**52** Suppl 3:S101-109.

- Woo J, Leung J. Multi-morbidity, dependency, and frailty singly or in combination have different impact on health outcomes. *Age (Dordr)*. Apr 2014;**36**(2):923-931.
- Zeng C, Ellis JL, Steiner JF, Shoup JA, McQuillan DB, Bayliss EA. Assessment of morbidity over time in predicting health outcomes. *Med Care*. Mar 2014;**52** Suppl 3:S52-59.
- Ruel G, Levesque JF, Stocks N, Sirois C, Kroger E, Adams RJ, Doucet M, Taylor AW. Understanding the Evolution of Multimorbidity: Evidences from the North West Adelaide Health Longitudinal Study (NWAHS). *PLoS One*. 2014;**9**(5):e96291.
- St John PD, Tyas SL, Menec V, Tate R. Multimorbidity, disability, and mortality in community-dwelling older adults. *Can Fam Physician*. May 2014;**60**(5):e272-280.
- Schuz B, Wolff JK, Warner LM, Ziegelmann JP, Wurm S. Multiple illness perceptions in older adults: Effects on physical functioning and medication adherence. *Psychol Health*. Dec 12 2013.
- Smith DJ, Martin D, McLean G, Langan J, Guthrie B, Mercer SW. Multimorbidity in bipolar disorder and undertreatment of cardiovascular disease: a cross sectional study. *BMC Med*. 2013;**11**:263.
- Melis RJ, Marengoni A, Rizzuto D, Teerenstra S, Kivipelto M, Angleman SB, Fratiglioni L. The influence of multimorbidity on clinical progression of dementia in a population-based cohort. *PLoS One*. 2013;**8**(12):e84014.
- Diez-Manglano J, de Escalante Yanguela B, Garcia-Arilla Calvo E, et al. Differential characteristics in polypathological inpatients in internal medicine departments and acute geriatric units: The PLUPAR study. *Eur J Intern Med*. Aug 9 2013.
- Wrede J, Voigt I, Bleidorn J, Hummers-Pradier E, Dierks ML, Junius-Walker U. Complex health care decisions with older patients in general practice: patient-centeredness and prioritization in consultations following a geriatric assessment. *Patient Educ Couns*. Jan 2013;**90**(1):54-60.
- de Souza Santos Machado V, Valadares AL, da Costa-Paiva LS, Moraes SS, Pinto-Neto AM. Multimorbidity and associated factors in Brazilian women aged 40 to 65 years: a population-based study. *Menopause*. May 2012;**19**(5):569-575.
- Spruit-van Eijk M, Zuidema SU, Buijck BI, Koopmans RT, Geurts AC. To what extent can multimorbidity be viewed as a determinant of postural control in stroke patients? *Arch Phys Med Rehabil* 80(1):103-11. Jun 2012;**93**(6):1021-1026.
- Gilbert AL, Caughey GE, Vitry AI, Clark A, Ryan P, McDermott RA, et al. Ageing well: Improving the management of patients with multiple chronic health problems. *Australas J Ageing*. 2011;**30** (SUPPL.2):32-7.
- Tinetti, M.E., et al., Contribution of Multiple Chronic Conditions to Universal Health Outcomes. *J Am Geriatr Soc*. 2011 Aug 30. doi: 10.1111/j.1532-5415.
- Perruccio, A.V., J.N. Katz, and E. Losina, Health burden in chronic disease: multimorbidity is associated with self-rated health more than medical comorbidity alone. *J Clin Epidemiol*. Aug 9. [Epub ahead of print], 2011.
- Landi F et al. Disability, more than multimorbidity, was predictive of mortality among older persons aged 80 years and older. *J Clin Epidemiol*. 2010. **63**(7):752-9.
- Caughey GE, Ramsay EN, Vitry AI, et al. Comorbid chronic diseases, discordant impact on mortality in the elderly; a 14 year longitudinal population study. *J Epidemiol Community Health*. 2010;**64**(12):1036-42.
- Butchart A, Kerr EA, Heisler M, Piette JD, Krein SL. Experience and management of chronic pain among patients with other complex chronic conditions. *Clin J Pain*. 2009.

25(4):293-8.

Lee, T. A., A. E. Shields, et al. "Mortality rate in veterans with multiple chronic conditions." *Journal of General Internal Medicine* 2007. **22** Suppl 3: 403-7.

Mercer, S. W., B. Fitzpatrick, et al. "More time for complex consultations in a high-deprivation practice is associated with increased patient enablement." *British Journal of General Practice* 2007. **57**(545): 960-6.

Min, L. C., N. S. Wenger, et al. "Multimorbidity is associated with better quality of care among vulnerable elders." *Medical Care* 2007. **45**(6): 480-8.

Bae S, Rosenthal MB. Patients with Multiple Chronic Conditions Do Not Receive Lower Quality of Preventive Care. *J Gen Intern Med.* 2008;**23**(12):1933-9.

Bergland, A., G.B. Jarnlo, and K. Laake, Predictors of falls in the elderly by location. *Aging-Clinical & Experimental Research*, 2003. **15**(1): p. 43-50.

Doll, H.A., S.E. Petersen, and S.L. Stewart-Brown, Obesity and physical and emotional well-being: associations between body mass index, chronic illness, and the physical and mental components of the SF-36 questionnaire. *Obesity Research.*, 2000. **8**(2): p. 160-70.

Katz, D.A. and C.A. McHorney, The relationship between insomnia and health-related quality of life in patients with chronic illness. *Journal of Family Practice.*, 2002. **51**(3): p. 229-35.

Katz, D.A., C.A. McHorney, and R.L. Atkinson, Impact of obesity on health-related quality of life in patients with chronic illness. *Journal of General Internal Medicine.*, 2000. **15**(11): p. 789-96.

Lyketsos, C.G., et al., Medical comorbidity in psychiatric inpatients: relation to clinical outcomes and hospital length of stay. *Psychosomatics.*, 2002. **43**(1): p. 24-30.

Sharkey, J.R., Risk and presence of food insufficiency are associated with low nutrient intakes and multimorbidity among homebound older women who receive home-delivered meals. *Journal of Nutrition*, 2003. **133**(11): p. 3485-91.

Tan, C.P., A. Ng, and I. Civil, Co-morbidities in trauma patients: common and significant. *New Zealand Medical Journal*, 2004. **117**(1201): p. U1044.

Wang, S.J., et al., Quality of life differs among headache diagnoses: analysis of SF-36 survey in 901 headache patients. *Pain.*, 2001. **89**(2-3): p. 285-92.

3.13 GENERALISATION OF CLINICAL TRIALS/GUIDELINES

Biegus KR, Frobell RB, Wallin Å K, Ekdahl AW. The challenge of recruiting multimorbid older patients identified in a hospital database to a randomised controlled trial. *Aging Clin Exp Res*. 2022;34(12):3115-21.

Onder, G., Vetrano, D.L., Palmer, K., Trevisan, C., Amato, L., Berti, F., Campomori, A., Catalano, L., Corsonello, A., Kruger, P., Medea, G., Nobili, A., Trifirò, G., Vecchi, S., Veronese, N. and Marengoni, A. (2022). Italian guidelines on management of persons with multimorbidity and polypharmacy. *Aging Clinical and Experimental Research*, [online] 34(5), pp.989–996. doi:10.1007/s40520-022-02094-z.

Onder G, Vetrano DL, Palmer K, Trevisan C, Amato L, Berti F, et al. Italian guidelines on management of persons with multimorbidity and polypharmacy. *Aging Clin Exp Res* 2022. doi: 10.1007/s40520-022-02094-z

10.1007/s40520-022-02094-z [pii]

Damarell RA, Morgan DD, Tieman JJ, et al. Corrigendum to: Multimorbidity through the lens of life-limiting illness: how helpful are Australian clinical practice guidelines to its management in primary care? *Aust J Prim Health* 2021;27(4):338. doi: 10.1071/PY20164_CO

Damarell RA, Morgan DD, Tieman JJ, et al. Multimorbidity through the lens of life-limiting illness: how helpful are Australian clinical practice guidelines to its management in primary care? *Aust J Prim Health* 2021 doi: 10.1071/PY20164

Cohen-Stavi CJ, Giveon S, Key C, et al. Guideline deviation and its association with specific chronic diseases among patients with multimorbidity: a cross-sectional cohort study in a care management setting. *BMJ Open* 2021;11(1):e040961. doi: 10.1136/bmjopen-2020-040961

Cohen-Stavi CJ, Key C, Giveon S, et al. Assessing guideline-concordant care for patients with multimorbidity treated in a care management setting. *Fam Pract* 2020;37(4):479-85. doi: 10.1093/fampra/cmaa024

Ong KY, Lee PSS, Lee ES. Patient-centred and not disease-focused: a review of guidelines and multimorbidity. *Singapore Med J* 2020;61(11):584-90. doi: 10.11622/smedj.2019109

Batten AJ, Thorpe J, Piegari RI, et al. A Resampling Based Grid Search Method to Improve Reliability and Robustness of Mixture-Item Response Theory Models of Multimorbid High-Risk Patients. *IEEE J Biomed Health Inform* 2020;24(6):1780-87. doi: 10.1109/JBHI.2019.2948734

Despotou G, Laleci Erturkmen GB, Yuksel M, et al. Localisation, Personalisation and Delivery of Best Practice Guidelines on an Integrated Care and Cure Cloud Architecture: The C3-Cloud Approach to Managing Multimorbidity. *Stud Health Technol Inform* 2020;270:623-27. doi: 10.3233/SHTI200235

Park B, Ock M, Jo MW, et al. Health gap for multimorbidity: comparison of models combining unconditional health gap. *Qual Life Res* 2020;29(9):2475-83. doi: 10.1007/s11136-020-02514-5

Cohen-Stavi CJ, Key C, Giveon S, et al. Assessing guideline-concordant care for patients with multimorbidity treated in a care management setting. *Fam Pract* 2020 doi: 10.1093/fampra/cmaa024

Hanlon P, Hannigan L, Rodriguez-Perez J, et al. Representation of people with comorbidity and multimorbidity in clinical trials of novel drug therapies: an individual-level participant data analysis. *BMC Med* 2019;**17**(1):201. doi: 10.1186/s12916-019-1427-1

Ong KY, Lee PSS, Lee ES. Patient-centred and not disease-focused: a review of guidelines and multimorbidity. *Singapore Med J* 2019 doi: 10.11622/smedj.2019109

Chandraratne NK, Pathirathna K, Harrison C, et al. A comparison of policies and guidelines related to multimorbidity in the UK, Australia and Sri Lanka. *Aust J Gen Pract* 2018;**47**(1-2):14-19.

Zamborlini V, da Silveira M, Pruski C, et al. Analyzing interactions on combining multiple clinical guidelines. *Artif Intell Med*. 2017;**81**:78-93.

Guthrie B, Thompson A, Dumbreck S, et al. Better guidelines for better care: accounting for multimorbidity in clinical guidelines - structured examination of exemplar guidelines and health economic modelling. Southampton (UK)2017.

Wilk S, Michalowski M, Michalowski W, Rosu D, Carrier M, Kezadri-Hamiaz M. Comprehensive Mitigation Framework for Concurrent Application of Multiple Clinical Practice Guidelines. *J Biomed Inform*. 2016.

Farmer C, Fenu E, O'Flynn N, Guthrie B. Clinical assessment and management of multimorbidity: summary of NICE guidance. *BMJ*. 2016;**354**:i4843.

National Guideline Centre (UK): Multimorbidity: Assessment, Prioritisation and Management of Care for People with Commonly Occurring Multimorbidity. 2016. at <https://www.ncbi.nlm.nih.gov/pubmed/27683922>.)

Buffel du Vaure C, Ravaud P, Baron G, Barnes C, Gilberg S, Boutron I. Potential workload in applying clinical practice guidelines for patients with chronic conditions and multimorbidity: a systematic analysis. *BMJ Open*. 2016;**6**:e010119.

Young CE, Boyle FM, Brooker KS, Mutch AJ Incorporating patient preferences in the management of multiple long-term conditions: is this a role for clinical practice guidelines? *Journal of Comorbidity* 2015;**5**(1):122-131.

Muth C, Kirchner H, van den Akker M, Scherer M, Glasziou PP. Current guidelines poorly address multimorbidity: pilot of the interaction matrix method. *J Clin Epidemiol*. Nov 2014;**67**(11):1242-1250.

Bernabeu-Wittel M, Alonso-Coello P, Rico-Blazquez M, Rotaecche Del Campo R, Sanchez Gomez S, Casariego Vales E. Development of clinical practice guidelines for patients with comorbidity and multiple diseases. *Rev Clin Esp*. August - September 2014;**214**(6):328-335.

Muth C, Kirchner H, van den Akker M, Scherer M, Glasziou PP. Current guidelines poorly address multimorbidity: pilot of the interaction matrix method. *J Clin Epidemiol*. Sep 9 2014.

Markun S, Holzer BM, Rodak R, Kaplan V, Wagner CC, Battegay E, Zimmerli L. Therapeutic conflicts in emergency department patients with multimorbidity: a cross-sectional study. *PLoS One*. 2014;**9**(10):e110309.

Goodman RA, Boyd C, Tinetti ME, Von Kohorn I, Parekh AK, McGinnis JM. IOM and DHHS meeting on making clinical practice guidelines appropriate for patients with multiple chronic conditions. *Ann Fam Med*. May-Jun 2014;**12**(3):256-259.

Uhlig K, Leff B, Kent D, Dy S, Brunnhuber K, Burgers JS, Greenfield S, Guyatt G, High K, Leipzig R, Mulrow C, Schmader K, Schunemann H, Walter LC, Woodcock J, Boyd CM. A framework for crafting clinical practice guidelines that are relevant to the care and management of people with multimorbidity. *J Gen Intern Med*. Apr 2014;**29**(4):670-679.

Hughes LD, McMurdo ME, Guthrie B. Guidelines for people not for diseases: the challenges of applying UK clinical guidelines to people with multimorbidity. *Age Ageing*. Jan 2013;**42**(1):62-69.

Nichol MB et al. Nonadherence to clinical practice guidelines and medications for multiple chronic conditions in a California Medicaid population. *J Am Pharm Assoc* (2003). 2010. **50**(4):496-507.

Boyd, C.M., et al., Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: implications for pay for performance. *JAMA*, 2005. **294**: p. 716-24.

Cabana, M.D., et al., Why don't physicians follow clinical practice guidelines? A framework for improvement. *JAMA*, 1999. **282**: p. 1458-65.

Caro, J.J. and K. Migliaccio-Walle, Generalizing the results of clinical trials to actual practice: the example of clopidogrel therapy for the prevention of vascular events. CAPRA (CAPRIE Actual Practice Rates Analysis) Study Group. Clopidogrel versus Aspirin in Patients at Risk of Ischaemic Events. *Am J Med*, 1999. **107**(6): p. 568-72.

CMAJ, Patient n plus 1. *CMAJ*, 2005. **172**: p. 1525.

Fortin M, Dionne J, Pinho G, Gignac J, Almirall J, Lapointe L. Randomized Controlled Trials: Do They Have External Validity for Patients With Multiple Comorbidities? *Ann. Fam. Med* 2006;**4**:104-8.

Moroney, J.T., et al., Treatment for the secondary prevention of stroke in older patients: the influence of dementia status. *Journal of the American Geriatrics Society*, 1999. **47**: p. 824-9.

Gurwitz, J.H., N.F. Col, and J. Avorn, The exclusion of the elderly and women from clinical trials in acute myocardial infarction. *JAMA*, 1992. **268**: p. 1417-22.

Oliveria, S.A., et al., Physician-related barriers to the effective management of uncontrolled hypertension. *Arch Intern Med*, 2002. **162**: p. 413-20.

Rothwell, P.M., External validity of randomised controlled trials: "to whom do the results of this trial apply?" *Lancet*., 2005. **365**: p. 82-93.

Tinetti, M.E., S.T. Bogardus, Jr., and J.V. Agostini, Potential pitfalls of disease-specific guidelines for patients with multiple conditions. *N Engl J Med*, 2004. **351**: p. 2870-4.

van Weel, C. and F.G. Schellevis, Comorbidity and guidelines: conflicting interests. *Lancet*, 2006. **367**: p. 550-1.

Biollaz, J. and T. Buclin, [Multiple diseases: should we treat them all?][French]. *Revue Medicale Suisse*, 2005. **1**(14): p. 941-7.

3.14 OTHER SUBJECTS

Polessa Paula D, Barbosa Aguiar O, Pruner Marques L, Bensenor I, Suemoto CK, Mendes da Fonseca MJ, et al. Comparing machine learning algorithms for multimorbidity prediction: An example from the Elsa-Brasil study. *PLoS One*. 2022;17(10):e0275619.

Mann, C., Jun, G.T., Tyrer, F., Kiani, R., Lewin, G. and Gangadharan, S.K. (2022). A scoping review of clusters of multiple long-term conditions in people with intellectual disabilities and factors impacting on outcomes for this patient group. *Journal of Intellectual Disabilities*, p.174462952211072. doi:10.1177/17446295221107275.

Etkind, S.N., Li, J., Louca, J., Hopkins, S.A., Kuhn, I., Spathis, A. and Barclay, S.I.G. (2022). Total uncertainty: a systematic review and thematic synthesis of experiences of uncertainty in older people with advanced multimorbidity, their informal carers and health professionals. *Age and Ageing*, [online] 51(8), p.afac188. doi:10.1093/ageing/afac188.

Lutchmun, W., Gach, J., Borup, C. and Froeschl, G. (2022). Chronic diseases and multimorbidity in persons experiencing homelessness: results from a cross-sectional study conducted at three humanitarian clinics in Germany in 2020. *BMC public health*, [online] 22(1), p.1597. doi:10.1186/s12889-022-14023-w.

Sader, J., Diana, A., Coen, M., Nendaz, M. and Audétat, M.-C. (2022). A GP's clinical reasoning in the context of multimorbidity: beyond the perception of an intuitive approach. *Family Practice*, [online] p.cmac076. doi:10.1093/fampra/cmac076.
Eidam, A., Roth, A., Frick, E., Metzner, M., Lampert, A., Seidling, H., Haefeli, W. and Bauer, J.M. (2022). Development of an Electronic Tool to Assess Patient Preferences in Geriatric Polypharmacy (PolyPref). *Patient Preference and Adherence*, Volume 16, pp.1733–1747. doi:10.2147/ppa.s364681.

Poon PKM, Tam KW, Zhang D, Yip BHK, Woo J, Wong SYS. Handgrip strength but not SARC-F score predicts cognitive impairment in older adults with multimorbidity in primary care: a cohort study. *BMC Geriatr* 2022;22(1):342. doi: 10.1186/s12877- 022-03034-2 10.1186/s12877-022-03034-2 [pii]

Zhang C, Dong F, Zheng X, Xue Y, Xiao S, Shi L, et al. The Impact of Sleep Quality on Subjective Wellbeing Among Older Adults With Multimorbidity: A Moderated Mediation Model. *Front Psychol* 2022;13:813775. doi: 10.3389/fpsyg.2022.813775

Verhoeff M, de Groot J, Burgers JS, van Munster BC. Development and internal validation of prediction models for future hospital care utilization by patients with multimorbidity using electronic health record data. *PLoS One* 2022;17(3):e0260829. doi: 10.1371/journal.pone.0260829 PONE-D-21-09724 [pii]

Hu XJ, Wang HHX, Li YT, Wu XY, Wang Y, Chen JH, et al. Healthcare needs, experiences and treatment burden in primary care patients with multimorbidity: An evaluation of process of care from patients' perspectives. *Health Expect* 2022;25(1):203-13. doi: 10.1111/hex.13363

Muhammad T, Boro B, Kumar M, Srivastava S. Gender differences in the association of obesity-related measures with multi-morbidity among older adults in India: evidence from LASI, Wave-1. *BMC Geriatr* 2022;22(1):171. doi: 10.1186/s12877-022-02869-z 10.1186/s12877-022-02869-z [pii]

Chauhan S, Srivastava S, Kumar P, Patel R. Decomposing urban-rural differences in multimorbidity among older adults in India: a study based on LASI data. *BMC Public Health* 2022;22(1):502. doi: 10.1186/s12889-022-12878-7 10.1186/s12889-022-12878-7 [pii]

Schulze J, Glassen K, Pohontsch NJ, Blozik E, Eissing T, Breckner A, et al. Measuring the quality of care for older adults with multimorbidity: Results of the MULTIqual project. *Gerontologist* 2022. doi: 6516832 [pii] 10.1093/geront/gnac013

Ando T, Nishimoto Y, Hirata T, Abe Y, Takayama M, Maeno T, et al. Association between multimorbidity, self-rated health and life satisfaction among independent, community-dwelling very old persons in Japan: longitudinal cohort analysis from the Kawasaki Ageing and Well-being Project. *BMJ Open* 2022;12(2):e049262. doi: bmjopen-2021-049262 [pii] 10.1136/bmjopen-2021-049262

Schramm S, Moller SP, Tolstrup JS, Laursen B. Effects of individual and parental educational levels on multimorbidity classes: a register-based longitudinal study in a Danish population. *BMJ Open* 2022;12(2):e053274. doi: bmjopen-2021-053274 [pii] 10.1136/bmjopen-2021-053274

Ingram E, Gomes M, Hogarth S, McDonald HI, Osborn D, Sheringham J. Household Tenure and Its Associations with Multiple Long-Term Conditions amongst Working-Age Adults in East London: A Cross-Sectional Analysis Using Linked Primary Care and Local Government Records. *Int J Environ Res Public Health* 2022;19(7). doi: ijerph19074155 [pii]10.3390/ijerph19074155

Crespo PA, Nunes BP, Barros FC, Goncalves H, Menezes AMB, Wehrmeister FC. Multimorbidity and simultaneity of health risk factors, from adolescence to early adulthood: 1993 Pelotas Birth Cohort. *Prev Med* 2022;155:106932. doi: S0091-7435(21)00505-3 [pii]10.1016/j.ypmed.2021.106932

Calvo E, Azar A, Shura R, Staudinger UM. A New Path to Address Multimorbidity? Longitudinal Analyses of Retirement Sequences and Chronic Diseases in Old Age. *J Appl Gerontol* 2022;41(4):952-61. doi: 10.1177/07334648211031038

Tomita S, Aoki T, Ohde S, Takahashi O, Kimura T, Matsushima M. Association between health literacy and multimorbidity: a nationwide, cross-sectional study of a Japanese population. *BMJ Open* 2022;12(1):e052731. doi: bmjopen-2021-052731 [pii] 10.1136/bmjopen-2021-052731

Nicolet A, Assouline D, Le Pogam MA, Perraudin C, Bagnoud C, Wagner J, et al. Exploring Patient Multimorbidity and Complexity Using Health Insurance Claims Data: A Cluster Analysis Approach. *JMIR Med Inform* 2022;10(4):e34274. doi: v10i4e34274 [pii] 10.2196/34274

Geldsetzer P, De Neve JW, Mohan V, Prabhakaran D, Roy A, Tandon N, et al. Health System Performance for Multimorbid Cardiometabolic Disease in India: A Population-

- Based Cross-Sectional Study. *Glob Heart* 2022;17(1):7. doi: 10.5334/gh.1056
- Botoseneanu A, Markwardt S, Nagel CL, Allore HG, Newsom JT, Dorr DA, et al. Multimorbidity Accumulation Among Middle-Aged Americans: Differences by Race/Ethnicity and Body Mass Index. *J Gerontol A Biol Sci Med Sci* 2022;77(2):e89-e97. doi: 6242447 [pii]
10.1093/gerona/ghab116
- Khan MR, Malik MA, Akhtar SN, Yadav S, Patel R. Multimorbidity and its associated risk factors among older adults in India. *BMC Public Health* 2022;22(1):746. doi: 10.1186/s12889-022-13181-1
- O'Regan A, O'Doherty J, O'Connor R, Cullen W, Niranjana V, Glynn L, et al. How do multi-morbidity and polypharmacy affect general practice attendance and referral rates? A retrospective analysis of consultations. *PLoS One* 2022;17(2):e0263258. doi: 10.1371/journal.pone.0263258 PONE-D-21-15158 [pii]
- Luster JE, Ratz D, Wei MY. Multimorbidity and Social Participation Is Moderated by Purpose in Life and Life Satisfaction. *J Appl Gerontol* 2022;41(2):560-70. doi: 10.1177/07334648211027691
- Puri P, Sinha A, Mahapatra P, Pati S. Multimorbidity among midlife women in India: well-being beyond reproductive age. *BMC Womens Health* 2022;22(1):117. doi: 10.1186/s12905-022-01693-2
- Rafferty AP, Luo H, Winterbauer NL, Bell RA, Little NRG, Imai S. Health Literacy Among Adults With Multiple Chronic Health Conditions. *J Public Health Manag Pract* 2022;28(2):E610-E14. doi: 10.1097/PHH.0000000000001352
- Lee SI, Azcoaga-Lorenzo A, Agrawal U, Kennedy JI, Fagbamigbe AF, Hope H, et al. Epidemiology of pre-existing multimorbidity in pregnant women in the UK in 2018: a population-based cross-sectional study. *BMC Pregnancy Childbirth* 2022;22(1):120. doi: 10.1186/s12884-022-04442-3
- De Maria M, Ferro F, Ausili D, et al. Characteristics of dyadic care types among patients living with multiple chronic conditions and their informal caregivers. *J Adv Nurs* 2021;77(12):4768-81. doi: 10.1111/jan.15033
- Miller AC, O'Reilly D, Kee F, et al. Multimorbidity, activity limitation and self-reported health all predict mortality risk, but better measures were required. *J Clin Epidemiol* 2021;144:144-62. doi: 10.1016/j.jclinepi.2021.12.010
- Canon-Esquivel A, Gonzalez-Velez AE, Forjaz MJ. Factors associated with self-rated health status of older people with multimorbidity in Colombia: A cross-sectional study. *Rev Esp Geriatr Gerontol* 2021;56(6):326-33. doi: 10.1016/j.regg.2021.07.005
- Bisquera A, Turner EB, Ledwaba-Chapman L, et al. Inequalities in developing multimorbidity over time: A population-based cohort study from an urban, multi-ethnic borough in the United Kingdom. *Lancet Reg Health Eur* 2022;12:100247. doi: 10.1016/j.lanepe.2021.100247

Ullmann S, Strauss B, Tiesler F, et al. Patient characteristics as predictors of sleep disturbances in multimorbid primary care patients - A secondary analysis. *J Psychosom Res* 2022;153:110705. doi: 10.1016/j.jpsychores.2021.110705

Wang D, Li D, Mishra SR, et al. Association between marital relationship and multimorbidity in middle-aged adults: a longitudinal study across the US, UK, Europe, and China. *Maturitas* 2022;155:32-39. doi: 10.1016/j.maturitas.2021.09.011

Griffith LE, Gruneir A, Fisher KA, et al. The impact of multimorbidity level and functional limitations on the accuracy of using self-reported survey data compared to administrative data to measure general practitioner and specialist visits in community-living adults. *BMC Health Serv Res* 2021;21(1):1123. doi: 10.1186/s12913-021-07160-2

Bishop NJ, Ullevig SL, Wang K, et al. Dietary quality modifies the association between multimorbidity and change in mobility limitations among older Americans. *Prev Med* 2021;153:106721. doi: 10.1016/j.ypmed.2021.106721

Bernardes GM, Saulo H, Santos JLF, et al. Effect of education and multimorbidity on mortality among older adults: findings from the health, well-being and ageing cohort study (SABE). *Public Health* 2021;201:69-74. doi: 10.1016/j.puhe.2021.10.001

Wister AV, Li L, Mitchell BA. A Study of Social Isolation, Multimorbidity and Multiple Role Demands Among Middle-Age Adults Based on the Canadian Longitudinal Study on Aging. *Int J Aging Hum Dev* 2021;914150211040451. doi: 10.1177/00914150211040451

Ganguli I, McGlave C, Rosenthal MB. National Trends and Outcomes Associated With Presence and Type of Usual Clinician Among Older Adults With Multimorbidity. *JAMA Netw Open* 2021;4(11):e2134798. doi: 10.1001/jamanetworkopen.2021.34798

Veronese N, Smith L, Cereda E, et al. Multimorbidity increases the risk for sarcopenia onset: Longitudinal analyses from the English Longitudinal Study of Ageing. *Exp Gerontol* 2021;156:111624. doi: 10.1016/j.exger.2021.111624

Zou C, Sun H, Lu C, et al. Nighttime sleep duration, restlessness and risk of multimorbidity - A longitudinal study among middle-aged and older adults in China. *Arch Gerontol Geriatr* 2022;99:104580. doi: 10.1016/j.archger.2021.104580

Ali SM, Selby DA, Khalid K, et al. Engagement with consumer smartwatches for tracking symptoms of individuals living with multiple long-term conditions (multimorbidity): A longitudinal observational study. *J Comorb* 2021;11:26335565211062791. doi: 10.1177/26335565211062791

Kyprianidou M, Panagiotakos D, Kambanaros M, et al. Quality of Sleep in the Cypriot Population and Its Association With Multimorbidity: A Cross-Sectional Study. *Front Public Health* 2021;9:693332. doi: 10.3389/fpubh.2021.693332

Pedersen SE, Aaby A, Friis K, et al. Multimorbidity and health literacy: A population-based survey among 28,627 Danish adults. *Scand J Public Health* 2021;14034948211045921. doi: 10.1177/14034948211045921

Kyprianidou M, Panagiotakos D, Faka A, et al. Adherence to the Mediterranean diet in Cyprus and its relationship to multi-morbidity: an epidemiological study. *Public Health Nutr* 2021;24(14):4546-55. doi: 10.1017/S1368980020004267

Chen J, Mittendorfer-Rutz E, Berg L, et al. Associations between Multimorbidity Patterns

and Subsequent Labor Market Marginalization among Refugees and Swedish-Born Young Adults-A Nationwide Registered-Based Cohort Study. *J Pers Med* 2021;11(12) doi: 10.3390/jpm11121305

Kato D, Kawachi I, Saito J, et al. Complex Multimorbidity and Incidence of Long-Term Care Needs in Japan: A Prospective Cohort Study. *Int J Environ Res Public Health* 2021;18(19) doi: 10.3390/ijerph181910523

Paukkonen L, Oikarinen A, Kahkonen O, et al. Patient participation during primary health-care encounters among adult patients with multimorbidity: A cross-sectional study. *Health Expect* 2021;24(5):1660-76. doi: 10.1111/hex.13306

Jungo KT, Meier R, Valeri F, et al. Baseline characteristics and comparability of older multimorbid patients with polypharmacy and general practitioners participating in a randomized controlled primary care trial. *BMC Fam Pract* 2021;22(1):123. doi: 10.1186/s12875-021-01488-8

Lee KP, Wong SYS, Yip BHK, et al. How common are Chinese patients with multimorbidity involved in decision-making and having a treatment plan? A cross-sectional study. *Int J Clin Pract* 2021;75(8):e14286. doi: 10.1111/ijcp.14286

Mohamed R, Patel J, Shaikh NF, et al. Absenteeism-Related Wage Loss Associated With Multimorbidity Among Employed Adults in the United States. *J Occup Environ Med* 2021;63(6):508-13. doi: 10.1097/JOM.0000000000002180

Mann J, Thompson F, Quigley R, et al. Beyond multimorbidity: primary care and the older person with complex needs. *Aust J Prim Health* 2021;27(3):194-201. doi: 10.1071/PY20125

Jin H, Wang Z, Shi L, et al. Multimorbid Patient Experiences With Primary Care at Community Health Centers in Shanghai, China. *Front Public Health* 2021;9:606188. doi: 10.3389/fpubh.2021.606188

Caceres BA, Travers J, Sharma Y. Differences in Multimorbidity among Cisgender Sexual Minority and Heterosexual Adults: Investigating Differences across Age-Groups. *J Aging Health* 2021;33(5-6):362-76. doi: 10.1177/0898264320983663

Nicholson K, Griffith LE, Sohel N, et al. Examining early and late onset of multimorbidity in the Canadian Longitudinal Study on Aging. *J Am Geriatr Soc* 2021;69(6):1579-91. doi: 10.1111/jgs.17096

Vallesi S, Tuson M, Davies A, et al. Multimorbidity among People Experiencing Homelessness-Insights from Primary Care Data. *Int J Environ Res Public Health* 2021;18(12) doi: 10.3390/ijerph18126498

Shi X, Nikolic G, Van Pottelbergh G, et al. Development of Multimorbidity Over Time: An Analysis of Belgium Primary Care Data Using Markov Chains and Weighted Association Rule Mining. *J Gerontol A Biol Sci Med Sci* 2021;76(7):1234-41. doi: 10.1093/gerona/glaa278

Bloeser K, Lipkowitz-Eaton J. Disproportionate multimorbidity among veterans in middle age. *J Public Health (Oxf)* 2021 doi: 10.1093/pubmed/fdab149

Luster JE, Ratz D, Wei MY. Multimorbidity and Social Participation Is Moderated by Purpose in Life and Life Satisfaction. *J Appl Gerontol* 2021:7334648211027691. doi:

10.1177/07334648211027691

Calvo E, Azar A, Shura R, et al. A New Path to Address Multimorbidity? Longitudinal Analyses of Retirement Sequences and Chronic Diseases in Old Age. *J Appl Gerontol* 2021;7334648211031038. doi: 10.1177/07334648211031038

Moin JS, Glazier RH, Kuluski K, et al. Examine the association between key determinants identified by the chronic disease indicator framework and multimorbidity by rural and urban settings. *J Comorb* 2021;11:26335565211028157. doi: 10.1177/26335565211028157

Quinones AR, Newsom JT, Elman MR, et al. Racial and Ethnic Differences in Multimorbidity Changes Over Time. *Med Care* 2021;59(5):402-09. doi: 10.1097/MLR.0000000000001527

Bernabe-Ortiz A, Carrillo-Larco RM. Multimorbidity and Disability Among Venezuelan Migrants: A Population-Based Survey in Peru. *J Immigr Minor Health* 2021 doi: 10.1007/s10903-021-01259-8

Viljanen A, Salminen M, Irjala K, et al. Chronic conditions and multimorbidity associated with institutionalization among Finnish community-dwelling older people: an 18-year population-based follow-up study. *Eur Geriatr Med* 2021 doi: 10.1007/s41999-021-00535-y

Tran VT, Diard E, Ravaud P. Priorities to improve the care for chronic conditions and multimorbidity: a survey of patients and stakeholders nested within the ComPaRe e-cohort. *BMJ Qual Saf* 2021;30(7):577-87. doi: 10.1136/bmjqs-2020-011219

Lee KP, Wong SYS, Yip BHK, et al. How common are Chinese patients with multimorbidity involved in decision-making and having a treatment plan? A cross-sectional study. *Int J Clin Pract* 2021:e14286. doi: 10.1111/ijcp.14286

Mann J, Thompson F, Quigley R, et al. Beyond multimorbidity: primary care and the older person with complex needs. *Aust J Prim Health* 2021 doi: 10.1071/PY20125

Rafferty AP, Luo H, Winterbauer NL, et al. Health Literacy Among Adults With Multiple Chronic Health Conditions. *Journal of public health management and practice : JPHMP* 2021 doi: 10.1097/PHH.0000000000001352

Chau E, Rosella LC, Mondor L, et al. Association between continuity of care and subsequent diagnosis of multimorbidity in Ontario, Canada from 2001-2015: A retrospective cohort study. *PLoS One* 2021;16(3):e0245193. doi: 10.1371/journal.pone.0245193

Foscolou A, Chrysohoou C, Dimitriadis K, et al. The Association of Healthy Aging with Multimorbidity: IKARIA Study. *Nutrients* 2021;13(4) doi: 10.3390/nu13041386

Pintz C, Posey L, Farmer P, et al. Interprofessional care of people with multiple chronic conditions: An open-access resource for nursing educators. *Nurse Educ Pract* 2021;51:102990. doi: 10.1016/j.nepr.2021.102990

Maxwell CJ, Mondor L, Pefoyo Kone AJ, et al. Sex differences in multimorbidity and polypharmacy trends: A repeated cross-sectional study of older adults in Ontario, Canada. *PLoS One* 2021;16(4):e0250567. doi: 10.1371/journal.pone.0250567

Ma R, Romano E, Vancampfort D, et al. Physical multimorbidity and social participation in adults aged ≥ 65 years from six low- and middle-income countries. *J Gerontol B Psychol Sci Soc Sci* 2021 doi: 10.1093/geronb/gbab056

St Sauver JL, Chamberlain AM, Bobo WV, et al. Implementing the US Department of Health and Human Services definition of multimorbidity: a comparison between billing codes and medical record review in a population-based sample of persons 40-84 years old. *BMJ Open* 2021;11(4):e042870. doi: 10.1136/bmjopen-2020-042870

Gopfert A, Deeny SR, Fisher R, et al. Primary care consultation length by deprivation and multimorbidity in England: an observational study using electronic patient records. *Br J Gen Pract* 2021;71(704):e185-e92. doi: 10.3399/bjgp20X714029

Moin JS, Glazier RH, Kuluski K, et al. Impact of neighbourhood walkability on the onset of multimorbidity: a cohort study. *BMJ Open* 2021;11(4):e045890. doi: 10.1136/bmjopen-2020-045890

Rocca WA, Grossardt BR, Boyd CM, et al. Multimorbidity, ageing and mortality: normative data and cohort study in an American population. *BMJ Open* 2021;11(3):e042633. doi: 10.1136/bmjopen-2020-042633

Oh H, Glass J, Narita Z, et al. Discrimination and Multimorbidity Among Black Americans: Findings from the National Survey of American Life. *J Racial Ethn Health Disparities* 2021;8(1):210-19. doi: 10.1007/s40615-020-00773-z

Rutten-van Molken M, Karimi M, Leijten F, et al. Comparing patients' and other stakeholders' preferences for outcomes of integrated care for multimorbidity: a discrete choice experiment in eight European countries. *BMJ Open* 2020;10(10):e037547. doi: 10.1136/bmjopen-2020-037547

Rolewicz L, Keeble E, Paddison C, et al. Are the needs of people with multiple long-term conditions being met? Evidence from the 2018 General Practice Patient Survey. *BMJ Open* 2020;10(11):e041569. doi: 10.1136/bmjopen-2020-041569

Shi X, Nikolic G, Van Pottelbergh G, et al. Development of multimorbidity over time: an analysis of Belgium primary care data using Markov chains and Weighted Association Rules Mining. *J Gerontol A Biol Sci Med Sci* 2020 doi: 10.1093/gerona/glaa278

Lai FTT, Ma TW, Hou WK. How does chronic multimorbidity affect daily routines? An experience sampling study of community-dwelling adults in Hong Kong. *J Community Psychol* 2020;48(7):2326-48. doi: 10.1002/jcop.22418

Heins M, Korevaar J, Schellevis F, et al. Identifying multimorbid patients with high care needs - A study based on electronic medical record data. *Eur J Gen Pract* 2020;26(1):189-95. doi: 10.1080/13814788.2020.1854719

McDermott CL, Engelberg RA, Khandelwal N, et al. The Association of Advance Care Planning Documentation and End-of-Life Healthcare Use Among Patients With Multimorbidity. *Am J Hosp Palliat Care* 2020:1049909120968527. doi: 10.1177/1049909120968527

- Yu X, Zhang W. Neighborhood's locality, road types, and residents' multimorbidity: evidence from China's middle-aged and older adults. *BMC Public Health* 2020;20(1):1728. doi: 10.1186/s12889-020-09876-y
- Kyprianidou M, Panagiotakos D, Faka A, et al. Adherence to the Mediterranean diet in Cyprus and its relationship to multi-morbidity: an epidemiological study. *Public Health Nutr* 2020;1-10. doi: 10.1017/S1368980020004267
- Dinh HTT, Nguyen NT, Bonner A. Health literacy profiles of adults with multiple chronic diseases: A cross-sectional study using the Health Literacy Questionnaire. *Nurs Health Sci* 2020;22(4):1153-60. doi: 10.1111/nhs.12785
- Leung CW, Kullgren JT, Malani PN, et al. Food insecurity is associated with multiple chronic conditions and physical health status among older US adults. *Prev Med Rep* 2020;20:101211. doi: 10.1016/j.pmedr.2020.101211
- Gopfert A, Deeny SR, Fisher R, et al. Primary care consultation length by deprivation and multimorbidity in England: an observational study using electronic patient records. *Br J Gen Pract* 2020 doi: 10.3399/bjgp20X714029
- Caceres BA, Travers J, Sharma Y. Differences in Multimorbidity among Cisgender Sexual Minority and Heterosexual Adults: Investigating Differences across Age-Groups. *J Aging Health* 2020;898264320983663. doi: 10.1177/0898264320983663
- Nicholson K, Rodrigues R, Anderson KK, et al. Sleep behaviours and multimorbidity occurrence in middle-aged and older adults: findings from the Canadian Longitudinal Study on Aging (CLSA). *Sleep Med* 2020;75:156-62. doi: 10.1016/j.sleep.2020.07.002
- Sindi S, Perez LM, Vetrano DL, et al. Sleep disturbances and the speed of multimorbidity development in old age: results from a longitudinal population-based study. *BMC Med* 2020;18(1):382. doi: 10.1186/s12916-020-01846-w
- Yang L, Hu Y, Silventoinen K, et al. Childhood adversity and trajectories of multimorbidity in mid-late life: China health and longitudinal retirement study. *J Epidemiol Community Health* 2020 doi: 10.1136/jech-2020-214633
- Sim SZ, Koh HL, Lee SPS, et al. How does multimorbidity affect middle-aged adults? A cross-sectional survey in the Singapore primary healthcare setting. *BMC Fam Pract* 2020;21(1):190. doi: 10.1186/s12875-020-01262-2
- Melo LA, Lima KC. Factors associated with the most frequent multimorbidities in Brazilian older adults. *Cien Saude Colet* 2020;25(10):3879-88. doi: 10.1590/1413-812320202510.35632018
- Jeong D, Kim J, Lee H, et al. Association of Cardiometabolic Multimorbidity Pattern with Dietary Factors among Adults in South Korea. *Nutrients* 2020;12(9) doi: 10.3390/nu12092730
- Yildiz B, Burdorf A, Schuring M. The influence of chronic diseases and multimorbidity on entering paid employment among unemployed persons - a longitudinal register-based study. *Scand J Work Environ Health* 2020 doi: 10.5271/sjweh.3942
- Dorrington S, Carr E, Stevelink SAM, et al. Multimorbidity and fit note receipt in working-age adults with long-term health conditions. *Psychol Med* 2020;1-10. doi:

10.1017/S0033291720002937

Safdar MF, Bhatti SN, Abbasi AS, et al. Applications and impact of computer technologies in management of multimorbidity. *J Pak Med Assoc* 2020;70(9):1572-76. doi: 10.5455/JPMA.37601

Madlock-Brown CR, Reynolds RB, Bailey JE. Increases in multimorbidity with weight class in the United States. *Clin Obes* 2020:e12436. doi: 10.1111/cob.12436

Skoczylas D, Gujski M, Bojar I, et al. Importance of food allergy and food intolerance in allergic multimorbidity. *Ann Agric Environ Med* 2020;27(3):413-17. doi: 10.26444/aaem/123107

Shang X, Peng W, Wu J, et al. Leading determinants for multimorbidity in middle-aged Australian men and women: A nine-year follow-up cohort study. *Prev Med* 2020;141:106260. doi: 10.1016/j.ypmed.2020.106260

Ukhanova MA, Tillotson CJ, Marino M, et al. Uptake of Preventive Services Among Patients With and Without Multimorbidity. *Am J Prev Med* 2020;59(5):621-29. doi: 10.1016/j.amepre.2020.04.019

Chen YH, Karimi M, Rutten-van Molken M. The disease burden of multimorbidity and its interaction with educational level. *PLoS One* 2020;15(12):e0243275. doi: 10.1371/journal.pone.0243275

van Zon SKR, Reijneveld SA, Galaurchi A, et al. Multimorbidity and the Transition Out of Full-Time Paid Employment: A Longitudinal Analysis of the Health and Retirement Study. *J Gerontol B Psychol Sci Soc Sci* 2020;75(3):705-15. doi: 10.1093/geronb/gbz061

Stone CL. A population-based measure of chronic disease severity for health planning and evaluation in the United States. *AIMS Public Health* 2020;7(1):44-65. doi: 10.3934/publichealth.2020006

Sum G, Koh GC, Mercer SW, et al. Patients with more comorbidities have better detection of chronic conditions, but poorer management and control: findings from six middle-income countries. *BMC Public Health* 2020;20(1):9. doi: 10.1186/s12889-019-8112-3

Wister A, Cosco T, Mitchell B, et al. Health behaviors and multimorbidity resilience among older adults using the Canadian Longitudinal Study on Aging. *Int Psychogeriatr* 2020;32(1):119-33. doi: 10.1017/S1041610219000486

Malecki SL, Van Mil S, Graffi J, et al. A genetic model for multimorbidity in young adults. *Genet Med* 2020;22(1):132-41. doi: 10.1038/s41436-019-0603-1

Polenick CA, Leggett AN, Webster NJ, et al. Multiple Chronic Conditions in Spousal Caregivers of Older Adults With Functional Disability: Associations With Caregiving Difficulties and Gains. *J Gerontol B Psychol Sci Soc Sci* 2020;75(1):160-72. doi: 10.1093/geronb/gbx118

Laires PA, Serrano-Alarcon M, Canhao H, et al. Multimorbidity and intention to retire: a cross-sectional study on 14 European countries. *Int J Public Health* 2020;65(2):187-95. doi: 10.1007/s00038-019-01322-0

Ward BW, Myrick KL, Cherry DK. Physician Specialty and Office Visits Made by Adults

With Diagnosed Multiple Chronic Conditions: United States, 2014-2015. *Public Health Rep* 2020;**135**(3):372-82. doi: 10.1177/0033354920913005

Montes MC, Bortolotto CC, Tomasi E, et al. Strength and multimorbidity among community-dwelling elderly from southern Brazil. *Nutrition* 2020;**71**:110636. doi: 10.1016/j.nut.2019.110636

Xu X, Jones M, Mishra GD. Age at natural menopause and development of chronic conditions and multimorbidity: results from an Australian prospective cohort. *Hum Reprod* 2020;**35**(1):203-11. doi: 10.1093/humrep/dez259

Jacob L, Oh H, Shin JI, et al. Informal caregiving, chronic physical conditions, and physical multimorbidity in 48 low- and middle-income countries. *J Gerontol A Biol Sci Med Sci* 2020 doi: 10.1093/gerona/glaa017

Nguyen TN, Ngangue PA, Ryan BL, et al. The revised Patient Perception of Patient-Centeredness Questionnaire: Exploring the factor structure in French-speaking patients with multimorbidity. *Health Expect* 2020 doi: 10.1111/hex.13068

Zhang D, Sit RWS, Wong C, et al. Cohort profile: The prospective study on Chinese elderly with multimorbidity in primary care in Hong Kong. *BMJ Open* 2020;**10**(2):e027279. doi: 10.1136/bmjopen-2018-027279

Pedersen AF, Noroxe KB, Vedsted P. Influence of patient multimorbidity on GP burnout: a survey and register-based study in Danish general practice. *Br J Gen Pract* 2020;**70**(691):e95-e101. doi: 10.3399/bjgp20X707837

Aaby A, Beauchamp A, O'Hara J, et al. Large diversity in Danish health literacy profiles: perspectives for care of long-term illness and multimorbidity. *Eur J Public Health* 2020;**30**(1):75-80. doi: 10.1093/eurpub/ckz134

Stickley A, Koyanagi A, Ueda M, et al. Physical multimorbidity and suicidal behavior in the general population in the United States. *J Affect Disord* 2020;**260**:604-09. doi: 10.1016/j.jad.2019.09.042

Kristensen K, Konig HH, Hajek A. The longitudinal association of multimorbidity on loneliness and network size: Findings from a population-based study. *Int J Geriatr Psychiatry* 2019;**34**(10):1490-97. doi: 10.1002/gps.5158

Horn AB, Boettcher VS, Holzer BM, et al. Couples Adjusting to Multimorbidity: A Dyadic Study on Disclosure and Adjustment Disorder Symptoms. *Front Psychol* 2019;**10**:2499. doi: 10.3389/fpsyg.2019.02499

Ghosh S, Choi WY, Williams A, et al. Burden on Caregivers of Adults with Multiple Chronic Conditions: Intersectionality of Age, Gender, Education level, Employment Status, and Impact on Social Life. *Can J Aging* 2019:1-12. doi: 10.1017/S071498081900045X

Troelstra SA, Straker L, Harris M, et al. Multimorbidity is common among young workers and related to increased work absenteeism and presenteeism: results from the population-based Raine Study cohort. *Scand J Work Environ Health* 2020;**46**(2):218-27. doi: 10.5271/sjweh.3858

Laires PA, Serrano-Alarcon M, Canhao H, et al. Multimorbidity and intention to retire: a cross-sectional study on 14 European countries. *Int J Public Health* 2019 doi: 10.1007/s00038-019-01322-0

Yi JY, Kim H, Chi I. Urban-rural differences in multimorbidity and associated factors in China and Korea: A population-based survey study. *Geriatr Gerontol Int* 2019;**19**(11):1157-64. doi: 10.1111/ggi.13771

Polenick CA, Birditt KS, Turkelson A, et al. Individual-Level and Couple-Level Discordant Chronic Conditions: Longitudinal Links to Functional Disability. *Ann Behav Med* 2019 doi: 10.1093/abm/kaz061

Dodds RM, Granic A, Robinson SM, et al. Sarcopenia, long-term conditions, and multimorbidity: findings from UK Biobank participants. *J Cachexia Sarcopenia Muscle* 2019 doi: 10.1002/jcsm.12503

Tinetti ME, Naik AD, Dindo L, et al. Association of Patient Priorities-Aligned Decision-Making With Patient Outcomes and Ambulatory Health Care Burden Among Older Adults With Multiple Chronic Conditions: A Nonrandomized Clinical Trial. *JAMA Intern Med* 2019 doi: 10.1001/jamainternmed.2019.4235

Gawron LM, Sanders JN, Sward K, et al. Multi-morbidity and Highly Effective Contraception in Reproductive-Age Women in the US Intermountain West: a Retrospective Cohort Study. *J Gen Intern Med* 2019 doi: 10.1007/s11606-019-05425-5

Murphy TE, McAvay GJ, Agogo GO, et al. Personalized and typical concurrent risk of limitations in social activity and mobility in older persons with multiple chronic conditions and polypharmacy. *Ann Epidemiol* 2019;**37**:24-30. doi: 10.1016/j.annepidem.2019.08.001

Petersen I, Rathod S, Kathree T, et al. Risk correlates for physical-mental multimorbidities in South Africa: a cross-sectional study. *Epidemiol Psychiatr Sci* 2019;**28**(4):418-26. doi: 10.1017/S2045796017000737

Kadijk EA, van den Heuvel S, Ybema JF, et al. The Influence of Multi-morbidity on the Work Ability of Ageing Employees and the Role of Coping Style. *J Occup Rehabil* 2019;**29**(3):503-13. doi: 10.1007/s10926-018-9811-9

Carrier H, Zaytseva A, Bocquier A, et al. GPs' management of polypharmacy and therapeutic dilemma in patients with multimorbidity: a cross-sectional survey of GPs in France. *Br J Gen Pract* 2019;**69**(681):e270-e78. doi: 10.3399/bjgp19X701801

Palladino R, Pennino F, Finbarr M, et al. Multimorbidity And Health Outcomes In Older Adults In Ten European Health Systems, 2006-15. *Health Aff (Millwood)* 2019;**38**(4):613-23. doi: 10.1377/hlthaff.2018.05273

Griffith LE, Gilsing A, Mangin D, et al. Multimorbidity Frameworks Impact Prevalence and Relationships with Patient-Important Outcomes. *J Am Geriatr Soc* 2019;**67**(8):1632-40. doi: 10.1111/jgs.15921

Bao J, Chua KC, Prina M, et al. Multimorbidity and care dependence in older adults: a longitudinal analysis of findings from the 10/66 study. *BMC Public Health* 2019;**19**(1):585. doi: 10.1186/s12889-019-6961-4

Kristensen K, Konig HH, Hajek A. The longitudinal association of multimorbidity on loneliness and network size: Findings from a population-based study. *Int J Geriatr Psychiatry* 2019;**34**(10):1490-97. doi: 10.1002/gps.5158

Quinones AR, Botosaneanu A, Markwardt S, et al. Racial/ethnic differences in

multimorbidity development and chronic disease accumulation for middle-aged adults. *PLoS One* 2019;**14**(6):e0218462. doi: 10.1371/journal.pone.0218462

Assari S, Wisseh C, Bazargan M. Obesity and Polypharmacy among African American Older Adults: Gender as the Moderator and Multimorbidity as the Mediator. *Int J Environ Res Public Health* 2019;**16**(12) doi: 10.3390/ijerph16122181

Bowen M, Marwick S, Marshall T, et al. Multimorbidity and emergency department visits by a homeless population: a database study in specialist general practice. *Br J Gen Pract* 2019;**69**(685):e515-e25. doi: 10.3399/bjgp19X704609

Dekhtyar S, Vetrano DL, Marengoni A, et al. Association Between Speed of Multimorbidity Accumulation in Old Age and Life Experiences: A Cohort Study. *Am J Epidemiol* 2019;**188**(9):1627-36. doi: 10.1093/aje/kwz101

Vasquez E, Quinones A, Ramirez S, et al. Association Between Adverse Childhood Events and Multimorbidity in a Racial and Ethnic Diverse Sample of Middle-Aged and Older Adults. *Innov Aging* 2019;**3**(2):igz016. doi: 10.1093/geroni/igz016

Aaby A, Beauchamp A, O'Hara J, et al. Large diversity in Danish health literacy profiles: perspectives for care of long-term illness and multimorbidity. *Eur J Public Health* 2019 doi: 10.1093/eurpub/ckz134

Sadarangani T, Missaelides L, Eilertsen E, et al. A Mixed-Methods Evaluation of a Nurse-Led Community-Based Health Home for Ethnically Diverse Older Adults With Multimorbidity in the Adult Day Health Setting. *Policy Polit Nurs Pract* 2019;1527154419864301. doi: 10.1177/1527154419864301

Dekker LH, de Borst MH, Meems LMG, et al. The association of multimorbidity within cardio-metabolic disease domains with dietary patterns: A cross-sectional study in 129 369 men and women from the Lifelines cohort. *PLoS One* 2019;**14**(8):e0220368. doi: 10.1371/journal.pone.0220368

Shah V, Stokes J, Sutton M. Effects of non-medical health coaching on multimorbid patients in primary care: a difference-in-differences analysis. *BMC Health Serv Res* 2019;**19**(1):593. doi: 10.1186/s12913-019-4367-8

Caughey GE, Hillen JB, Bacon S, et al. Implementation of medication-related indicators of potentially preventable hospitalizations in a national chronic disease management program for older patients with multimorbidity. *Int J Qual Health Care* 2019;**31**(2):133-39. doi: 10.1093/intqhc/mzy133

Hussin NM, Shahar S, Din NC, et al. Incidence and predictors of multimorbidity among a multiethnic population in Malaysia: a community-based longitudinal study. *Aging Clin Exp Res* 2019;**31**(2):215-24. doi: 10.1007/s40520-018-1007-9

Henchoz Y, Seematter-Bagnoud L, Nanchen D, et al. Childhood adversity: A gateway to multimorbidity in older age? *Arch Gerontol Geriatr* 2019;**80**:31-37. doi: 10.1016/j.archger.2018.10.003

Rose AJ, Bayliss E, Baseman L, et al. Feasibility of Distinguishing Performance Among Provider Groups Using Patient-reported Outcome Measures in Older Adults With Multiple Chronic Conditions. *Med Care* 2019;**57**(3):180-86. doi: 10.1097/MLR.0000000000001013

Kuipers SJ, Cramm JM, Nieboer AP. The importance of patient-centered care and co-creation of care for satisfaction with care and physical and social well-being of patients

with multi-morbidity in the primary care setting. *BMC Health Serv Res* 2019;**19**(1):13. doi: 10.1186/s12913-018-3818-y

Licher S, Heshmatollah A, van der Willik KD, et al. Lifetime risk and multimorbidity of non-communicable diseases and disease-free life expectancy in the general population: A population-based cohort study. *PLoS Med* 2019;**16**(2):e1002741. doi: 10.1371/journal.pmed.1002741

Mangin D, Parascandalo J, Khudoyarova O, et al. Multimorbidity, eHealth and implications for equity: a cross-sectional survey of patient perspectives on eHealth. *BMJ Open* 2019;**9**(2):e023731. doi: 10.1136/bmjopen-2018-023731

Lai FTT, Guthrie B, Wong SYS, et al. Sex-specific intergenerational trends in morbidity burden and multimorbidity status in Hong Kong community: an age-period-cohort analysis of repeated population surveys. *BMJ Open* 2019;**9**(1):e023927. doi: 10.1136/bmjopen-2018-023927

Raciborski F, Bousquet J, Namyslowski A, et al. Dissociating polysensitization and multimorbidity in children and adults from a Polish general population cohort. *Clin Transl Allergy* 2019;**9**:4. doi: 10.1186/s13601-019-0246-y

Marino-Sanchez F, Valls-Mateus M, de Los Santos G, et al. Multimorbidities of Pediatric Allergic Rhinitis. *Curr Allergy Asthma Rep* 2019;**19**(2):13. doi: 10.1007/s11882-019-0843-9

Frith E, Ramulu PY, Ashar B, et al. Association of Single and Multiple Medical Conditions with Work Status among Adults in the United States. *J Lifestyle Med* 2019;**9**(1):15-26. doi: 10.15280/jlm.2019.9.1.15

Han BH, Ko R, Palamar JJ. Substance Use by Adults with Medical Multimorbidity in the United States, 2015-2016. *J Gen Intern Med* 2019 doi: 10.1007/s11606-019-04980-1

Griffith LE, Gilsing A, Mangin D, et al. Multimorbidity Frameworks Impact Prevalence and Relationships with Patient-Important Outcomes. *J Am Geriatr Soc* 2019 doi: 10.1111/jgs.15921

Monahan PO, Kroenke K, Callahan CM, et al. Reliability and Validity of SymTrak, a Multi-Domain Tool for Monitoring Symptoms of Older Adults with Multiple Chronic Conditions. *J Gen Intern Med* 2019 doi: 10.1007/s11606-018-4780-4

Herzig L, Mueller Y, Haller DM, et al. Family practitioners' top medical priorities when managing patients with multimorbidity: a cross-sectional study. *BJGP Open* 2019;**3**(1):bjgpopen18X101622. doi: 10.3399/bjgpopen18X101622

Cromley EK, Wilson-Genderson M, Heid AR, et al. Spatial Associations of Multiple Chronic Conditions Among Older Adults. *J Appl Gerontol* 2018;**37**(11):1411-35. doi: 10.1177/0733464816672044

Canizares M, Hogg-Johnson S, Gignac MAM, et al. Increasing Trajectories of Multimorbidity Over Time: Birth Cohort Differences and the Role of Changes in Obesity and Income. *J Gerontol B Psychol Sci Soc Sci* 2018;**73**(7):1303-14. doi: 10.1093/geronb/gbx004

- Kaneva M, Gerry CJ, Baidin V. The effect of chronic conditions and multi-morbidity on self-assessed health in Russia. *Scand J Public Health* 2018;**46**(8):886-96. doi: 10.1177/1403494817746283
- Behm L, Bjorkman E, Ahlstrom G. Mental health and reactions to caregiving among next of kin of older people (65+) with multi-morbidity discharged home after hospitalization. *Scand J Caring Sci* 2018;**32**(4):1458-67. doi: 10.1111/scs.12592
- Kadijk EA, van den Heuvel S, Ybema JF, et al. The Influence of Multi-morbidity on the Work Ability of Ageing Employees and the Role of Coping Style. *J Occup Rehabil* 2018 doi: 10.1007/s10926-018-9811-9
- Nicholson C, Davies JM, George R, et al. What are the main palliative care symptoms and concerns of older people with multimorbidity?-a comparative cross-sectional study using routinely collected Phase of Illness, Australia-modified Karnofsky Performance Status and Integrated Palliative Care Outcome Scale data. *Ann Palliat Med* 2018;**7**(Suppl 3):S164-S75. doi: 10.21037/apm.2018.06.07
- Henchoz Y, Seematter-Bagnoud L, Nanchen D, et al. Childhood adversity: A gateway to multimorbidity in older age? *Arch Gerontol Geriatr* 2019;**80**:31-37. doi: 10.1016/j.archger.2018.10.003
- Mbizo J, Okafor A, Sutton MA, et al. Complementary and alternative medicine use among persons with multiple chronic conditions: results from the 2012 National Health Interview Survey. *BMC Complement Altern Med* 2018;**18**(1):281. doi: 10.1186/s12906-018-2342-2
- Han BH, Termine DJ, Moore AA, et al. Medical multimorbidity and drug use among adults in the United States. *Prev Med Rep* 2018;**12**:214-19. doi: 10.1016/j.pmedr.2018.10.007
- Amell A, Roso-Llorach A, Palomero L, et al. Disease networks identify specific conditions and pleiotropy influencing multimorbidity in the general population. *Sci Rep* 2018;**8**(1):15970. doi: 10.1038/s41598-018-34361-3
- Carvalho JN, de Camargo Cancela M, de Souza DLB. Lifestyle factors and high body mass index are associated with different multimorbidity clusters in the Brazilian population. *PLoS One* 2018;**13**(11):e0207649. doi: 10.1371/journal.pone.0207649
- Xu X, Mishra GD, Dobson AJ, et al. Short-term weight gain is associated with accumulation of multimorbidity in mid-aged women: a 20-year cohort study. *Int J Obes (Lond)* 2018 doi: 10.1038/s41366-018-0250-7
- Vancampfort D, Stubbs B, Firth J, et al. Handgrip strength, chronic physical conditions and physical multimorbidity in middle-aged and older adults in six low- and middle income countries. *Eur J Intern Med* 2018 doi: 10.1016/j.ejim.2018.11.007
- Song X, Wu J, Yu C, et al. Association between multiple comorbidities and self-rated health status in middle-aged and elderly Chinese: the China Kadoorie Biobank study. *BMC Public Health* 2018;**18**(1):744. doi: 10.1186/s12889-018-5632-1.
- Liu H, Lou VWQ. Transitioning into spousal caregiving: contribution of caregiving intensity and caregivers' multiple chronic conditions to functional health. *Age Ageing* 2018 doi: 10.1093/ageing/afy098.
- Faruqui SHA, Alaeddini A, Jaramillo CA, et al. Mining patterns of comorbidity evolution in patients with multiple chronic conditions using unsupervised multi-level temporal Bayesian network. *PLoS One* 2018;**13**(7):e0199768. doi: 10.1371/journal.pone.0199768.

.Vancampfort D, Smith L, Stubbs B, et al. Associations between active travel and physical multi-morbidity in six low- and middle-income countries among community-dwelling older adults: A cross-sectional study. *PLoS One* 2018;**13**(8):e0203277. doi: 10.1371/journal.pone.0203277.

Rutten-van Molken M, Leijten F, Hoedemakers M, et al. Strengthening the evidence-base of integrated care for people with multi-morbidity in Europe using Multi-Criteria Decision Analysis (MCDA). *BMC Health Serv Res* 2018;**18**(1):576. doi: 10.1186/s12913-018-3367-4.

Heid AR, Pruchno R, Wilson-Genderson M. Illness Representations of Multiple Chronic Conditions and Self-Management Behaviors in Older Adults: A Pilot Study. *Int J Aging Hum Dev* 2018;**87**(1):90-106. doi: 10.1177/0091415018771327.

Kingston A, Robinson L, Booth H, et al. Projections of multi-morbidity in the older population in England to 2035: estimates from the Population Ageing and Care Simulation (PACSim) model. *Age Ageing* 2018;**47**(3):374-80. doi: 10.1093/ageing/afx201.

England-Mason G, Casey R, Ferro M, et al. Child maltreatment and adult multimorbidity: results from the Canadian Community Health Survey. *Can J Public Health* 2018;**109**(4):561-72. doi: 10.17269/s41997-018-0069-y.

Deruaz-Luyet A, N'Goran AA, Pasquier J, et al. Multimorbidity: can general practitioners identify the health conditions most important to their patients? Results from a national cross-sectional study in Switzerland. *BMC Fam Pract* 2018;**19**(1):66. doi: 10.1186/s12875-018-0757-y.

Harrison SM, Wei MY, Lamerato LE, et al. Multimorbidity is associated with uptake of influenza vaccination. *Vaccine* 2018;**36**(25):3635-40. doi: 10.1016/j.vaccine.2018.05.021.

Wang L, Cocker F, Kilpatrick M, et al. The Associations of Multimorbidity With Health-Related Productivity Loss in a Large and Diverse Public Sector Setting: A Cross-Sectional Survey. *J Occup Environ Med* 2018;**60**(6):528-35. doi: 10.1097/JOM.0000000000001243.

Lupianez-Villanueva F, Anastasiadou D, Codagnone C, et al. Electronic Health Use in the European Union and the Effect of Multimorbidity: Cross-Sectional Survey. *J Med Internet Res* 2018;**20**(5):e165. doi: 10.2196/jmir.7299.

Wister A, Lear S, Schuurman N, et al. Development and validation of a multi-domain multimorbidity resilience index for an older population: results from the baseline Canadian Longitudinal Study on Aging. *BMC Geriatr* 2018;**18**(1):170. doi: 10.1186/s12877-018-0851-y.

Han BH, Moore AA, Sherman SE, et al. Prevalence and correlates of binge drinking among older adults with multimorbidity. *Drug Alcohol Depend* 2018;**187**:48-54. doi: 10.1016/j.drugalcdep.2018.01.038.

Andersson MA, Monin JK. Informal Care Networks in the Context of Multimorbidity: Size, Composition, and Associations With Recipient Psychological Well-Being. *J Aging Health* 2018;**30**(4):641-64. doi: 10.1177/0898264316687623.

Keller T, Hohmann C, Standl M, et al. The sex-shift in single disease and multimorbid asthma and rhinitis during puberty - a study by MeDALL. *Allergy* 2018;**73**(3):602-14. doi: 10.1111/all.13312.

Bhalla IP, Rosenheck RA. A Change in Perspective: From Dual Diagnosis to Multimorbidity. *Psychiatr Serv* 2018;**69**(1):112-16. doi: 10.1176/appi.ps.201700194.

MacLean RR, Sofuoglu M, Rosenheck R. Tobacco and alcohol use disorders: Evaluating multimorbidity. *Addict Behav* 2018;**78**:59-66. doi: 10.1016/j.addbeh.2017.11.006.

Siroux V, Ballardini N, Soler M, et al. The asthma-rhinitis multimorbidity is associated with IgE polysensitization in adolescents and adults. *Allergy* 2018 doi: 10.1111/all.13410.

N'Goran AA, Pasquier J, Deruaz-Luyet A, et al. Factors associated with health literacy in multimorbid patients in primary care: a cross-sectional study in Switzerland. *BMJ Open* 2018;**8**(2):e018281. doi: 10.1136/bmjopen-2017-018281.

Kim N, Nam HJ, Noh J, et al. The effect of multimorbidity on the gap between global and age-comparative self-rated health scores among the Korean elderly. *Arch Gerontol Geriatr* 2018;**76**:19-25. doi: 10.1016/j.archger.2018.01.002.

Jantsch AG, Alves RFS, Faerstein E. Educational inequality in Rio de Janeiro and its impact on multimorbidity: evidence from the Pro-Saude study. A cross-sectional analysis. *Sao Paulo Med J* 2018;**136**(1):51-58. doi: 10.1590/1516-3180.2017.0209100917.

Deparis S, Pascale A, Tommasi P, et al. An Analytical Method for Multimorbidity Management Using Bayesian Networks. *Stud Health Technol Inform* 2018;**247**:820-24.

Bynum JPW, Chang CH, Austin A, Carmichael D, Meara E. Outcomes in Older Adults with Multimorbidity Associated with Predominant Provider of Care Specialty. *J Am Geriatr Soc*. 2017;**65**(9):1916-1923.

Adams ML. Differences Between Younger and Older US Adults With Multiple Chronic Conditions. *Prev Chronic Dis*. 2017;**14**:E76.

Polenick CA, Leggett AN, Webster NJ, Han BH, Zarit SH, Piette JD. Multiple Chronic Conditions in Spousal Caregivers of Older Adults With Functional Disability: Associations With Caregiving Difficulties and Gains. *J Gerontol B Psychol Sci Soc Sci*. 2017.

Kang J, Song YM. The association between submarine service and multimorbidity: a cross-sectional study of Korean naval personnel. *BMJ Open*. 2017;**7**(9):e017776.

Eton DT, Ridgeway JL, Linzer M, et al. Healthcare provider relational quality is associated with better self-management and less treatment burden in people with multiple chronic conditions. *Patient Prefer Adherence*. 2017;**11**:1635-1646.

Chi WC, Wolff J, Greer R, Dy S. Multimorbidity and Decision-Making Preferences Among Older Adults. *Ann Fam Med*. 2017;**15**(6):546-551.

Le Reste JY, Nabbe P, Billot Grasset A, et al. Multimorbid outpatients: A high frequency of FP appointments and/or family difficulties, should alert FPs to the possibility of death or acute hospitalization occurring within six months; A primary care feasibility study. *PLoS One*. 2017;**12**(11):e0186931.

MacLean RR, Sofuoglu M, Rosenheck R. Tobacco and alcohol use disorders: Evaluating multimorbidity. *Addict Behav.* 2017;**78**:59-66.

Gimeno-Feliu LA, Calderon-Larranaga A, Diaz E, et al. Multimorbidity and immigrant status: associations with area of origin and length of residence in host country. *Fam Pract.* 2017;**34**(6):662-666.

Adams ML, Grandpre J, Katz DL, Shenson D. Linear association between number of modifiable risk factors and multiple chronic conditions: Results from the Behavioral Risk Factor Surveillance System. *Prev Med.* 2017;**105**:169-175.

Wang L, Cocker F, Kilpatrick M, et al. The Associations of Multimorbidity With Health-Related Productivity Loss in a Large and Diverse Public Sector Setting: A Cross-Sectional Survey. *J Occup Environ Med.* 2017.

Drye EE, Altaf FK, Lipska KJ, et al. Defining Multiple Chronic Conditions for Quality Measurement. *Med Care.* 2017.

Sharpe L, McDonald S, Correia H, et al. Pain severity predicts depressive symptoms over and above individual illnesses and multimorbidity in older adults. *BMC Psychiatry.* 2017;**17**(1):166. doi: 10.1186/s12888-017-1334-y.

Alimohammadian M, Majidi A, Yaseri M, et al. Multimorbidity as an important issue among women: results of a gender difference investigation in a large population-based cross-sectional study in West Asia. *BMJ Open.* 2017;**7**(5):e013548. doi: 10.1136/bmjopen-2016-013548.

Brenk-Franz K, Strauss B, Tiesler F, Fleischhauer C, Schneider N, Gensichen J. Patient-provider relationship as mediator between adult attachment and self-management in primary care patients with multiple chronic conditions. *J Psychosom Res.* 2017;**97**:131-135. doi: 10.1016/j.jpsychores.2017.04.007.

van den Brink AMA, Gerritsen DL, de Valk MMH, Oude Voshaar RC, Koopmans R. Characteristics and health conditions of a group of nursing home patients with mental-physical multimorbidity - the MAPPING study. *Int Psychogeriatr.* 2017;**29**(6):1037-1047. doi: 10.1017/S1041610217000230.

Greenberg AJ, Falisi AL, Finney Rutten LJ, et al. Access to Electronic Personal Health Records Among Patients With Multiple Chronic Conditions: A Secondary Data Analysis. *J Med Internet Res.* 2017;**19**(6):e188. doi: 10.2196/jmir.7417.

Tetzlaff J, Muschik D, Epping J, Eberhard S, Geyer S. Expansion or compression of multimorbidity? 10-year development of life years spent in multimorbidity based on health insurance claims data of Lower Saxony, Germany. *Int J Public Health.* 2017;**62**(6):679-686. doi: 10.1007/s00038-017-0962-9.

Lawson C, Pati S, Green J, et al. Development of an international comorbidity education framework. *Nurse Educ Today.* 2017;**55**:82-89. doi: 10.1016/j.nedt.2017.05.011.

Mortsiefer A, Altiner A, Ernst A, et al. Satisfaction with general practice care in German patients with multimorbidity: a cross-sectional study. *Fam Pract.* 2017;**34**(4):452-458. doi: 10.1093/fampra/cmw141.

Neuner-Jehle S, Zechmann S, Grundmann Maissen D, Rosemann T, Senn O. Patient-provider concordance in the perception of illness and disease: a cross-sectional study

among multimorbid patients and their general practitioners in Switzerland. *Patient Preference Adherence*. 2017;**11**:1451-1458. doi: 10.2147/PPA.S137388.

Blokh D, Stambler I, Lubart E, Mizrahi EH. The application of information theory for the estimation of old-age multimorbidity. *Geroscience*. 2017. doi: 10.1007/s11357-017-9996-4.

Lujic S, Simpson JM, Zwar N, Hosseinzadeh H, Jorm L. Multimorbidity in Australia: Comparing estimates derived using administrative data sources and survey data. *PLoS One*. 2017;**12**(8):e0183817. doi: 10.1371/journal.pone.0183817.

Jason KJ, Carr DC, Washington TR, Hilliard TS, Mingo CA. Multiple Chronic Conditions, Resilience, and Workforce Transitions in Later Life: A Socio-Ecological Model. *Gerontologist*. 2017;**57**(2):269-281.

Sundstrup E, Jakobsen MD, Mortensen OS, Andersen LL. Joint association of multimorbidity and work ability with risk of long-term sickness absence: a prospective cohort study with register follow-up. *Scand J Work Environ Health*. 2017;**43**(2):146-154.

Espeland MA, Crimmins EM, Grossardt BR, et al. Clinical Trials Targeting Aging and Age-Related Multimorbidity. *J Gerontol A Biol Sci Med Sci*. 2017;**72**(3):355-361.

Mortsiefer A, Altiner A, Ernst A, et al. Satisfaction with general practice care in German patients with multimorbidity: a cross-sectional study. *Fam Pract*. 2017.

Dhalwani NN, Zaccardi F, O'Donovan G, et al. Association Between Lifestyle Factors and the Incidence of Multimorbidity in an Older English Population. *J Gerontol A Biol Sci Med Sci*. 2017;**72**(4):528-534.

Canizares M, Hogg-Johnson S, Gignac MAM, Glazier RH, Badley EM. Increasing Trajectories of Multimorbidity Over Time: Birth Cohort Differences and the Role of Changes in Obesity and Income. *J Gerontol B Psychol Sci Soc Sci*. 2017.

Kavalidou K, Smith DJ, O'Connor RC. The role of physical and mental health multimorbidity in suicidal ideation. *J Affect Disord*. 2017;**209**:80-85.

Ubalde-Lopez M, Delclos GL, Benavides FG, Calvo-Bonacho E, Gimeno D. The effect of multimorbidity on sickness absence by specific diagnoses. *Occup Med (Lond)*. 2017;**67**(2):93-100.

Tetzlaff J, Muschik D, Epping J, Eberhard S, Geyer S. Expansion or compression of multimorbidity? 10-year development of life years spent in multimorbidity based on health insurance claims data of Lower Saxony, Germany. *Int J Public Health*. 2017.

Lowe DB, Taylor MJ, Hill SJ. Associations between multimorbidity and additional burden for working-age adults with specific forms of musculoskeletal conditions: a cross-sectional study. *BMC Musculoskelet Disord*. 2017;**18**(1):135.

Garg R, Shen C, Sambamoorthi N, Kelly K, Sambamoorthi U. Type of Multimorbidity and Patient-Doctor Communication and Trust among Elderly Medicare Beneficiaries. *Int J Family Med*. 2016;**2016**:8747891.

Lowe D, Taylor M, Hill S. Changing definitions altered multimorbidity prevalence, but not burden associations, in a musculoskeletal population. *J Clin Epidemiol*. 2016;**78**:116-126.

Blakemore A, Hann M, Howells K, et al. Patient activation in older people with long-term

conditions and multimorbidity: correlates and change in a cohort study in the United Kingdom. *BMC Health Serv Res.* 2016;**16**(1):582.

Tomasdottir MO, Sigurdsson JA, Petursson H, et al. Does 'existential unease' predict adult multimorbidity? Analytical cohort study on embodiment based on the Norwegian HUNT population. *BMJ Open.* 2016;**6**(11):e012602.

Rocca WA, Gazzuola-Rocca L, Smith CY, et al. Accelerated Accumulation of Multimorbidity After Bilateral Oophorectomy: A Population-Based Cohort Study. *Mayo Clin Proc* 67(2):144-57. 2016;**91**(11):1577-1589. Garg R, Shen C, Sambamoorthi N, Kelly K, Sambamoorthi U. Type of Multimorbidity and Patient-Doctor Communication and Trust among Elderly Medicare Beneficiaries. *Int J Family Med.* 2016;**2016**:8747891.

Blakemore A, Hann M, Howells K, et al. Patient activation in older people with long-term conditions and multimorbidity: correlates and change in a cohort study in the United Kingdom. *BMC Health Serv Res.* 2016;**16**(1):582.

Tomasdottir MO, Sigurdsson JA, Petursson H, et al. Does 'existential unease' predict adult multimorbidity? Analytical cohort study on embodiment based on the Norwegian HUNT population. *BMJ Open.* 2016;**6**(11):e012602.

Rocca WA, Gazzuola-Rocca L, Smith CY, et al. Accelerated Accumulation of Multimorbidity After Bilateral Oophorectomy: A Population-Based Cohort Study. *Mayo Clin Proc* 67(2):144-57. 2016;**91**(11):1577-1589.

Bowling CB, Plantinga L, Phillips LS, et al. Association of Multimorbidity with Mortality and Healthcare Utilization in Chronic Kidney Disease. *J Am Geriatr Soc.* 2016.

Violan C, Bejarano-Rivera N, Foguet-Boreu Q, et al. The burden of cardiovascular morbidity in a European Mediterranean population with multimorbidity: a cross-sectional study. *BMC Fam Pract.* 2016;**17**(1):150.

Bowling CB, Plantinga L, Phillips LS, et al. Association of Multimorbidity with Mortality and Healthcare Utilization in Chronic Kidney Disease. *J Am Geriatr Soc.* 2016.

Wong ES, Rosland AM, Fihn SD, Nelson KM. Patient-Centered Medical Home Implementation in the Veterans Health Administration and Primary Care Use: Differences by Patient Comorbidity Burden. *J Gen Intern Med.* 2016.

Eton DT, Yost KJ, Lai JS, et al. Development and validation of the Patient Experience with Treatment and Self-management (PETS): a patient-reported measure of treatment burden. *Qual Life Res.* 2016.

Pavela G, Latham K. Childhood Conditions and Multimorbidity Among Older Adults. *J Gerontol B Psychol Sci Soc Sci.* 2016;**71**:889-901.

Afrin N, Honkanen R, Koivumaa-Honkanen H, et al. Multimorbidity predicts falls differentially according to the type of fall in postmenopausal women. *Maturitas.* 2016;**91**:19-24.

Bernabeu-Wittel M, Moreno-Gavino L, Ollero-Baturone M, et al. Validation of PROFUND prognostic index over a four-year follow-up period. *Eur J Intern Med.* 2016.

Ubalde-Lopez M, Delclos GL, Benavides FG, Calvo-Bonacho E, Gimeno D. The effect of multimorbidity on sickness absence by specific diagnoses. *Occup Med (Lond).* 2016.

Hilderink HB, Plasmans MH, Snijders BE, Boshuizen HC, Poos MJ, van Gool CH.

Accounting for multimorbidity can affect the estimation of the Burden of Disease: a comparison of approaches. *Arch Public Health*. 2016;**74**:37.

Rodriguez-Fernandez R, Ng N, Susilo D, Prawira J, Bangs MJ, Amiya RM. The double burden of disease among mining workers in Papua, Indonesia: at the crossroads between Old and New health paradigms. *BMC Public Health*. 2016;**16**:951.

Balbale SN, Etingen B, Malhiot A, Miskevics S, LaVela SL. Perceptions of Chronic Illness Care Among Veterans With Multiple Chronic Conditions. *Mil Med*. 2016;**181**:439-44.

Falci L, Shi Z, Greenlee H. Multiple Chronic Conditions and Use of Complementary and Alternative Medicine Among US Adults: Results From the 2012 National Health Interview Survey. *Prev Chronic Dis*. 2016;**13**:E61.

Yuen HK, Vogtle LK. Multi-morbidity, disability and adaptation strategies among community-dwelling adults aged 75 years and older. *Disabil Health J*. 2016.

Agur K, McLean G, Hunt K, Guthrie B, Mercer SW. How Does Sex Influence Multimorbidity? Secondary Analysis of a Large Nationally Representative Dataset. *Int J Environ Res Public Health*. 2016;**13**:391.

Galenkamp H, Gagliardi C, Principi A, et al. Predictors of social leisure activities in older Europeans with and without multimorbidity. *Eur J Ageing*. 2016;**13**:129-43.

Diaz E, Kumar BN, Gimeno-Feliu LA, Calderon-Larranaga A, Poblador-Pou B, Prados-Torres A: Multimorbidity among registered immigrants in Norway: the role of reason for migration and length of stay. *Trop Med Int Health*. 2015;**20**(12):1805-1814.

Jensen LF, Pedersen AF, Andersen B, Vestergaard M, Vedsted P: Non-participation in breast cancer screening for women with chronic diseases and multimorbidity: a population-based cohort study. *BMC Cancer*. 2015;**15**:798.

Zielinski A, Halling A: Association between age, gender and multimorbidity level and receiving home health care: a population-based Swedish study. *BMC Res Notes*. 2015;**8**:714.

Allore HG, Zhan Y, Cohen AB, Tinetti ME, Trentalange M, McAvay G: Methodology to Estimate the Longitudinal Average Attributable Fraction of Guideline-recommended Medications for Death in Older Adults With Multiple Chronic Conditions. *J Gerontol A Biol Sci Med Sci*. 2016.

Weir DL, McAlister FA, Majumdar SR, Eurich DT: The Interplay Between Continuity of Care, Multimorbidity, and Adverse Events in Patients With Diabetes. *Med Care*. 2016.

Salisbury C, Procter S, Stewart K, et al. The content of general practice consultations: cross-sectional study based on video recordings. *Br J Gen Pract*. Nov 2013;**63**(616):e751-759.

Cheng TY, Chou YJ, Huang N, Pu C, Chou YJ, Chou P. Exploring the role of multiple chronic conditions in traditional Chinese medicine use and three types of traditional Chinese medicine therapy among adults in Taiwan. *J Altern Complement Med*. Jun 2015;**21**(6):350-357.

Ward BW. Multiple chronic conditions and labor force outcomes: A population study of U.S. adults. *Am J Ind Med*. Sep 2015;**58**(9):943-954.

Onder G, Palmer K, Navickas R, et al. Time to face the challenge of multimorbidity. A European perspective from the joint action on chronic diseases and promoting healthy ageing across the life cycle (JA-CHRODIS). *Eur J Intern Med*. Apr 2015;**26**(3):157-159.

Loprinzi PD. Health-enhancing multibehavior and medical multimorbidity. *Mayo Clin Proc* 67(2):144-57. May 2015;**90**(5):624-632.

Islam MM, McRae IS, Yen L, Jowsey T, Valderas JM. Time spent on health-related activities by senior Australians with chronic diseases: what is the role of multimorbidity and comorbidity? *Aust N Z J Public Health*. Jun 2015;**39**(3):277-283.

Adeniji C, Kenning C, Coventry PA, Bower P. What are the core predictors of 'hassles' among patients with multimorbidity in primary care? A cross sectional study. *BMC Health Serv Res*. 2015;**15**:255.

Sarkar C, Dodhia H, Crompton J, et al. Hypertension: a cross-sectional study of the role of multimorbidity in blood pressure control. *BMC Fam Pract*. 2015;**16**:98.

Guilcher SJ, Lofters A, Glazier RH, Jaglal SB, Voth J, Bayoumi AM. Level of disability, multi-morbidity and breast cancer screening: does severity matter? *Prev Med*. Oct 2014;**67**:193-198.

Lofters A, Guilcher S, Glazier RH, Jaglal S, Voth J, Bayoumi AM. Screening for cervical cancer in women with disability and multimorbidity: a retrospective cohort study in Ontario, Canada. *CMAJ Open*. Oct 2014;**2**(4):E240-247.

St Sauver JL, Boyd CM, Grossardt BR, et al. Risk of developing multimorbidity across all ages in an historical cohort study: differences by sex and ethnicity. *BMJ Open*. 2015;**5**(2):e006413.

Kenning C, Coventry PA, Gibbons C, Bee P, Fisher L, Bower P. Does patient experience of multimorbidity predict self-management and health outcomes in a prospective study in primary care? *Fam Pract*. Feb 24 2015.

Paddison CA, Saunders CL, Abel GA, Payne RA, Campbell JL, Roland M. Why do patients with multimorbidity in England report worse experiences in primary care? Evidence from the General Practice Patient Survey. *BMJ Open*. 2015;**5**(3):e006172.

Martin CM. Self-rated health: patterns in the journeys of patients with multi-morbidity and frailty. *J Eval Clin Pract*. Dec 2014;**20**(6):1010-1016.

Frei H. Homeopathic treatment of multimorbid patients: a prospective outcome study with polarity analysis. *Homeopathy : the journal of the Faculty of Homeopathy*. Jan 2015;**104**(1):57-65.

Alwhaibi M, Bhattacharya R, Sambamoorthi U. Type of Multimorbidity and Complementary and Alternative Medicine Use among Adults. *Evid Based Complement Alternat Med*. 2015;**2015**:362582.

Parekh AK, Kronick R, Tavenner M. Optimizing health for persons with multiple chronic conditions. *JAMA*. Sep 24 2014;**312**(12):1199-1200.

Fortin M, Haggerty J, Almirall J, Bouhali T, Sasseville M, Lemieux M. Lifestyle factors and multimorbidity: a cross sectional study. *BMC Public Health*. Jul 5 2014;**14**(1):686.

DuGoff EH, Canudas-Romo V, Buttorff C, Leff B, Anderson GF. Multiple chronic conditions and life expectancy: a life table analysis. *Med Care*. Aug 2014;**52**(8):688-694.

- Strauss VY, Jones PW, Kadam UT, Jordan KP. Distinct trajectories of multimorbidity in primary care were identified using latent class growth analysis. *J Clin Epidemiol*. Oct 2014;**67**(10):1163-1171.
- Min L, Kerr EA, Blaum CS, Reuben D, Cigolle C, Wenger N. Contrasting effects of geriatric versus general medical multimorbidity on quality of ambulatory care. *J Am Geriatr Soc*. Sep 2014;**62**(9):1714-1721.
- Streit S, da Costa BR, Bauer DC, Collet TH, Weiler S, Zimmerli L, Frey P, Cornuz J, Gaspoz JM, Battegay E, Kerr E, Aujesky D, Rodondi N. Multimorbidity and quality of preventive care in Swiss university primary care cohorts. *PLoS One*. 2014;**9**(4):e96142.
- Chrischilles E, Schneider K, Wilwert J, Lessman G, O'Donnell B, Gryzlak B, Wright K, Wallace R. Beyond comorbidity: expanding the definition and measurement of complexity among older adults using administrative claims data. *Med Care*. Mar 2014;**52** Suppl 3:S75-84.
- Ruel G, Shi Z, Zhen S, Zuo H, Kroger E, Sirois C, Levesque JF, Taylor AW. Association between nutrition and the evolution of multimorbidity: the importance of fruits and vegetables and whole grain products. *Clin Nutr*. Jun 2014;**33**(3):513-520.
- Boyd CM, Wolff JL, Giovannetti E, Reider L, Weiss C, Xue QL, Leff B, Boulton C, Hughes T, Rand C. Healthcare task difficulty among older adults with multimorbidity. *Med Care*. Mar 2014;**52** Suppl 3:S118-125.
- Brilleman SL, Gravelle H, Hollinghurst S, Purdy S, Salisbury C, Windmeijer F. Keep it simple? Predicting primary health care costs with clinical morbidity measures. *J Health Econ*. May 2014;**35**:109-122.
- Doos L, Bradley E, Rushton CA, Satchithananda D, Davies SJ, Kadam UT. Heart failure and chronic obstructive pulmonary disease multimorbidity at hospital discharge transition: a study of patient and carer experience. *Health Expectations*. May 16 2014.
- Koller D, Schon G, Schafer I, Glaeske G, van den Bussche H, Hansen H. Multimorbidity and long-term care dependency—a five-year follow-up. *BMC Geriatr*. 2014;**14**:70.
- Sibley KM, Voth J, Munce SE, Straus SE, Jaglal SB. Chronic disease and falls in community-dwelling Canadians over 65 years old: a population-based study exploring associations with number and pattern of chronic conditions. *BMC Geriatr*. 2014;**14**:22.
- Booth HP, Prevost AT, Gulliford MC. Impact of body mass index on prevalence of multimorbidity in primary care: cohort study. *Fam Pract*. Feb 2014;**31**(1):38-43.
- Vila-Rodriguez F, Panenka WJ, Lang DJ, Thornton AE, Vertinsky T, Wong H, Barr AM, Procyshyn RM, Sidhu JJ, Smith GN, Buchanan T, Krajden M, Krausz M, Montaner JS, Macewan GW, Honer WG. The hotel study: multimorbidity in a community sample living in marginal housing. *Am J Psychiatry*. Dec 1 2013;**170**(12):1413-1422.
- Lappenschaar M, Hommersom A, Lucas PJ, Lagro J, Visscher S, Korevaar JC, Schellevis FG. Multilevel temporal Bayesian networks can model longitudinal change in multimorbidity. *J Clin Epidemiol*. Dec 2013;**66**(12):1405-1416.
- Galvan-Banqueri M, de la Higuera-Vila L, Vega-Coca MD, Nieto Martin MD, Perez-Guerrero C, Santos-Ramos B. Reliability of a questionnaire for pharmacological treatment appropriateness in patients with multiple chronic conditions. *Eur J Intern Med*. Jul 2013;**24**(5):420-424.
- de S Santos Machado V, Valadares AL, Costa-Paiva LH, Osis MJ, Sousa MH, Pinto-Neto AM. Aging, obesity, and multimorbidity in women 50 years or older: a population-based study. *Menopause*. Apr 1 2013.

Jowsey T, McRae IS, Valderas JM, et al. Time's up. descriptive epidemiology of multimorbidity and time spent on health related activity by older Australians: a time use survey. *PLoS One*. 2013;**8**(4):e59379.

Teljeur C, Smith SM, Paul G, Kelly A, O'Dowd T. Multimorbidity in a cohort of patients with type 2 diabetes. *Eur J Gen Pract*. Mar 2013;**19**(1):17-22.

Caracciolo B, Gatz M, Xu W, Marengoni A, Pedersen NL, Fratiglioni L. Relationship of Subjective Cognitive Impairment and Cognitive Impairment No Dementia to Chronic Disease and Multimorbidity in a Nation-Wide Twin Study. *J Alzheimers Dis*. Apr 19 2013.

Maeng DD, Martsolf GR, Scanlon DP, Christianson JB. Care coordination for the chronically ill: understanding the patient's perspective. *Health Serv Res*. Oct 2012;**47**(5):1960-1979.

Chan CL, You HJ, Huang HT, Ting HW. Using an integrated COC index and multilevel measurements to verify the care outcome of patients with multiple chronic conditions. *BMC Health Serv Res*. 2012;**12**:405.

Sullivan PW, Ghushchyan VH, Bayliss EA. The impact of co-morbidity burden on preference-based health-related quality of life in the United States. *Pharmacoeconomics*. May 2012;**30**(5):431-442.

Gadermann AM, Alonso J, Vilagut G, Zaslavsky AM, Kessler RC. Comorbidity and disease burden in the national comorbidity survey replication (ncs-R). *Depress Anxiety*. Sep 2012;**29**(9):797-806.

Tran VT, Montori VM, Eton DT, Baruch D, Falissard B, Ravaud P. Development and description of measurement properties of an instrument to assess treatment burden among patients with multiple chronic conditions. *BMC Med*. 2012;**10**:68.

Moth G, Vestergaard M, Vedsted P. Chronic care management in Danish general practice - a cross-sectional study of workload and multimorbidity. *BMC Fam Pract*. 2012;**13**:52.

von Wild T, Stollwerck PL, Namdar T, Stang FH, Mailander P, Siemers F. Are Multimorbidities Underestimated in Scoring Systems of Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis Like in SCORTEN? *Eplasty*. 2012;**12**:e35.

Busato A, Bhend H, Chmiel C, et al. Improving the quality of morbidity indicators in electronic health records in Swiss primary care. *Swiss Med Wkly*. 2012;**142**:w13611.

Garcia-Olmos L, Salvador CH, Alberquilla A, et al. Comorbidity patterns in patients with chronic diseases in general practice. *PLoS One*. 2012;**7**(2):e32141.

Hudon C, Fortin M, Poitras M-E, Almirall J. The relationship between literacy and multimorbidity in a primary care setting. *BMC Family Practice*. 2012;**13**:33.

Grant RW, Ashburner JM, Hong CC, Chang Y, Barry MJ, Atlas SJ. Defining Patient Complexity From the Primary Care Physician's Perspective: A Cohort Study. *Ann Intern Med*. 2011;**155**:797-804.

Gulley, S.P., E.K. Rasch, and L. Chan, The complex web of health: relationships among chronic conditions, disability, and health services. *Public Health Rep*, 2011. **126**: p. 495-507.

Fried, T.R., et al., Health Outcome Prioritization as a Tool for Decision Making Among Older Persons With Multiple Chronic Conditions. *Arch Intern Med*. 2011;**171**(20):1854-6.

Naessens JM, Stroebel RJ, Finnie DM, et al. Effect of multiple chronic conditions among

working-age adults. *Am J Manag Care* 2011;**17**:118-22.

Wong A, Boshuizen HC, Schellevis FG, Kommer GJ, Polder JJ. Longitudinal administrative data can be used to examine multimorbidity, provided false discoveries are controlled for. *J Clin Epidemiol* 2011;**64**(10):1109-17.

Tucker-Seeley RD, Li Y, Sorensen G, Subramanian S. Lifecourse socioeconomic circumstances and multimorbidity among older adults. *BMC Public Health* 2011;**11**:313.

Schäfer I, Hansen H, Schon G, et al. The German MultiCare-study: Patterns of multimorbidity in primary health care - Protocol of a prospective cohort study. *BMC Health Services Research*. 2009;**9**(145).

Akner G. Analysis of multimorbidity in individual elderly nursing home residents. Development of a multimorbidity matrix. *Arch Gerontol Geriatr*. 2009 Jan 28. [Epub ahead of print]

Marengoni A, Rizzuto D, Wang HX, Winblad B, Fratiglioni L. Patterns of chronic multimorbidity in the elderly population. *J Am Geriatr Soc*. 2009;**57**(2):225-30.

Charlson, M., R. E. Charlson, et al. "Can disease management target patients most likely to generate high costs? The impact of comorbidity." *Journal of General Internal Medicine* 2007. **22**(4): 464-9.

Duff, K., J. W. Mold, et al. "Medical burden and cognition in older patients in primary care: selective deficits in attention." *Archives of Clinical Neuropsychology* 2007. **22**(5): 569-75.

Fung, C. H., C. M. Setodji, et al. "The relationship between multimorbidity and patients' ratings of communication." *J Gen Intern Med* 2008. **23**: 788-93.

Laux, G., T. Kuehlein, et al. "Co- and multimorbidity patterns in primary care based on episodes of care: results from the German CONTENT project." *BMC Health Services Research* 2008. **8**: 14.

Noel, P. H., M. L. Parchman, et al. "The challenges of multimorbidity from the patient perspective." *Journal of General Internal Medicine* 2007. **22** Suppl 3: 419-24.

Perruccio, A. V., J. D. Power, et al. "The relative impact of 13 chronic conditions across three different outcomes." *Journal of Epidemiology and Community Health* 2007. **61**: 1056-1061.

Nagel G, Peter R, Braig S, Hermann S, Rohrmann S, Linseisen J. The impact of education on risk factors and the occurrence of multimorbidity in the EPIC-Heidelberg cohort. *BMC Public Health*. 2008 Nov 11;**8**(1):384

Huitema HOM, van den Akker M, Buntinx F, Muris JW, Metsemakers JFM, Knottnerus JA. Comorbidity of chronic gastro-intestinal disorders. A cross-sectional analysis in a large general practice population in the Netherlands. *Arch Public Health* 2000;**58**:51-65.

Landwehr Johan STM, van den Akker M, Metsemakers JFM, Buntinx F. Comorbidity of chronic cardiovascular disorders. A cross-sectional analysis in a large general practice population in the Netherlands. *Arch Public Health* 2000;**58**:213-31.

van den Akker M, Vos R, Knottnerus JA. In an exploratory prospective study on multimorbidity general and disease-related susceptibility could be distinguished. *J Clin Epidemiol* 2006;**59**:934-9.

van den Akker, M., et al., Morbidity in responders and non-responders in a register-based population survey. *Fam Pract*, 1998. **15**: p. 261-3.

4. ECONOMIC STUDIES

Gillespie P, Hobbins A, O'Toole L, Connolly D, Boland F, Smith SM. Cost-effectiveness of an occupational therapy-led self-management support programme for multimorbidity in primary care. *Fam Pract*. 2022;39(5):826-33.

Karan A, Farooqui HH, Hussain S, Hussain MA, Selvaraj S, Mathur MR. Multimorbidity, healthcare use and catastrophic health expenditure by households in India: a cross-section analysis of self-reported morbidity from national sample survey data 2017-18. *BMC Health Serv Res*. 2022;22(1):1151.

La DTV, Zhao Y, Arokiasamy P, Atun R, Mercer S, Marthias T, et al. Multimorbidity and out-of-pocket expenditure for medicines in China and India. *BMJ Glob Health*. 2022;7(11).

Larkin J, Walsh B, Moriarty F, Clyne B, Harrington P, Smith SM. What is the impact of multimorbidity on out-of-pocket healthcare expenditure among community-dwelling older adults in Ireland? A cross-sectional study. *BMJ Open*. 2022;12(9):e060502.

Li H, Chang E, Zheng W, Liu B, Xu J, Gu W, et al. Multimorbidity and catastrophic health expenditure: Evidence from the China Health and Retirement Longitudinal Study. *Front Public Health*. 2022;10:1043189.

Zhai X, Zhang Q, Li X, Zhao X. Association between multimorbidity patterns and catastrophic health expenditure among Chinese older adults living alone. *Arch Gerontol Geriatr*. 2023;106:104892.

Tran, P.B., Kazibwe, J., Nikolaidis, G.F., Linnosmaa, I., Rijken, M. and van Olmen, J. (2022). Costs of multimorbidity: a systematic review and meta-analyses. *BMC Medicine*, 20(1). doi:10.1186/s12916-022-02427-9.

Park S, Nam JY. Effects of Changes in Multiple Chronic Conditions on Medical Costs among Older Adults in South Korea. *Healthcare (Basel)* 2022;10(4). doi: healthcare10040742 [pii]

10.3390/healthcare10040742

Coughlin SS, Datta B, Berman A, et al. A cross-sectional study of financial distress in persons with multimorbidity. *Prev Med Rep* 2021;23:101464. doi: 10.1016/j.pmedr.2021.101464

Figuroa JF, Papanicolas I, Riley K, et al. International comparison of health spending and utilization among people with complex multimorbidity. *Health Serv Res* 2021;56 Suppl 3:1317-34. doi: 10.1111/1475-6773.13708

Tan SY, Lew KJ, Xie Y, et al. Healthcare cost of patients with multiple chronic diseases in Singapore public primary care setting. *Ann Acad Med Singap* 2021;50(11):809-17. doi: 10.47102/annals-acadmedsg.2021246

Figuroa JF, Papanicolas I, Riley K, et al. International comparison of health spending and utilization among people with complex multimorbidity. *Health Serv Res* 2021 doi: 10.1111/1475-6773.13708

Coughlin SS, Datta B, Berman A, et al. A cross-sectional study of financial distress in persons with multimorbidity. *Prev Med Rep* 2021;23:101464. doi: 10.1016/j.pmedr.2021.101464

Marthias T, Anindya K, Ng N, et al. Impact of non-communicable disease multimorbidity on health service use, catastrophic health expenditure and productivity loss in Indonesia: a population-based panel data analysis study. *BMJ Open* 2021;11(2):e041870. doi: 10.1136/bmjopen-2020-041870

Jing Z, Li J, Fu PP, et al. Catastrophic health expenditure among single empty-nest elderly with multimorbidity in rural Shandong, China: the effect of co-occurrence of frailty. *Int J Equity Health* 2021;20(1):23. doi: 10.1186/s12939-020-01362-6

Zhao Y, Atun R, Anindya K, et al. Medical costs and out-of-pocket expenditures associated with multimorbidity in China: quantile regression analysis. *BMJ Glob Health* 2021;6(2) doi: 10.1136/bmjgh-2020-004042

Nedzinskiene L, Jureviciene E, Visockiene Z, et al. Structure and Distribution of Health Care Costs across Age Groups of Patients with Multimorbidity in Lithuania. *Int J Environ Res Public Health* 2021;18(5) doi: 10.3390/ijerph18052767

Hajat C, Siegal Y, Adler-Waxman A. Clustering and Healthcare Costs With Multiple Chronic Conditions in a US Study. *Front Public Health* 2020;8:607528. doi: 10.3389/fpubh.2020.607528

MacNeil-Vroomen JL, Thompson M, Leo-Summers L, et al. Health-care use and cost for multimorbid persons with dementia in the National Health and Aging Trends Study. *Alzheimers Dement* 2020;16(9):1224-33. doi: 10.1002/alz.12094

Yamanashi H, Nobusue K, Nonaka F, et al. The role of mental disease on the association between multimorbidity and medical expenditure. *Fam Pract* 2020;37(4):453-58. doi: 10.1093/fampra/cmaa015

Bernardes GM, Saulo H, Fernandez RN, et al. Catastrophic health expenditure and multimorbidity among older adults in Brazil. *Rev Saude Publica* 2020;54:125. doi: 10.11606/s1518-8787.2020054002285

Keel G, Muhammad R, Savage C, et al. Time-driven activity-based costing for patients with multiple chronic conditions: a mixed-method study to cost care in a multidisciplinary and integrated care delivery centre at a university-affiliated tertiary teaching hospital in Stockholm, Sweden. *BMJ Open* 2020;10(6):e032573. doi: 10.1136/bmjopen-2019-032573

Rivera-Almaraz A, Manrique-Espinoza B, Chatterji S, et al. Longitudinal associations of multimorbidity, disability and out-of-pocket health expenditures in households with older adults in Mexico: The study on global AGEing and adult health (SAGE). *Disabil Health J* 2019;12(4):665-72. doi: 10.1016/j.dhjo.2019.03.004

Verest W, Galenkamp H, Spek B, et al. Do ethnic inequalities in multimorbidity reflect ethnic differences in socioeconomic status? The HELIUS study. *Eur J Public Health* 2019;29(4):687-93. doi: 10.1093/eurpub/ckz012

Maciejewski ML, Hammill BG. Measuring the burden of multimorbidity among Medicare beneficiaries via condition counts and cumulative duration. *Health Serv Res* 2019;54(2):484-91. doi: 10.1111/1475-6773.13124

Caballer-Tarazona V, Guadalajara-Olmeda N, Vivas-Consuelo D. Predicting healthcare expenditure by multimorbidity groups. *Health Policy* 2019;**123**(4):427-34. doi: 10.1016/j.healthpol.2019.02.002

Youn JH, Stevenson MD, Thokala P, et al. Modeling the Economic Impact of Interventions for Older Populations with Multimorbidity: A Method of Linking Multiple Single-Disease Models. *Medical decision making : an international journal of the Society for Medical Decision Making*. Med Decis Making. 2019 Oct;39(7):842-856:272989X19868987. doi: 10.1177/0272989X19868987

Caballer-Tarazona V, Guadalajara-Olmeda N, Vivas-Consuelo D. Predicting healthcare expenditure by multimorbidity groups. *Health Policy* 2019;**123**(4):427-34. doi: 10.1016/j.healthpol.2019.02.002

Mori T, Hamada S, Yoshie S, et al. The associations of multimorbidity with the sum of annual medical and long-term care expenditures in Japan. *BMC Geriatr* 2019;**19**(1):69. doi: 10.1186/s12877-019-1057-7

Chen H, Chen Y, Cui B. The association of multimorbidity with healthcare expenditure among the elderly patients in Beijing, China. *Arch Gerontol Geriatr* 2018;**79**:32-38. doi: 10.1016/j.archger.2018.07.008.

Eckardt M, Brettschneider C, van den Bussche H, König HH, MultiCare Study G. Analysis of Health Care Costs in Elderly Patients with Multiple Chronic Conditions Using a Finite Mixture of Generalized Linear Models. *Health economics*. 2017;**26**(5):582-599. doi: 10.1002/hec.3334.

Soni A. Out-of-Pocket Expenditures for Adults with Health Care Expenses for Multiple Chronic Conditions, U.S. Civilian Noninstitutionalized Population, 2014 (<https://www.ncbi.nlm.nih.gov/books/NBK425788/>). Medical Expenditure Panel Survey Statistical Briefs. Rockville (MD)2001 (Updated February 2017).

Soto-Gordoa M, Arrospide A, Merino Hernandez M, et al. Incorporating Budget Impact Analysis in the Implementation of Complex Interventions: A Case of an Integrated Intervention for Multimorbid Patients within the CareWell Study. *Value Health*. 2017;**20**(1):100-106.

Matthews KA, Holt J, Gaglioti AH, et al. County-Level Variation in Per Capita Spending for Multiple Chronic Conditions Among Fee-for-Service Medicare Beneficiaries, United States, 2014. *Prev Chronic Dis*. 2016;**13**:E162.

Lanzeta I, Mar J, Arrospide A. Cost-utility analysis of an integrated care model for multimorbid patients based on a clinical trial. *Gac Sanit*. 2016;**30**:352-8.

Ruscitto A, Mercer SW, Morales D, Guthrie B. Accounting for multimorbidity in pay for performance: a modelling study using UK Quality and Outcomes Framework data. *Br J Gen Pract*. 2016;**66**:e561-7.

Rezaee ME, Pollock M. Prevalence and Associated Cost and Utilization of Multiple Chronic Conditions in the Outpatient Setting among Adult Members of an Employer-based Health Plan. *Popul Health Manag*. Apr 28 2015.

Zhong W, Finnie DM, Shah ND, Wagie AE, St Sauver JL, Jacobson DJ, Naessens JM. Effect of Multiple Chronic Diseases on Health Care Expenditures in Childhood. *J Prim Care Community Health*. 2015;**6**(1):2-9.

Naci H, Soumerai SB, Ross-Degnan D, Zhang F, Briesacher BA, Gurwitz JH, Madden JM. Medication affordability gains following Medicare Part D are eroding among elderly with multiple chronic conditions. *Health Aff (Millwood)*. Aug 2014;**33**(8):1435-1443.

Pati S, Agrawal S, Swain S, Lee JT, Vellakkal S, Hussain MA, Millett C. Non communicable disease multimorbidity and associated health care utilization and expenditures in India: cross-sectional study. *BMC Health Serv Res*. 2014;**14**:451.

Kuo RN, Lai MS. The influence of socio-economic status and multimorbidity patterns on healthcare costs: a six-year follow-up under a universal healthcare system. *Int J Equity Health*. 2013;**12**(1):69.

Machlin SR, Soni A. Health care expenditures for adults with multiple treated chronic conditions: estimates from the medical expenditure panel survey, 2009. *Prev Chronic Dis*. 2013;**10**:E63.

Nagl A, Witte J, Hodek JM, Greiner W. Relationship between multimorbidity and direct healthcare costs in an advanced elderly population. Results of the PRISCUS trial. *Z Gerontol Geriatr*. Feb 2012;**45**(2):146-154.

Cunningham PJ. Chronic burdens: the persistently high out-of-pocket health care expenses faced by many Americans with chronic conditions. Issue Brief (Commonw Fund). 2009. **63**:1-14.

Wehling M. Multimorbidity and polypharmacy: how to reduce the harmful drug load and yet add needed drugs in the elderly? Proposal of a new drug classification: fit for the aged. *J Am Geriatr Soc*. 2009. **57**(3):560-1.

Schoenberg, N. E., H. Kim, et al. "Burden of common multiple-morbidity constellations on out-of-pocket medical expenditures among older adults." *Gerontologist* 2007. **47**(4): 423-37.

Rice, D.P. and M.P. LaPlante, Medical expenditures for disability and disabling comorbidity. *Am J Public Health*, 1992. **82**(5): p. 739-41.

Shah, A.N., et al., Comorbid illness affects hospital costs related to hip arthroplasty: quantification of health status and implications for fair reimbursement and surgeon comparisons. *Journal of Arthroplasty*, 2004. **19**(6): p. 700-5.

Shwartz, M., et al., The importance of comorbidities in explaining differences in patient costs. *Medical Care*., 1996. **34**(8): p. 767-82.

Young, D.S., B.S. Sachais, and L.C. Jefferies, Effect of disease complications on hospital costs. *Clinical Chemistry*., 2002. **48**(1): p. 140-9.

Wolff, J.L., B. Starfield, and G. Anderson, Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Archives of Internal Medicine*, 2002. **162**: p. 2269-76.

Beddhu, S., et al., A simple comorbidity scale predicts clinical outcomes and costs in dialysis patients. *Am J Med*, 2000. **108**: p. 609-13.

5. METHODS TO MEASURE MULTIMORBIDITY AND COMORBIDITY

Dodds RM, Bunn JG, Hillman SJ, Granic A, Murray J, Witham MD, et al. Simple approaches to characterising multiple long-term conditions (multimorbidity) and rates of emergency hospital admission: Findings from 495,465 UK Biobank participants. *J Intern Med*. 2023;293(1):100-9.

Han HR, Lee JW, Saylor MA, Parisi JM, Hornstein E, Agarwalla V, et al. Methods and operational aspects of human-centred design into research processes for individuals with multiple chronic conditions: A survey study. *Nurs Open*. 2022.

Mejías-Trueba M, Fernández-Rubio B, López-Hermoso C, Fernández-Rubio G, Jiménez-De Juan C, Rodríguez-Perez A. Cross-cultural adaptation into Spanish of the MULTIPLEs scale in elderly patients with multimorbidity. *Med Clin (Barc)*. 2022;159(7):327-9.

Nichols L, Taverner T, Crowe F, Richardson S, Yau C, Kiddle S, et al. In simulated data and health records, latent class analysis was the optimum multimorbidity clustering algorithm. *J Clin Epidemiol*. 2022;152:164-75.

Roso-Llorach A, Vetrano DL, Trevisan C, Fernández S, Guisado-Clavero M, Carrasco-Ribelles LA, et al. 12-year evolution of multimorbidity patterns among older adults based on Hidden Markov Models. *Aging (Albany NY)*. 2022;14(24):9805-17.

Steinman MA, Jing B, Shah SJ, Rizzo A, Lee SJ, Covinsky KE, et al. Development and validation of novel multimorbidity indices for older adults. *J Am Geriatr Soc*. 2023;71(1):121-35.

Suls J, Salive ME, Koroukian SM, Alemi F, Silber JH, Kastenmüller G, et al. Emerging approaches to multiple chronic condition assessment. *J Am Geriatr Soc*. 2022;70(9):2498-507.

Lai, H.-Y., Huang, S.-T., Chen, L.-K. and Hsiao, F.-Y. (2022). Development of frailty index using ICD-10 codes to predict mortality and rehospitalization of older adults: An update of the multimorbidity frailty index. *Archives of Gerontology and Geriatrics*, 100, p.104646. doi:10.1016/j.archger.2022.104646.

Schulze, J., Breckner, A., Duncan, P., Scherer, M., Pohontsch, N.J. and Lühmann, D. (2022). Adaptation and validation of a German version of the Multimorbidity Treatment Burden Questionnaire. *Health and Quality of Life Outcomes*, 20(1). doi:10.1186/s12955-022-01993-z.

Dong, G., Zhang, Z.-C., Feng, J. and Zhao, X.-M. (2022). MorbidGCN: prediction of multimorbidity with a graph convolutional network based on integration of population phenotypes and disease network. *Briefings in Bioinformatics*, [online] 23(4), p.bbac255. doi:10.1093/bib/bbac255.

McEntee, M.L., Gandek, B. and Ware, J.E. (2022). Improving multimorbidity measurement using individualized disease-specific quality of life impact assessments: predictive validity of a new comorbidity index. *Health and Quality of Life Outcomes*, [online] 20(1), p.108. doi:10.1186/s12955-022-02016-7.

Gastens, V., Chiolero, A., Anker, D., Schneider, C., Feller, M., Bauer, D.C., Rodondi, N. and Giovane, C.D. (2022). Development and validation of a new prognostic index for mortality risk in multimorbid adults. *PLoS One*, [online] 17(8), p.e0271923. doi:10.1371/journal.pone.0271923.

Roomaney, R.A., van Wyk, B. and Pillay-van Wyk, V. (2022). A systematic method for comparing multimorbidity in national surveys. *BMC research notes*, [online] 15(1), p.280. doi:10.1186/s13104-022-06164-3.

Luo Y, Huang Z, Liu H, Xu H, Su H, Chen Y, et al. Development and Validation of a Multimorbidity Index Predicting Mortality Among Older Chinese Adults. *Front Aging Neurosci* 2022;14:767240. doi: 10.3389/fnagi.2022.767240

Aubert CE, Rodondi N, Terman SW, Feller M, Schneider C, Oberle J, et al. HOSPITAL Score and LACE Index to Predict Mortality in Multimorbid Older Patients. *Drugs Aging* 2022;39(3):223-34. doi: 10.1007/s40266-022-00927-0

10.1007/s40266-022-00927-0 [pii]

Hu WH, Liu YY, Yang CH, Zhou T, Yang C, Lai YS, et al. Developing and validating a Chinese multimorbidity-weighted index for middle-aged and older community-dwelling individuals. *Age Ageing* 2022;51(2). doi: 6535928 [pii]

10.1093/ageing/afab274

Ghazalbash S, Zargoush M, Mowbray F, et al. Examining the predictability and prognostication of multimorbidity among older Delayed-Discharge Patients: A Machine learning analytics. *Int J Med Inform* 2021;156:104597. doi: 10.1016/j.ijmedinf.2021.104597

Vela E, Cleries M, Monterde D, et al. Performance of quantitative measures of multimorbidity: a population-based retrospective analysis. *BMC Public Health* 2021;21(1):1881. doi: 10.1186/s12889-021-11922-2

Novella A, Elli C, Tettamanti M, et al. Comparison between drug therapy-based comorbidity indices and the Charlson Comorbidity Index for the detection of severe multimorbidity in older subjects. *Aging Clin Exp Res* 2021;33(7):1929-35. doi: 10.1007/s40520-020-01706-w

Suls J, Bayliss EA, Berry J, et al. Measuring Multimorbidity: Selecting the Right Instrument for the Purpose and the Data Source. *Med Care* 2021;59(8):743-56. doi: 10.1097/MLR.0000000000001566

Wei MY, Luster JE, Ratz D, et al. Development, Validation, and Performance of a New Physical Functioning-Weighted Multimorbidity Index for Use in Administrative Data. *J Gen Intern Med* 2021 doi: 10.1007/s11606-020-06486-7

Novella A, Elli C, Tettamanti M, et al. Comparison between drug therapy-based comorbidity indices and the Charlson Comorbidity Index for the detection of severe multimorbidity in older subjects. *Aging Clin Exp Res* 2020 doi: 10.1007/s40520-020-01706-w

Jacob ME, Ni P, Driver J, et al. Burden and Patterns of Multimorbidity: Impact on Disablement in Older Adults. *Am J Phys Med Rehabil* 2020;99(5):359-65. doi: 10.1097/PHM.0000000000001388

Corrao G, Rea F, Carle F, et al. Measuring multimorbidity inequality across Italy through the multisource comorbidity score: a nationwide study. *Eur J Public Health* 2020;30(5):916-21. doi: 10.1093/eurpub/ckaa063

Otero MJ, Toscano Guzman MD, Galvan-Banqueri M, et al. Utility of a trigger tool (TRIGGER-CHRON) to detect adverse events associated with high-alert medications in patients with multimorbidity. *Eur J Hosp Pharm* 2020 doi: 10.1136/ejhpharm-2019-002126

Boulton C, Wilkinson JM. Use of public datasets in the examination of multimorbidity: Opportunities and challenges. *Mech Ageing Dev* 2020;190:111310. doi: 10.1016/j.mad.2020.111310

Kalgotra P, Sharda R, Croff JM. Examining multimorbidity differences across racial groups: a network analysis of electronic medical records. *Sci Rep* 2020;10(1):13538. doi: 10.1038/s41598-020-70470-8

Hassaine A, Salimi-Khorshidi G, Canoy D, et al. Untangling the complexity of multimorbidity with machine learning. *Mech Ageing Dev* 2020;190:111325. doi: 10.1016/j.mad.2020.111325

Peng LN, Hsiao FY, Lee WJ, et al. Comparisons Between Hypothesis- and Data-Driven Approaches for Multimorbidity Frailty Index: A Machine Learning Approach. *J Med Internet Res* 2020;22(6):e16213. doi: 10.2196/16213

Roth JA, Sakoparnig T, Gerber M, et al. Bayesian networks to identify potential high-risk multimorbidity and intervention clusters in inpatients: an explorative data mining study. *Swiss Med Wkly* 2020;150:w20299. doi: 10.4414/smw.2020.20299

Wei MY, Ratz D, Mukamal KJ. Multimorbidity in Medicare Beneficiaries: Performance of an ICD-Coded Multimorbidity-Weighted Index. *J Am Geriatr Soc* 2020;68(5):999-1006. doi: 10.1111/jgs.16310

Corrao S, Natoli G, Nobili A, et al. Comorbidity does not mean clinical complexity: evidence from the RePoSI register. *Intern Emerg Med* 2020;15(4):621-28. doi: 10.1007/s11739-019-02211-3

Griffith LE, Gruneir A, Fisher KA, et al. The hidden complexity of measuring number of chronic conditions using administrative and self-report data: A short report. *J Comorb* 2020;10:2235042X20931287. doi: 10.1177/2235042X20931287

Payne RA, Mendonca SC, Elliott MN, et al. Development and validation of the Cambridge Multimorbidity Score. *CMAJ* 2020;192(5):E107-E14. doi: 10.1503/cmaj.190757

Wei MY, Ratz D, Mukamal KJ. Multimorbidity in Medicare Beneficiaries: Performance of an ICD-Coded Multimorbidity-Weighted Index. *J Am Geriatr Soc* 2020;68(5):999-1006. doi: 10.1111/jgs.16310

Gontijo Guerra S, Berbiche D, Vasiliadis HM. Measuring multimorbidity in older adults: comparing different data sources. *BMC Geriatr* 2019;19(1):166. doi: 10.1186/s12877-019-1173-4

Prazeres F, Santiago L. Measuring multimorbidity in family practice-a comparison of two methods. *Fam Pract* 2018;35(5):571-75. doi: 10.1093/fampra/cmz014

Exner A, Kleinstauber M, Maier W, et al. Cross-cultural validation of the German version of the Four-Dimensional Symptom Questionnaire (4DSQ) in multimorbid elderly people. *Qual Life Res* 2018;**27**(10):2691-97. doi: 10.1007/s11136-018-1924-2

Constantinou P, Tuppin P, Fagot-Campagna A, et al. Two morbidity indices developed in a nationwide population permitted performant outcome-specific severity adjustment. *J Clin Epidemiol* 2018;**103**:60-70. doi: 10.1016/j.jclinepi.2018.07.003

Tyack Z, Kuys S, Cornwell P, et al. Reproducibility, longitudinal validity and interpretability of the Disease Burden Morbidity Assessment in people with chronic disease. *Chronic Illn* 2018;**14**(4):310-25. doi: 10.1177/1742395318789469

Griffith LE, Gruneir A, Fisher KA, et al. Key factors to consider when measuring multimorbidity: Results from an expert panel and online survey. *J Comorb* 2018;**8**(1):2235042X18795306. doi: 10.1177/2235042X18795306

Hajat C, Kishore SP. The case for a global focus on multiple chronic conditions. *BMJ Glob Health* 2018;**3**(3):e000874. doi: 10.1136/bmjgh-2018-000874.

Kim N, Nam HJ, Noh J, et al. The effect of multimorbidity on the gap between global and age-comparative self-rated health scores among the Korean elderly. *Arch Gerontol Geriatr* 2018;**76**:19-25. doi: 10.1016/j.archger.2018.01.002.

Silber JH, Reiter JG, Rosenbaum PR, et al. Defining Multimorbidity in Older Surgical Patients. *Med Care* 2018;**56**(8):701-10. doi: 10.1097/MLR.0000000000000947.

Tyack Z, Kuys S, Cornwell P, et al. Reproducibility, longitudinal validity and interpretability of the disease burden morbidity assessment in people with chronic disease. *Chronic Illn* 2018:1742395318789469. doi: 10.1177/1742395318789469.

Wei MY, Kabeto MU, Langa KM, et al. Multimorbidity and Physical and Cognitive Function: Performance of a New Multimorbidity-Weighted Index. *J Gerontol A Biol Sci Med Sci* 2018;**73**(2):225-32. doi: 10.1093/gerona/glx114.

Gordon J, Miller GC, Britt H. What are chronic conditions that contribute to multimorbidity? *Aust J Gen Pract* 2018;**47**(1-2):20-23.

Prazeres F, Santiago L. Measuring multimorbidity in family practice-a comparison of two methods. *Fam Pract* 2018 doi: 10.1093/fampra/cmz014.

Gurney JK, Stanley J, Sarfati D. The M3 multimorbidity index outperformed both Charlson and Elixhauser indices when predicting adverse outcomes in people with diabetes. *J Clin Epidemiol* 2018 doi: 10.1016/j.jclinepi.2018.04.002.

Duncan P, Murphy M, Man MS, et al. Development and validation of the Multimorbidity Treatment Burden Questionnaire (MTBQ). *BMJ Open* 2018;**8**(4):e019413. doi: 10.1136/bmjopen-2017-019413.

Fortin M, Almirall J, Nicholson K. Development of a research tool to document self-reported chronic conditions in primary care. *J Comorb*. 2017;**7**(1):117-123.

Calderon-Larranaga A, Vetrano DL, Onder G, et al. Assessing and Measuring Chronic Multimorbidity in the Older Population: A Proposal for Its Operationalization. *J Gerontol A Biol Sci Med Sci*. 2017;**72**(10):1417-1423.

- Wen YC, Chen LK, Hsiao FY. Predicting mortality and hospitalization of older adults by the multimorbidity frailty index. *PLoS One*. 2017;**12**(11):e0187825.
- Corazza GR, Klersy C, Formagnana P, Lenti MV, Padula D, Consensus P. A consensus for the development of a vector model to assess clinical complexity. *Intern Emerg Med*. 2017;**12**(8):1313-1318.
- Stanley J, Sarfati D. The new measuring multimorbidity index predicted mortality better than Charlson and Elixhauser indices among the general population. *J Clin Epidemiol*. 2017;**92**:99-110.
- Blokh D, Stambler I, Lubart E, Mizrahi EH. The application of information theory for the estimation of old-age multimorbidity. *Geroscience*. 2017;**39**(5-6):551-556.
- Wei MY, Kabeto MU, Langa KM, Mukamal KJ. Multimorbidity and physical and cognitive function: performance of a new multimorbidity-weighted index. *J Gerontol A Biol Sci Med Sci*. 2017. doi: 10.1093/gerona/glx114.
- Martin S, Wagner J, Lupulescu-Mann N, et al. Comparison of EHR-based diagnosis documentation locations to a gold standard for risk stratification in patients with multiple chronic conditions. *Appl Clin Inform*. 2017;**8**(3):794-809. doi: 10.4338/ACI-2016-12-RA-0210.
- Min H, Avramovic S, Wojtusiak J, et al. A Comprehensive Multimorbidity Index for Predicting Mortality in Intensive Care Unit Patients. *J Palliat Med*. 2017;**20**(1):35-41.
- Gassmann D, Cheetham M, Siebenhuener K, et al. The multimorbidity interaction severity index (MISI): A proof of concept study. *Medicine (Baltimore)*. 2017;**96**(8):e6144.
- Alemi F, Levy CR, Kheirbek RE. The Multimorbidity Index: A Tool for Assessing the Prognosis of Patients from Their History of Illness. *EGEMS (Wash DC)*. 2016;**4**(1):1235.
- Fraccaro P, Kontopantelis E, Sperrin M, et al. Predicting mortality from change-over-time in the Charlson Comorbidity Index: A retrospective cohort study in a data-intensive UK health system. *Medicine (Baltimore)*. 2016;**95**(43):e4973.
- Calderon-Larranaga A, Vetrano DL, Onder G, et al. Assessing and Measuring Chronic Multimorbidity in the Older Population: A Proposal for Its Operationalization. *J Gerontol A Biol Sci Med Sci*. 2016.
- Bernabeu-Wittel M, Moreno-Gavino L, Ollero-Baturone M, et al. Validation of PROFUND prognostic index over a four-year follow-up period. *Eur J Intern Med*. 2016;**36**:20-24.
- Held FP, Blyth F, Gnjjidic D, et al. Association Rules Analysis of Comorbidity and Multimorbidity: The Concord Health and Aging in Men Project. *J Gerontol A Biol Sci Med Sci*. 2016;**71**:625-31.
- Ubalde-Lopez M, Delclos GL, Benavides FG, Calvo-Bonacho E, Gimeno D. Measuring multimorbidity in a working population: the effect on incident sickness absence. *Int Arch Occup Environ Health*. 2016;**89**:667-78.
- Pati S, Hussain MA, Swain S, et al. Development and Validation of a Questionnaire to Assess Multimorbidity in Primary Care: An Indian Experience. *Biomed Res Int*. 2016;**2016**:6582487.

N'Goran AA, Blaser J, Deruaz-Luyet A, et al. From chronic conditions to relevance in multimorbidity: a four-step study in family medicine. *Fam Pract*. 2016;**33**:439-44.

Diez-Manglano J, Cabrerizo Garcia JL, Garcia-Arilla Calvo E, Jimeno Sainz A, Calvo Begueria E, Martinez-Alvarez RM *et al*: External validation of the PROFUND index in polypathological patients from internal medicine and acute geriatrics departments in Aragon. *Intern Emerg Med*. 2015;**10**(8):915-926.

Radner H, Yoshida K, Mjaavatten MD, Aletaha D, Frits M, Lu B *et al*: Development of a multimorbidity index: Impact on quality of life using a rheumatoid arthritis cohort. *Semin Arthritis Rheum*. 2015;**45**(2):167-173.

Tonelli M, Wiebe N, Fortin M, et al. Methods for identifying 30 chronic conditions: application to administrative data. *BMC Med Inform Decis Mak*. 2015;**15**:31.

Boeckxstaens P, Vaes B, Legrand D, Dalleur O, De Sutter A, Degryse JM. The relationship of multimorbidity with disability and frailty in the oldest patients: A cross-sectional analysis of three measures of multimorbidity in the BELFRAIL cohort. *Eur J Gen Pract*. Mar 2015;**21**(1):39-44.

Mc Sharry J, Bishop FL, Moss-Morris R, Holt RI, Kendrick T. A new measure of multimorbid illness and treatment representations: The example of diabetes and depression. *J Affect Disord*. 2015;**174**:192-200.

Boeckxstaens P, Vaes B, Van Pottelbergh G, et al. Multimorbidity measures were poor predictors of adverse events in patients aged ≥ 80 years: a prospective cohort study. *J Clin Epidemiol*. Feb 2015;**68**(2):220-227.

Harrison C, Britt H, Miller G, Henderson J. Examining different measures of multimorbidity, using a large prospective cross-sectional study in Australian general practice. *BMJ Open*. 2014;**4**(7):e004694.

Gibbons CJ, Kenning C, Coventry PA, Bee P, Bundy C, Fisher L, Bower P. Development of a Multimorbidity Illness Perceptions Scale (MULTIPLES). *PLoS One*. 2013;**8**(12):e81852.

Brilleman SL, Salisbury C. Comparing measures of multimorbidity to predict outcomes in primary care: a cross sectional study. *Fam Pract*. Apr 2013;**30**(2):172-178.

Poitras M-E, Fortin M, Hudon C, Haggerty J, Almirall J. Validation of the disease burden morbidity assessment by self-report in a French-speaking population. *BMC Health Service Research*. 2012;**12**:35.

Diederichs CP, Wellmann J, Bartels DB, Ellert U, Hoffmann W, Berger K. How to weight chronic diseases in multimorbidity indices? Development of a new method on the basis of individual data from five population-based studies. *J Clin Epidemiol*. Jun 2012;**65**(6):679-685.

Steinhaeuser J, Miksch A, Ose D, Glassen K, Natanzon I, Szecsenyi J, et al. Questionnaire of chronic illness care in primary care-psychometric properties and test-retest reliability. *BMC Health Serv Res*. 2011;**11**:295.

Starfield, B. and K. Kinder, Multimorbidity and its measurement. *Health Policy*. 2011;**103**(1):3-8.

Diederichs C, Berger K, Bartels DB. The Measurement of Multiple Chronic Diseases--A

Systematic Review on Existing Multimorbidity Indices. *J Gerontol A Biol Sci Med Sci* 2011;**66**:301-11.

Holzhausen M, Fuchs J, Busch M, et al. Operationalizing multimorbidity and autonomy for health services research in aging populations--the OMAHA study. *BMC Health Serv Res* 2011;**11**:47.

Vitry A, Wong SA, Roughead EE, Ramsay E, Barratt J. Validity of medication-based comorbidity indices in the Australian elderly population. *Aust N Z J Public Health*. 2009 Apr;**33**(2):126-30.

Md Yusof MY, Horan MA, Jones M, McInnes L, Rabbitt PM, Pendleton N. Developing a self-reported comorbidity index to predict mortality of community-dwelling older adults. *Arch Gerontol Geriatr*. 2009 Jun 20. 2010;**50**(3):e63-7.

Salvi F, Miller MD, Grilli A, et al. A manual of guidelines to score the modified cumulative illness rating scale and its validation in acute hospitalized elderly patients. *J Am Geriatr Soc*. 2008; **56**:1926-31.

Boyd, C. M., C. O. Weiss, et al. "Framework for evaluating disease severity measures in older adults with comorbidity." *Journals of Gerontology Series A-Biological Sciences & Medical Sciences* 2007. **62**(3): 286-95.

Lash, T. L., V. Mor, et al. "Methodology, design, and analytic techniques to address measurement of comorbid disease." *Journals of Gerontology Series A-Biological Sciences & Medical Sciences* 2007. **62**(3): 281-5.

Tooth, L., R. Hockey, et al. "Weighted multimorbidity indexes predicted mortality, health service use, and health-related quality of life in older women." *Journal of Clinical Epidemiology* 2008. **61**(2): 151-9.

Hudon C, Fortin M, Soubhi H. Abbreviated guidelines for scoring the Cumulative Illness Rating Scale (CIRS) in family practice. *J Clin Epidemiol* 2007; **60** :212e1-212e3.

Bayliss, E.A., J.L. Ellis, and J.F. Steiner, Subjective assessments of comorbidity correlate with quality of life health outcomes: Initial validation of a comorbidity assessment instrument. *Health and Quality of life Outcomes*, 2005. **3**: p. 51.

Bravo, G., et al., A prospective evaluation of the Charlson Comorbidity Index for use in long-term care patients. *Journal of the American Geriatrics Society.*, 2002. **50**(4): p. 740-5.

Buntinx, F., et al., Evaluation of Charlson's comorbidity index in elderly living in nursing homes. *Journal of Clinical Epidemiology.*, 2002. **55**(11): p. 1144-7.

Byles, J.E., et al., Single index of multimorbidity did not predict multiple outcomes. *J Clin Epidemiol*, 2005. **58**: p. 997-1005.

Charlson, M.E., et al., A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. *J Chronic Dis*, 1987. **40**: p. 373-83.

Charlson, M., et al., Validation of a combined comorbidity index.

Conwell, Y., et al., Validation of a measure of physical illness burden at autopsy: the Cumulative Illness Rating Scale. *Journal of the American Geriatrics Society.*, 1993. **41**(1): p. 38-41.

Crabtree, H.L., et al., The Comorbidity Symptom Scale: a combined disease inventory

and assessment of symptom severity. *Journal of the American Geriatrics Society.*, 2000. **48**(12): p. 1674-8.

de Groot, V., et al., How to measure comorbidity. a critical review of available methods. *J Clin Epidemiol*, 2003. **56**: p. 221-9.

Desai MM, Bogardus STJ, Williams CS, Vitagliano G, Inouye SK. Development and validation of a risk-adjustment index for older patients: the high-risk diagnoses for the elderly scale. *J Am Geriatr Soc* 2002; 50(3):474-481.

Deyo, R.A., D.C. Cherkin, and M.A. Ciol, Adapting a clinical comorbidity index for use with ICD-9-CM administrative databases. *Journal of Clinical Epidemiology.*, 1992. **45**(6): p. 613-9.

D'Hoore, W., C. Sicotte, and C. Tilquin, Risk adjustment in outcome assessment: the Charlson comorbidity index. *Methods of Information in Medicine.*, 1993. **32**(5): p. 382-7.

Elixhauser, A., et al., Comorbidity measures for use with administrative data. *Medical Care.*, 1998. **36**(1): p. 8-27.

Extermann, M., et al., Comorbidity and functional status are independent in older cancer patients. *Journal of Clinical Oncology.*, 1998. **16**(4): p. 1582-7.

Fan, V.S., et al., Validation of case-mix measures derived from self-reports of diagnoses and health. *J Clin Epidemiol*, 2002. **55**: p. 371-80.

Fleming, S.T., et al., A comprehensive prognostic index to predict survival based on multiple comorbidities: a focus on breast cancer. *Medical Care*, 1999. **37**(6): p. 601-14.

Fortin M, Hudon C, Dubois M-F, Almirall J, Lapointe L, Soubhi H. Comparative assessment of three different indices of multimorbidity for studies on health-related quality of life. *Health and Quality of Life Outcomes* 2005;**3**:74.

Fried LP, Bandeen-Roche K, Kasper JD, Guralink JM. Association of comorbidity with disability in older women: The Women's Health and Aging Study. *Journal of Clinical Epidemiology* 1999; 52(1):27-37.

Greenfield S, Apolone G, McNeil BJ, Cleary PD. The importance of co-existent disease in the occurrence of postoperative complications and one-year recovery in patients undergoing total hip replacement. Comorbidity and outcomes after hip replacement. *Med Care* 1993; 31(2):141-154.

Groll, D.L., et al., The development of a comorbidity index with physical function as the outcome. *J Clin Epidemiol*, 2005. **58**: p. 595-602.

Harboun, M. and J. Ankri, [Comorbidity indexes: review of the literature and application to studies of elderly population][French]. *Rev Epidemiol Sante Publique*, 2001. **49**(3): p. 287-98.

Harse, J.D. and C.D. Holman, Charlson's Index was a poor predictor of quality of life outcomes in a study of patients following joint replacement surgery. *Journal of Clinical Epidemiology*, 2005. **58**(11): p. 1142-9.

Holman, C.D., et al., A multipurpose comorbidity scoring system performed better than the Charlson index. *Journal of Clinical Epidemiology*, 2005. **58**(10): p. 1006-14.

Hudon C, Fortin M, Vanasse A. Cumulative Illness Rating Scale was a reliable and valid index in a family practice context. *J Clin Epidemiol* 2005;**58**:603-8.

Imamura, K., et al., Reliability of a comorbidity measure: the Index of Co-Existent Disease (ICED). *J Clin Epidemiol*, 1997. **50**: p. 1011-6.

Incalzi RA, Capparella O, Gemma A, Landi F, Bruno E, Di Meo F et al. The interaction between age and comorbidity contributes to predicting the mortality of geriatric patients in the acute-care hospital. *J Int Med* 1997; **242**:291-298.

Inouye SK, Bogardus STJ, Vitagliano G, Desai MM, Williams CS, Grady JN et al. Burden of illness score for elderly persons. Risk adjustment incorporating the cumulative impact of diseases, physiologic abnormalities, and functional impairments. *Med Care* 2003; **41**(1):70-83.

John, R., D.S. Kerby, and C.H. Hennessy, Patterns and impact of comorbidity and multimorbidity among community-resident American Indian elders. *Gerontologist*, 2003. **43**: p. 649-60.

Knaus WA, Wagner DP, Draper EA, Zimmerman JE, Bergner M, Bastos PG et al. The APACHE III Prognostic System. Risk prediction of hospital mortality for critically ill hospitalized adults. *Chest* 1991; **100**:1619-1636.

Kaplan, M.H. and A.R. Feinstein, The importance of classifying initial co-morbidity in evaluating the outcome of diabetes mellitus. *J Chron Dis*, 1974. **27**: p. 387-40

Katz, J.N., et al., Can comorbidity be measured by questionnaire rather than medical record review? *Medical Care.*, 1996. **34**: p. 73-84.

Knoefel, F.D. and L. Patrick, Improving outcomes in geriatric rehabilitation: The impact of reducing cumulative illness. *Geriatrics Today*, 2003. **6**: p. 153-7.

Linn, B.S., M.W. Linn, and L. Gurel, Cumulative illness rating scale. *J Am Geriatr Soc*, 1968. **16**: p. 622-6.

Liu, M., K. Domen, and N. Chino, Comorbidity measures for stroke outcome research: a preliminary study. *Archives of Physical Medicine & Rehabilitation.*, 1997. **78**(2): p. 166-72.

Lyketsos, C.G., et al., The General Medical Health Rating: a bedside global rating of medical comorbidity in patients with dementia. *Journal of the American Geriatrics Society.*, 1999. **47**(4): p. 487-91.

Miller, M.D., et al., Rating chronic medical illness burden in geropsychiatric practice and research: application of the Cumulative Illness Rating Scale. *Psychiatry Res*, 1992. **41**: p. 237-48.

Monfardini, S., et al., Validation of a multidimensional evaluation scale for use in elderly cancer patients. *Cancer*, 1996. **77**(2): p. 395-401.

Mulrow CD, Gerety MB, Cornell JE, Lawrence VA, Kanten DN. The relationship between disease and function and perceived health in very frail elders. *J Am Geriatr Soc* 1994; **42**:374-380.

Parkerson, G.R., Jr., W.E. Broadhead, and C.K. Tse, The Duke Severity of Illness Checklist (DUSOI) for measurement of severity and comorbidity. *J Clin Epidemiol*, 1993. **46**: p. 379-93.

Parmelee, P.A., et al., Validation of the Cumulative Illness Rating Scale in a geriatric residential population. *Journal of the American Geriatrics Society*, 1995. **43**(2): p. 130-7.

Perkins, A.J., et al., Common comorbidity scales were similar in their ability to predict health care costs and mortality. *J Clin Epidemiol*, 2004. **57**: p. 1040-1048.

Piccirillo, J.F. and I. Costas, The impact of comorbidity on outcomes. *Orl; Journal of Oto-Rhino-Laryngology & its Related Specialties*, 2004. **66**(4): p. 180-5.

Piccirillo JF. Importance of comorbidity in head and neck cancer. *Laryngoscope* 2000; 110:593-602.

Rao, A.V., P.H. Seo, and H.J. Cohen, Geriatric assessment and comorbidity. *Seminars in Oncology*, 2004. **31**(2): p. 149-59.

Repetto, L., et al., Comprehensive geriatric assessment adds information to Eastern Cooperative Oncology Group performance status in elderly cancer patients: an Italian Group for Geriatric Oncology Study. *Journal of Clinical Oncology*, 2002. **20**(2): p. 494-502.

Rigler SK, Studenski S, Wallace D, et al. Co-morbidity adjustment for functional outcomes in commuity-dwelling older adults. *Clin Rehab* 2002;**16**:420-428.

Rochon, P.A., et al., Comorbid illness is associated with survival and length of hospital stay in patients with chronic disability. A prospective comparison of three comorbidity indices. *Med Care*, 1996. **34**(11): p. 1093-101.

Romano PS, Roos LL, Jollis JG. Adapting a clinical comorbidity index for use with ICD-9 administrative data: differing perspectivew. *J Clin Epidemiol* 1993; 46(10):1075-1079.

Rozzini, R., et al., Geriatric Index of Comorbidity: validation and comparison with other measures of comorbidity. *Age Ageing*, 2002. **31**(4): p. 277-85.

Sangha, O., et al., The Self-Administered Comorbidity Questionnaire: a new method to assess comorbidity for clinical and health services research. *Arthritis & Rheumatism*, 2003. **49**(2): p. 156-63.

Shwartz M, Iezzoni L, I, Moskowitz MA, Ash AS, Sawitz E. The importance of comorbidities in explaining differences in patient costs. *Med Care* 1996; **34**(8):767-782.

Schneeweiss, S., et al., Consistency of performance ranking of comorbidity adjustment scores in Canadian and U.S. utilization data. *Journal of General Internal Medicine*, 2004. **19**(5 Pt 1): p. 444-50.

Schneeweiss, S. and M. Maclure, Use of comorbidity scores for control of confounding in studies using administrative databases. *International Journal of Epidemiology.*, 2000. **29**(5): p. 891-8.

Shiels, C., et al., The inter-rate reliability of a generic measure of severity of illness. *Family Practice.*, 1997. **14**(6): p. 466-71.

Starfield B, Weiner J, Mumford L, Steinwachs D. Ambulatory care groups: a categorization of diagnoses for research and management. *Health Serv Res* 1991; **26**(1):53-74.

Verbrugge LM, Lepkowski JM, Imanaka Y. Comorbidity and its impact on disability. *The Milbank Quarterly* 1989; 67(3-4):450-484.

Von Korff M, Wagner EH, Saunders K. A chronic disease score from automated pharmacy data. *J Clin Epidemiol* 1992; 45(2):197-203.

Waldman, E. and J.F. Potter, A prospective evaluation of the cumulative illness rating scale. *Aging Clinical & Experimental Research*, 1992. 4(2): p. 171-8.

Ware JE, Bayliss MS, Rogers WH, Kosinski M, Tarlov AR. Differences in 4- year health outcomes for elderly and poor, chronically ill patients treated in HMO and fee-for-service systems. Results from the Medical Outcomes Study. *JAMA* 1996; 276(13):1039-1047.

Yancik R, Havlik RJ, Ries L, Long S, Rossi WK, Edwards BK. Cancer and comorbidity in older patients: a descriptive profile. *Ann Epidemiol* 1996; 6(5):399-412.

6. EDITORIALS / OPINION ARTICLES

Blum M, Gelfman LP. Visualizing Multimorbidity in Chronically Ill Populations Using UpSet Plots. *J Pain Symptom Manage*. 2022.

Castelli M, Erskine J, Hunter D, Hungin A. The forgotten dimension of integrated care: barriers to implementing integrated clinical care in English NHS hospitals. *Health Econ Policy Law*. 2022;1-8.

Etkind SN. Uncertainty in multimorbidity: a shared experience we should recognise, acknowledge and communicate. *Br J Community Nurs*. 2022;27(11):540-4.

Ferrucci L, Kohanski R. Better care for older patients with complex multimorbidity and frailty: a call to action. *Lancet Healthy Longev*. 2022;3(9):e581-e3.

Gupta P, Prabhakaran D, Mohan S. Multimorbidity or multiple long-term conditions: need for bridging the evidence & care gaps to address an emerging priority public health issue in India. *Indian J Med Res*. 2022.

Johansson T. Limited knowledge about what matters to older people with multimorbidity hinders appropriate palliative care provision. *Evid Based Nurs*. 2022.

Koirala B, Peeler A, Dennison Himmelfarb C, Davidson PM. Living with multiple chronic conditions: How we achieve holistic care and optimize health outcomes. *J Adv Nurs*. 2023;79(2):e7-e9.

Linden R, Vassilaki M, Henderson EJ, Mohan D. Editorial: Multimorbidity in the context of neurodegenerative disorders. *Front Neurosci*. 2022;16:1076486.

MacRae C, Henderson D, Guthrie B, Mercer SW. Multimorbidity and comorbidity patterns in the English National Health Service. *Cell Rep Med*. 2022;3(12):100863.

Simpson G, Mutindi Kaluvu L, Stokes J, Roderick P, Chapman A, Akyea RK, et al. Understanding social care need through primary care big data: a rapid scoping review. *BJGP Open*. 2022;6(4).

van den Akker M, Dieckelmann M, Hussain MA, Bond-Smith D, Muth C, Pati S, et al. Children and adolescents are not small adults: toward a better understanding of multimorbidity in younger populations. *J Clin Epidemiol*. 2022;149:165-71.

Basto-Abreu, A., Barrientos-Gutierrez, T., Wade, A.N., Oliveira de Melo, D., Semeão de Souza, A.S., Nunes, B.P., Perianayagam, A., Tian, M., Yan, L.L., Ghosh, A. and Miranda, J.J. (2022). Multimorbidity matters in low and middle-income countries. *Journal of Multimorbidity and Comorbidity*, [online] 12, p.26335565221106074. doi:10.1177/26335565221106074.

Multimorbidity. (2022). *Nature Reviews Disease Primers*, 8(1). doi:10.1038/s41572-022-00383-5.

OUP accepted manuscript. (2022). *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*. doi:10.1093/geronb/gbac070.

Okyar Bas A, Balci C. Comment on: The relationship between multimorbidity, obesity, and functional impairment in older adults. *J Am Geriatr Soc* 2022. doi: 10.1111/jgs.17809

Fortin M, Stewart M, Almirall J, Beupre P. Challenges in Multimorbidity Research: Lessons Learned From the Most Recent Randomized Controlled Trials in Primary Care. *Front Med (Lausanne)* 2022;9:815783. doi: 10.3389/fmed.2022.815783

Tsur AM, Twig G. The actual burden of obesity-accounting for multimorbidity. *Lancet Diabetes Endocrinol* 2022;10(4):233-34. doi: S2213-8587(22)00073-0 [pii]

10.1016/S2213-8587(22)00073-0

Aagaard G. Living with multiple chronic conditions: how exercise helps me self-manage my conditions. *Br J Sports Med* 2022;56(5):301-02. doi: bjsports-2021-104382 [pii]

10.1136/bjsports-2021-104382

Fraser HC, Kuan V, Johnen R, Zwierzyna M, Hingorani AD, Beyer A, et al. Biological mechanisms of aging predict age-related disease co-occurrence in patients. *Aging Cell* 2022;21(4):e13524. doi: 10.1111/accel.13524

Strandberg TE, Kivimaki M. Frailty and multimorbidity are independent and additive prognostic factors. *J Am Geriatr Soc* 2022. doi: 10.1111/jgs.17753

Dash P, Mohapatra SR, Pati S. Metabolomics of Multimorbidity: Could It Be the Quo Vadis? *Front Mol Biosci* 2022;9:848971. doi: 10.3389/fmolb.2022.848971

848971 [pii]

Dahal R, Bista S. Strategies To Reduce Polypharmacy in the Elderly. 2022. doi: NBK574550 [bookaccession]

Stompor M, Stompor T. In search for the right way in medical care of older adults: navigating between geriatrician and other specialties on the sea of multimorbidity. *Pol Arch Intern Med* 2021;131(12) doi: 10.20452/pamw.16167

Davenport C, Ouellet J, Tinetti ME. Use of the Patient-Identified Top Health Priority in Care Decision-making for Older Adults With Multiple Chronic Conditions. *JAMA Netw Open* 2021;4(10):e2131496. doi: 10.1001/jamanetworkopen.2021.31496

Vetrano DL, Dekhtyar S, Triolo F. Mens sana in corpore sano: multimorbidity and mental health. *Lancet Reg Health Eur* 2021;8:100175. doi: 10.1016/j.lanepe.2021.100175

Gonzalez-Bueno J, Espauella-Panicot J. Tailored care in frail patients with multimorbidity: future prospects. *Fam Hosp* 2021;45(5):221-22.

Aggaard G. Living with multiple chronic conditions: how exercise helps me self-manage my conditions. *Br J Sports Med* 2021 doi: 10.1136/bjsports-2021-104382

Stambler I, Moskalev A. Editorial: Clinical Evaluation Criteria for Aging and Aging-Related Multimorbidity. *Front Genet* 2021;12:764874. doi: 10.3389/fgene.2021.764874

Tan KB. Prevention and management of multimorbidity to ensure healthcare sustainability. *Ann Acad Med Singap* 2021;50(11):807-08. doi: 10.47102/annals-acadmedsg.2021416

Ecks S. Depression, Deprivation, and Dysbiosis: Polyiatrogenesis in Multiple Chronic Illnesses. *Cult Med Psychiatry* 2021;45(4):507-24. doi: 10.1007/s11013-020-09699-x

Sturmberg JP, Getz LO, Stange KC, et al. Beyond multimorbidity: What can we learn from complexity science? *J Eval Clin Pract* 2021;27(5):1187-93. doi: 10.1111/jep.13521

Deelen J. Targeting multimorbidity: Using healthspan and lifespan to identify biomarkers of ageing that pinpoint shared disease mechanisms. *EBioMedicine* 2021;67:103364. doi: 10.1016/j.ebiom.2021.103364

Hodgson S, Simpson G, Roderick P, et al. Integrating primary care and social services for older adults with multimorbidity: policy implications. *BJGP Open* 2021;5(4) doi: 10.3399/BJGPO.2021.0035

Zhao D. Key roles of five lifestyle risk factors in the harmful transition from a healthy condition to multimorbidity in the Chinese population. *Eur Heart J* 2021;42(34):3385-87. doi: 10.1093/eurheartj/ehab516

Bricca A, Harris LK, Jager M, et al. Infographic. Benefits and harms of exercise therapy in people with multimorbidity. *Br J Sports Med* 2021;55(18):1059-60. doi: 10.1136/bjsports-2021-104367

Kuipers SJ, Nieboer AP, Cramm JM. Easier Said Than Done: Healthcare Professionals' Barriers to the Provision of Patient-Centered Primary Care to Patients with Multimorbidity. *Int J Environ Res Public Health* 2021;18(11) doi: 10.3390/ijerph18116057

Koch L. Shared genetic components of multimorbidity. *Nat Rev Genet* 2021;22(10):624. doi: 10.1038/s41576-021-00402-3

Puthuchery ZA, Osman M, Harvey DJR, et al. Talking to multi-morbid patients about critical illness: an evolving conversation. *Age Ageing* 2021;50(5):1512-15. doi: 10.1093/ageing/afab107

Montori VM. Removing the blindfold: The centrality of care in caring for patients with multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:969-72. doi: 10.1111/1475-6773.13865

Bierman AS, Wang J, O'Malley PG, et al. Transforming care for people with multiple chronic conditions: Agency for Healthcare Research and Quality's research agenda. *Health Serv Res* 2021;56 Suppl 1:973-79. doi: 10.1111/1475-6773.13863

Mitchell KB, Bartell S. Multimorbidity and Resident Education. *Fam Med* 2021;53(7):531-34. doi: 10.22454/FamMed.2021.106319

Garg T, Polenick CA, Schoenborn N, et al. Innovative Strategies to Facilitate Patient-Centered Research in Multiple Chronic Conditions. *J Clin Med* 2021;10(10) doi: 10.3390/jcm10102112

Zucchelli A, Calderon-Larranaga A, Vetrano DL. Special Issue-"Multimorbidity Development and Evolution: Clinical Implications". *J Clin Med* 2021;10(16) doi: 10.3390/jcm10163450

Sherman BW. Management of individuals with multiple chronic conditions: a continuing challenge. *Am J Manag Care* 2021;27(6):256-60. doi: 10.37765/ajmc.2021.88665

Chen LK. Towards Appropriate Prescribing for Older Persons with Multiple Chronic Conditions. *Arch Gerontol Geriatr* 2021;94:104397. doi: 10.1016/j.archger.2021.104397

Gibbs JF, Guarnieri E, Chu QD, et al. Value-based chronic care model approach for vulnerable older patients with multiple chronic conditions. *J Gastrointest Oncol* 2021;12(Suppl 2):S324-S38. doi: 10.21037/jgo-20-317

Chudasama YV, Khunti K, Davies MJ. Clustering of comorbidities. *Future Healthc J* 2021;8(2):e224-e29. doi: 10.7861/fhj.2021-0085

Rosenbaum S, McKeon G, Stubbs B, et al. Redefining mental healthcare: going multidisciplinary to manage multimorbidity. *Br J Sports Med* 2021;55(1):7-8. doi: 10.1136/bjsports-2019-101691

Harrison C, Fortin M, van den Akker M, et al. Comorbidity versus multimorbidity: Why it matters. *J Comorb* 2021;11:2633556521993993. doi: 10.1177/2633556521993993

Pati S, Sinha R, Mahapatra P, et al. Management of geriatric multimorbidity in old age home residents: An emerging issue in India. *Geriatr Gerontol Int* 2021;21(3):338-39. doi: 10.1111/ggi.14137

O'Mahony D. Optimization of Medication by Pharmacists in Older People With Multimorbidity for Improved Outcomes-Mirage or Reality? *JAMA Netw Open* 2021;4(4):e216392. doi: 10.1001/jamanetworkopen.2021.639

Fortin M, Stewart M. Implementing patient-centred integrated care for multiple chronic conditions: Evidence-informed framework. *Can Fam Physician* 2021;67(4):235-38. doi: 10.46747/cfp.6704235

Helping persons with multiple chronic conditions overcome barriers to self-management. *Nurse Pract* 2021;46(3):28-29. doi: 10.1097/01.NPR.0000735708.76592.9f

Ecks S. Depression, Deprivation, and Dysbiosis: Polyiatrogenesis in Multiple Chronic Illnesses. *Cult Med Psychiatry* 2021 doi: 10.1007/s11013-020-09699-x

Arias de la Torre J, Ronaldson A, Valderas JM, et al. Diagnostic promiscuity: the use of real-world data to study multimorbidity in mental health. *Br J Psychiatry* 2021:1-3. doi: 10.1192/bjp.2020.257

Chen LK. Towards Appropriate Prescribing for Older Persons with Multiple Chronic Conditions. *Arch Gerontol Geriatr* 2021;94:104397. doi: 10.1016/j.archger.2021.104397

Sturmberg JP, Getz LO, Stange KC, et al. Beyond multimorbidity: What can we learn from complexity science? *J Eval Clin Pract* 2021 doi: 10.1111/jep.13521

Alderman C. Multimorbidity, Consumer- Directed Care, and Drug-Related Harm. *Sr Care Pharm* 2021;36(3):125-26. doi: 10.4140/TCP.n.2021.126.

Jin Y, Bratzke L, Baumann LC. Helping persons with multiple chronic conditions overcome barriers to self-management. *Nurse Pract* 2021;46(3):20-28. doi: 10.1097/01.NPR.0000733676.28520.db

Glick M. Multimorbidity. *Br Dent J* 2021;230(6):324. doi: 10.1038/s41415-021-2854-x

Majnaric LT, Babic F, O'Sullivan S, et al. AI and Big Data in Healthcare: Towards a More Comprehensive Research Framework for Multimorbidity. *J Clin Med* 2021;10(4) doi: 10.3390/jcm10040766

Nwadiugwu MC. Multi-Morbidity in the Older Person: An Examination of Polypharmacy and Socioeconomic Status. *Front Public Health* 2020;8:582234. doi: 10.3389/fpubh.2020.582234

Bellantuono I, Marengoni A. What researchers on ageing should know about multimorbidity, geroprotectors and artificial intelligence. *Mech Ageing Dev* 2021;195:111453. doi: 10.1016/j.mad.2021.111453

Tsai J, King B, Elder J. Multimorbidity and Social Drivers of Homelessness and Health: Introduction to This Special Issue. *Med Care* 2021;59(Suppl 2):S101-S02. doi: 10.1097/MLR.0000000000001518

Corwin EJ, Brewster G, Dunbar SB, et al. The Metabolomic Underpinnings of Symptom Burden in Patients With Multiple Chronic Conditions. *Biol Res Nurs* 2021;23(2):270-79. doi: 10.1177/1099800420958196

Morsli S, Bellantuono I. The use of geroprotectors to prevent multimorbidity: Opportunities and challenges. *Mech Ageing Dev* 2021;193:111391. doi: 10.1016/j.mad.2020.111391

Head A, Fleming K, Kypridemos C, et al. Multimorbidity: the case for prevention. *J Epidemiol Community Health* 2021;75(3):242-44. doi: 10.1136/jech-2020-214301

Selby K, Chabloz YM, Schwarz J, et al. The multimorbidity dead end: how we got here and possible ways out. *Br J Gen Pract* 2020;70(701):607-08. doi: 10.3399/bjgp20X713825

Szanton SL, Han HR, Campbell J, et al. Shifting paradigms to build resilience among patients and families experiencing multiple chronic conditions. *J Clin Nurs* 2020;29(19-20):3591-94. doi: 10.1111/jocn.15145

Boulton C, Wilkinson JM. Use of public datasets in the examination of multimorbidity: Opportunities and challenges. *Mech Ageing Dev* 2020;190:111310. doi: 10.1016/j.mad.2020.111310

Corwin EJ, Brewster G, Dunbar SB, et al. The Metabolomic Underpinnings of Symptom Burden in Patients With Multiple Chronic Conditions. *Biol Res Nurs* 2020;1099800420958196. doi: 10.1177/1099800420958196

Nicholson K, De Burghgraeve T, Fortin M, et al. Advancing cross-national planning and partnership: Proceedings from the International Multimorbidity Symposium 2019. *J Comorb* 2020;10:2235042X20953313. doi: 10.1177/2235042X20953313

Rajput VK, Dowie J, Kaltoft MK. People Living with Multiple Long-Term Conditions: Meeting the Challenges of Personalized Decision Making. *Stud Health Technol Inform* 2020;273:258-61. doi: 10.3233/SHTI200652

Hassaine A, Salimi-Khorshidi G, Canoy D, et al. Untangling the complexity of multimorbidity with machine learning. *Mech Ageing Dev* 2020;190:111325. doi: 10.1016/j.mad.2020.111325

Onder G, Bernabei R, Vetrano DL, et al. Facing multimorbidity in the precision medicine era. *Mech Ageing Dev* 2020;190:111287. doi: 10.1016/j.mad.2020.111287

Guimaraes RM, Andrade FCD. Healthy life-expectancy and multimorbidity among older adults: Do inequality and poverty matter? *Arch Gerontol Geriatr* 2020;90:104157. doi: 10.1016/j.archger.2020.104157

Cuenca-Bermejo L, Pizzichini E, Gonzalez-Cuello AM, et al. Octodon degus: a natural model of multimorbidity for ageing research. *Ageing Res Rev* 2020;64:101204. doi: 10.1016/j.arr.2020.101204

Aggarwal P, Woolford SJ, Patel HP. Multi-Morbidity and Polypharmacy in Older People: Challenges and Opportunities for Clinical Practice. *Geriatrics (Basel)* 2020;5(4) doi: 10.3390/geriatrics5040085

Morsli S, Bellantuono I. The use of geroprotectors to prevent multimorbidity: Opportunities and challenges. *Mech Ageing Dev* 2021;193:111391. doi: 10.1016/j.mad.2020.111391

Head A, Fleming K, Kypridemos C, et al. Multimorbidity: the case for prevention. *J Epidemiol Community Health* 2020 doi: 10.1136/jech-2020-214301

Kojima T, Mizokami F, Akishita M. Geriatric management of older patients with multimorbidity. *Geriatr Gerontol Int* 2020;20(12):1105-11. doi: 10.1111/ggi.14065

Kadambi S, Abdallah M, Loh KP. Multimorbidity, Function, and Cognition in Aging. *Clin Geriatr Med* 2020;36(4):569-84. doi: 10.1016/j.cger.2020.06.002

Watt RG, Serban S. Multimorbidity: a challenge and opportunity for the dental profession. *Br Dent J* 2020;229(5):282-86. doi: 10.1038/s41415-020-2056-y

Onder G, Bernabei R, Vetrano DL, et al. Facing multimorbidity in the precision medicine era. *Mech Ageing Dev* 2020;190:111287. doi: 10.1016/j.mad.2020.111287

Askerud A, Jaye C, McKinlay E, et al. What is the answer to the challenge of multimorbidity in New Zealand? *J Prim Health Care* 2020;12(2):118-21. doi: 10.1071/HC20028

Goldstein JM, Langer A, Lesser JA. Sex Differences in Disorders of the Brain and Heart-A

Global Crisis of Multimorbidity and Novel Opportunity. *JAMA Psychiatry* 2020 doi: 10.1001/jamapsychiatry.2020.1944

Zhai T, Goss J. Health system reform in China: the challenges of multimorbidity. *Lancet Glob Health* 2020;8(6):e750-e51. doi: 10.1016/S2214-109X(20)30225-4

Rosenbaum S, McKeon G, Stubbs B, et al. Redefining mental healthcare: going multidisciplinary to manage multimorbidity. *Br J Sports Med* 2020 doi: 10.1136/bjsports-2019-101691

Gruneir A, Fisher K, Perez R, Favotto L, Patterson C, Markle-Reid M, Ploeg J, Upshur R, Griffith LE. Measuring multimorbidity series: an overlooked complexity-comparison of self-report vs. administrative data in community-living adults-paper 1: introduction. *J Clin*

Epidemiol. 2020 Aug;124:160-162. doi: 10.1016/j.jclinepi.2020.04.020. Epub 2020 Apr 28. PMID: 32360507.

Lenti MV, Corazza GR. Administrative data for exploring multimorbidity in hospitalised patients. *Intern Emerg Med* 2020 doi: 10.1007/s11739-020-02307-1

Mathew R. Rammya Mathew: Learning to manage multimorbidity. *BMJ* 2020;**368**:m871. doi: 10.1136/bmj.m871

Adan M, Gillies C, Tyrer F, et al. The multimorbidity epidemic: challenges for real-world research. *Prim Health Care Res Dev* 2020;**21**:e6. doi: 10.1017/S146342361900094X

Duncan H. Managing multimorbidity: all doctors started as generalists. *BMJ* 2020;**368**:m733. doi: 10.1136/bmj.m733

Coughlan C, Watson M. Managing multimorbidity: listening to patients and integrated care. *BMJ* 2020;**368**:m713. doi: 10.1136/bmj.m713

Sharpe M. Time to transcend "physical" and "mental" health. *BMJ* 2020;**368**:m609. doi: 10.1136/bmj.m609

Chiolero A, Rodondi N, Santschi V. High-value, data-informed, and team-based care for multimorbidity. *Lancet Public Health* 2020;**5**(2):e84. doi: 10.1016/S2468-2667(20)30007-4

Whitty CJM, Watt FM. Map clusters of diseases to tackle multimorbidity. *Nature* 2020;**579**(7800):494-96. doi: 10.1038/d41586-020-00837-4

Mair FS, Jani BD. Emerging trends and future research on the role of socioeconomic status in chronic illness and multimorbidity. *Lancet Public Health* 2020;**5**(3):e128-e29. doi: 10.1016/S2468-2667(20)30001-3

Sutherland I, Samadian S. Managing multimorbidity needs time and thought. *BMJ* 2020;**368**:m711. doi: 10.1136/bmj.m711

O'Mahony MS, Parbhoo A. Deprescribing in older people. *Br J Hosp Med (Lond)* 2020;**81**(1):1-9. doi: 10.12968/hmed.2019.0213

Mercer SW, Watt GC, Reilly J, et al. Multimorbidity and GP burnout. *Br J Gen Pract* 2020;**70**(692):108. doi: 10.3399/bjgp20X708353

Cowan E, Nation M, Whittle M, et al. Cardiovascular, metabolic and kidney disease: crosscutting science and best practice in multimorbidity - a multispecialty conference at the Royal College of Physicians. *Clin Med (Lond)* 2020;**20**(1):28-30. doi: 10.7861/clinmed.2019-0393

Fried TR, Street RL, Jr., Cohen AB. Chronic Disease Decision Making and "What Matters Most". *J Am Geriatr Soc* 2020;**68**(3):474-77. doi: 10.1111/jgs.16371

Whitty CJM, MacEwen C, Goddard A, et al. Rising to the challenge of multimorbidity. *BMJ* 2020;**368**:l6964. doi: 10.1136/bmj.l6964

Quinones AR, Allore HG, Botosaneanu A, et al. Tracking Multimorbidity Changes in Diverse Racial/Ethnic Populations Over Time: Issues and Considerations. *J Gerontol A Biol Sci Med Sci* 2020;**75**(2):297-300. doi: 10.1093/gerona/glz028

Nicholson K, Makovski TT, Stranges S. The integration of primary care and public health to improve population health: tackling the complex issue of multimorbidity. *Int J Public Health* 2019;**64**(7):983-84. doi: 10.1007/s00038-019-01278-1

Pearson-Stuttard J, Ezzati M, Gregg EW. Multimorbidity-a defining challenge for health systems. *Lancet Public Health* 2019;**4**(12):e599-e600. doi: 10.1016/S2468-2667(19)30222-1

Battegay E. Multimorbidity is a game changer. *Swiss Med Wkly* 2019;**149**:w20131. doi: 10.4414/smw.2019.20131

Ng CJ, Lee YK, Abdullah A, et al. Shared decision making: A dual-layer model to tackling multimorbidity in primary care. *J Eval Clin Pract* 2019;**25**(6):1074-79. doi: 10.1111/jep.13163

Gaga M, Powell P, Almagro M, et al. ERS Presidential Summit 2018: multimorbidities and the ageing population. *ERJ Open Res* 2019;**5**(3) doi: 10.1183/23120541.00126-2019

Rijken M, Lette M, Baan CA, et al. Assigning a Prominent Role to "The Patient Experience" in Assessing the Quality of Integrated Care for Populations with Multiple Chronic Conditions. *Int J Integr Care* 2019;**19**(3):19. doi: 10.5334/ijic.4656

Woodford HJ, Fisher J. New horizons in deprescribing for older people. *Age Ageing* 2019;**48**(6):768-75. doi: 10.1093/ageing/afz109

Szanton SL, Han H, Campbell J, et al. Shifting paradigms to build resilience among patients and families experiencing multiple chronic conditions. *J Clin Nurs* 2019 doi: 10.1111/jocn.15145

Schuttner L, Parchman M. Team-Based Primary Care for the Multimorbid Patient: Matching Complexity With Complexity. *Am J Med* 2019;**132**(4):404-06. doi: 10.1016/j.amjmed.2018.09.029

Smith SM. Managing multimorbidity in primary care. *CMAJ* 2019;**191**(18):E489-E90. doi: 10.1503/cmaj.190406

Ng CJ, Lee YK, Abdullah A, et al. Shared decision making: A dual-layer model to tackling multimorbidity in primary care. *J Eval Clin Pract* 2019 doi: 10.1111/jep.13163

Longobucco Y, Benedetti C, Tagliaferri S, et al. Proactive interception and care of Frailty and Multimorbidity in older persons: the experience of the European Innovation Partnership on Active and Healthy Ageing and the response of Parma Local Health Trust and Lab through European Projects. *Acta Biomed* 2019;**90**(2):364-74. doi: 10.23750/abm.v90i2.8419

Duggal NA, Niemi G, Harridge SDR, et al. Can physical activity ameliorate immunosenescence and thereby reduce age-related multi-morbidity? *Nat Rev Immunol* 2019;**19**(9):563-72. doi: 10.1038/s41577-019-0177-9

Welsh TJ. Multimorbidity in people living with dementia. *Case Rep Womens Health* 2019;**23**:e00125. doi: 10.1016/j.crwh.2019.e00125

Stewart D, McCambridge J. Alcohol complicates multimorbidity in older adults. *BMJ* 2019;**365**:l4304. doi: 10.1136/bmj.l4304

Nicholson K, Makovski TT, Stranges S. The integration of primary care and public health to improve population health: tackling the complex issue of multimorbidity. *Int J Public Health* 2019;**64**(7):983-84. doi: 10.1007/s00038-019-01278-1

Chew-Graham C, O'Toole L, Taylor J, et al. 'Multimorbidity': an acceptable term for patients or time for a rebrand? *Br J Gen Pract* 2019;**69**(685):372-73. doi: 10.3399/bjgp19X704681

Kuzuya M. Era of geriatric medical challenges: Multimorbidity among older patients. *Geriatr Gerontol Int* 2019;**19**(8):699-704. doi: 10.1111/ggi.13742

Suls J, Green PA. Multimorbidity in health psychology and behavioral medicine. *Health Psychol* 2019;**38**(9):769-71. doi: 10.1037/hea0000783

Suls J, Green PA, Boyd CM. Multimorbidity: Implications and directions for health psychology and behavioral medicine. *Health Psychol* 2019;**38**(9):772-82. doi: 10.1037/hea0000762

Bierman AS. Preventing and managing multimorbidity by integrating behavioral health and primary care. *Health Psychol* 2019;**38**(9):851-54. doi: 10.1037/hea0000787

Daoud A, Faizan S, Abidi S, et al. Towards Personalized Lifetime Health: A Platform for Early Multimorbid Chronic Disease Risk Assessment and Mitigation. *Stud Health Technol Inform* 2019;**264**:935-39. doi: 10.3233/SHTI190361

Jennings E, Gallagher P, O'Mahony D. Detection and prevention of adverse drug reactions in multi-morbid older patients. *Age Ageing* 2019;**48**(1):10-13. doi: 10.1093/ageing/afy157

Marengoni A, Vetrano DL, Onder G. Target Population for Clinical Trials on Multimorbidity: Is Disease Count Enough? *J Am Med Dir Assoc* 2019;**20**(2):113-14. doi: 10.1016/j.jamda.2018.10.012

Holland AE, Lee AL. Precision Medicine, Healthy Living and the Complex Patient: Managing the Patient With Multimorbidity. *Prog Cardiovasc Dis* 2019;**62**(1):29-33. doi: 10.1016/j.pcad.2018.12.010

Calderon-Larranaga A, Fratiglioni L. Multimorbidity research at the crossroads:

- developing the scientific evidence for clinical practice and health policy. *J Intern Med* 2019;**285**(3):251-54. doi: 10.1111/joim.12872
- Sturgiss EA, Boeckxstaens P, Clark AM. Multimorbidity and patient-centred care in the 3D trial. *Lancet* 2019;**393**(10167):127. doi: 10.1016/S0140-6736(18)32527-3
- Marengoni A, Vetrano DL, Calderon-Larranaga A, et al. Multimorbidity and patient-centred care in the 3D trial. *Lancet* 2019;**393**(10167):127-28. doi: 10.1016/S0140-6736(18)32528-5
- Lewis-Barned N, Coulter A, Eaton S, et al. Multimorbidity and patient-centred care in the 3D trial. *Lancet* 2019;**393**(10167):127. doi: 10.1016/S0140-6736(18)32529-7
- Xu Z, Yao M, Fang L. Multimorbidity and patient-centred care in the 3D trial. *Lancet* 2019;**393**(10167):128-29. doi: 10.1016/S0140-6736(18)32540-6
- Salisbury C, Bower P, Guthrie B, et al. Multimorbidity and patient-centred care in the 3D trial - Authors' reply. *Lancet* 2019;**393**(10167):129. doi: 10.1016/S0140-6736(18)32536-4
- Tinetti ME, Green AR, Ouellet J, et al. Caring for Patients With Multiple Chronic Conditions. *Ann Intern Med* 2019;**170**(3):199-200. doi: 10.7326/M18-3269
- Engamba SA, Steel N, Howe A, et al. Tackling multimorbidity in primary care: is relational continuity the missing ingredient? *Br J Gen Pract* 2019;**69**(679):92-93. doi: 10.3399/bjgp19X701201
- Quinones AR, Allore HG, Botosaneanu A, et al. Tracking Multimorbidity Changes in Racial/Ethnic Diverse Populations over Time: Issues and Considerations. *J Gerontol A Biol Sci Med Sci* 2019 doi: 10.1093/gerona/glz028
- Martin CM. What matters in "multimorbidity"? Arguably resilience and personal health experience are central to quality of life and optimizing survival. *J Eval Clin Pract* 2018;**24**(6):1282-84. doi: 10.1111/jep.12644
- Vetrano DL, Calderon-Larranaga A, Marengoni A, et al. An International Perspective on Chronic Multimorbidity: Approaching the Elephant in the Room. *J Gerontol A Biol Sci Med Sci* 2018;**73**(10):1350-56. doi: 10.1093/gerona/glx178
- Kostev K, Jacob L. Multimorbidity and polypharmacy among elderly people followed in general practices in Germany. *Eur J Intern Med* 2018;**55**:66-68. doi: 10.1016/j.ejim.2018.07.014
- Jessup RL, Putrik P, Beauchamp A. Improving health information to address low health literacy for patients with multimorbidity. *Aust Health Rev* 2018 doi: 10.1071/AH18116
- Walker C. A commentary on Martin's "What matters in 'multimorbidity'? Arguably resilience and personal health experience are central to quality of life and optimizing survival." *J. Eval. Clin. Pract.* 2016; 1-3. *J Eval Clin Pract* 2018;**24**(6):1291-92. doi: 10.1111/jep.13027
- Blaum CS, Rosen J, Naik AD, et al. Feasibility of Implementing Patient Priorities Care for

- Older Adults with Multiple Chronic Conditions. *J Am Geriatr Soc* 2018;**66**(10):2009-16. doi: 10.1111/jgs.15465
- Treadwell J. Ideal model of care for multimorbidity: the search continues. *Drug Ther Bull* 2018;**56**(11):126. doi: 10.1136/dtb.2018.11.000025
- Schuttner L, Parchman M. Team-Based Primary Care for the Multimorbid Patient: Matching Complexity With Complexity. *Am J Med* 2018 doi: 10.1016/j.amjmed.2018.09.029
- Jack E, Maskrey N, Byng R. SHERPA: a new model for clinical decision making in patients with multimorbidity. *Lancet* 2018;**392**(10156):1397-99. doi: 10.1016/S0140-6736(18)31371-0
- Kadam UT, Roberts I, White S, et al. Conceptualizing multiple drug use in patients with comorbidity and multimorbidity: proposal for standard definitions beyond the term polypharmacy. *J Clin Epidemiol* 2019;**106**:98-107. doi: 10.1016/j.jclinepi.2018.10.014
- Hurst JR, Dickhaus J, Maulik PK, et al. Global Alliance for Chronic Disease researchers' statement on multimorbidity. *Lancet Glob Health* 2018;**6**(12):e1270-e71. doi: 10.1016/S2214-109X(18)30391-7
- van Bruchem-Visser RL. Taking care of the multimorbid patient, a primary task of the internist. *Neth J Med* 2018;**76**(9):388.
- Marengoni A, Vetrano DL, Onder G. Target Population for Clinical Trials on Multimorbidity: Is Disease Count Enough? *J Am Med Dir Assoc* 2019;**20**(2):113-14. doi: 10.1016/j.jamda.2018.10.012
- Fortin M. "It-that-must-not-be-named": Addressing patient discomfort with the term multimorbidity. *Can Fam Physician* 2018;**64**(12):881-82.
- Rosella L, Kornas K. Putting a Population Health Lens to Multimorbidity in Ontario. *Healthc Q* 2018;**21**(3):8-11. doi: 10.12927/hcq.2018.25709
- Hoffmann T, Jansen J, Glasziou P. The importance and challenges of shared decision making in older people with multimorbidity. *PLoS Med* 2018;**15**(3):e1002530. doi: 10.1371/journal.pmed.1002530.
- Tsiachristas A, van Ginneken E, Rijken M. Tackling the challenge of multi-morbidity: Actions for health policy and research. *Health Policy* 2018;**122**(1):1-3. doi: 10.1016/j.healthpol.2017.11.011.
- Prados-Torres A, Poblador-Plou B, Gimeno-Miguel A, et al. Cohort Profile: The Epidemiology of Chronic Diseases and Multimorbidity. The EpiChron Cohort Study. *Int J Epidemiol* 2018;**47**(2):382-84f. doi: 10.1093/ije/dyx259.
- Harrison C, Siriwardena AN. Editorial Multimorbidity. *Aust J Gen Pract* 2018;**47**(1-2):6-7.
- Oliver D. David Oliver: A manifesto for multimorbidity. *BMJ* 2018;**360**:k1044. doi: 10.1136/bmj.k1044

- Stokes T. Multimorbidity and clinical guidelines: problem or opportunity? *N Z Med J* 2018;**131**(1472):7-9.
- Millar E, Dowell T, Lawrenson R, et al. Clinical guidelines: what happens when people have multiple conditions? *N Z Med J* 2018;**131**(1472):73-81.
- Trevena L. Minimally disruptive medicine for patients with complex multimorbidity. *Aust J Gen Pract* 2018;**4**(4):175-79.
- Harvey G, Dollard J, Marshall A, et al. Achieving Integrated Care for Older People: Shuffling the Deckchairs or Making the System Watertight For the Future? *Int J Health Policy Manag* 2018;**7**(4):290-93. doi: 10.15171/ijhpm.2017.144.
- Happ MB, Mion LC, Duffy S. The challenge of multiple complex chronic conditions. *Geriatr Nurs* 2018;**39**(2):244-46. doi: 10.1016/j.gerinurse.2018.02.009.
- Bastian LA, Brandt CA, Justice AC. Measuring Multimorbidity: A Risky Business. *J Gen Intern Med.* 2017;**32**(9):959-960.
- Vetrano DL, Calderon-Larranaga A, Marengoni A, et al. An international perspective on chronic multimorbidity: approaching the elephant in the room. *J Gerontol A Biol Sci Med Sci.* 2017.
- Bernabeu-Wittel M, Baron-Franco B, Nieto-Martin D, Moreno-Gavino L, Ramirez-Duque N, Ollero-Baturone M. Prognostic stratification and healthcare approach in patients with multiple pathologies. *Rev Clin Esp.* 2017;**217**(7):410-419.
- Rizzuto D, Melis RJF, Marengoni A. Reply to: Function but not Multimorbidity at the Cornerstone of Geriatric Medicine. *J Am Geriatr Soc.* 2017;**65**(10):2334-2335.
- Abizanda P, Rodriguez-Manas L. Function But Not Multimorbidity at The Cornerstone of Geriatric Medicine. *J Am Geriatr Soc.* 2017;**65**(10):2333-2334.
- Riano D, Ortega W. Computer technologies to integrate medical treatments to manage multimorbidity. *J Biomed Inform.* 2017;**75**:1-13.
- Heisler M. Eliciting Personal Values of Patients with Multiple Chronic Conditions: Why and How. *J Gen Intern Med.* 2017;**32**(12):1273-1274.
- Yarnall AJ, Sayer AA, Clegg A, Rockwood K, Parker S, Hindle JV. New horizons in multimorbidity in older adults. *Age Ageing.* 2017;**46**(6):882-888.
- Battegay EJ, Cheetham M. Choosing Wisely - An international and multimorbid perspective. *Z Evid Fortbild Qual Gesundhwes.* 2017;**129**:27-30.
- Tsiachristas A, van Ginneken E, Rijken M. Tackling the challenge of multi-morbidity: Actions for health policy and research. *Health Policy.* 2018;**122**(1):1-3.
- Marengoni A, Fratiglioni L, Onder G. Improving Public Awareness of Multimorbidity. *J Am Med Dir Assoc.* 2017;**18**(5):372-373. doi: 10.1016/j.jamda.2017.01.010.
- Mazza D, Mitchell G. Cancer, ageing, multimorbidity and primary care. *Eur J Cancer Care (Engl).* 2017;**26**(3). doi: 10.1111/ecc.12717.
- Kernick D, Chew-Graham CA, O'Flynn N. Clinical assessment and management of multimorbidity: NICE guideline. *Br J Gen Pract.* 2017;**67**(658):235-236. doi: 10.3399/bjgp17X690857.

- Gallo JJ. Multimorbidity and Mental Health. *Am J Geriatr Psychiatry*. 2017;**25**(5):520-521. doi: 10.1016/j.jagp.2017.02.007.
- Molokhia M, Majeed A. Current and future perspectives on the management of polypharmacy. *BMC Fam Pract*. 2017;**18**(1):70. doi: 10.1186/s12875-017-0642-0.
- Mair FS, Gallacher KI. Multimorbidity: what next? *Br J Gen Pract*. 2017;**67**(659):248-249. doi: 10.3399/bjgp17X690965.
- Watt G. The subversive challenges of multimorbidity. *Br J Gen Pract*. 2017;**67**(659):280-281. doi: 10.3399/bjgp17X691289.
- Bastian LA, Brandt CA, Justice AC. Measuring Multimorbidity: A Risky Business. *J Gen Intern Med*. 2017. doi: 10.1007/s11606-017-4110-2.
- Bickford J, Cohen A. Multimorbidity: what next? *Br J Gen Pract*. 2017;**67**(660):300. doi: 10.3399/bjgp17X691637.
- Sasseville M, Stewart M, Bouhali T, Fortin M. Relevant Outcomes for Patient-Centered Interventions for Persons with Multimorbidity: Experts' Discussion. *Ann Fam Med*. 2017;**15**(4):388-389. doi: 10.1370/afm.2116.
- Abizanda P, Rodriguez-Manas L. Function But Not Multimorbidity at The Cornerstone of Geriatric Medicine. *J Am Geriatr Soc*. 2017. doi: 10.1111/jgs.15021.
- Brockmoller J, Stingl JC. Multimorbidity, polypharmacy and pharmacogenomics in old age. *Pharmacogenomics*. 2017;**18**(6):515-517.
- de Souto Barreto P. Exercise for Multimorbid Patients in Primary Care: One Prescription for All? *Sports Med*. 2017.
- Leland NE, Fogelberg DJ, Halle AD, Mroz TM. Occupational Therapy and Management of Multiple Chronic Conditions in the Context of Health Care Reform. *Am J Occup Ther*. 2017;**71**(1):7101090010p1-7101090010p6.
- Stott DJ, Young J. 'Across the pond'-a response to the NICE guidelines for management of multi-morbidity in older people. *Age Ageing*. 2017:1-2.
- Manning E, Gagnon M. The complex patient: A concept clarification. *Nurs Health Sci*. 2017;**19**(1):13-21.
- Onder G, Cesari M, Maggio M, Palmer K. Defining a care pathway for patients with multimorbidity or frailty. *Eur J Intern Med*. 2017;**38**:1-2.
- Dean E. Multiple morbidities assessment. *Nurs Stand*. 2017;**31**(34):15.
- Melis RJ, Gijzel SM, Olde Rikkert MG. Moving beyond multimorbidity as a simple count of diseases. *J Eval Clin Pract*. 2017;**23**(1):216-218.
- Marengoni A, Fratiglioni L, Onder G. Improving Public Awareness of Multimorbidity. *J Am Med Dir Assoc*. 2017;**18**(5):372-373.
- DeHaven MJ. Multimorbidity, chronic disease, and community health science. *J Eval Clin Pract*. 2017;**23**(1):219-221.

- Cesari M, Perez-Zepeda MU, Marzetti E. Frailty and Multimorbidity: Different Ways of Thinking About Geriatrics. *J Am Med Dir Assoc*. 2017;**18**(4):361-364.
- Gallo JJ. Multimorbidity and Mental Health. *Am J Geriatr Psychiatry*. 2017;**25**(5):520-521.
- Villacampa-Fernandez P, Navarro-Pardo E, Tarin JJ, Cano A. Frailty and multimorbidity: Two related yet different concepts. *Maturitas*. 2017;**95**:31-35.
- Sturmberg JP, Botelho RJ, Kissling B. Integrated multimorbidity management in primary care: why, what, how, and how to? *Journal of Comorbidity*. 2016;**6**:114-119.
- O'Hara R, Beaudreau SA, Gould CE, Froehlich W, Kraemer HC. Handling clinical comorbidity in randomized clinical trials in psychiatry. *J Psychiatr Res*. 2017;**86**:26-33.
- Payne RA. The epidemiology of polypharmacy. *Clin Med (Lond)*. 2016;**16**(5):465-469.
- Rohleder N. Translating biobehavioral research advances into improvements in health care—a "network of networks" approach to multimorbidity. *J Eval Clin Pract*. 2016.
- Hughes CM, Cadogan CA, Patton D, Ryan CA. Pharmaceutical strategies towards optimising polypharmacy in older people. *Int J Pharm*. 2016;**512**(2):360-365.
- Dhere A. Managing complex long-term conditions and multimorbidity. *Clin Med (Lond)*. 2016;**16**(6):545-547.
- Wise J. Patients with multimorbidity need longer GP consultations, says RCGP. *BMJ*. 2016;**355**:i5961.
- Dean E. Multiple morbidities assessment. *Nurs Manag (Harrow)*. 2016;**23**(7):13.
- Dean E. Multiple morbidities assessment. *Nurs Older People*. 2016;**28**(10):11.
- Villacampa-Fernandez P, Navarro-Pardo E, Tarin JJ, Cano A. Frailty and multimorbidity: Two related yet different concepts. *Maturitas*. 2017;**95**:31-35.
- Nichter M. Comorbidity: Reconsidering the Unit of Analysis. *Med Anthropol Q*. 2016;**30**(4):536-544.
- Bierman AS, Tinetti ME. Precision medicine to precision care: managing multimorbidity. *Lancet*. 2016;**388**(10061):2721-2723.
- Grinberg C, Hawthorne M, LaNoue M, Brenner J, Mautner D. The Core of Care Management: The Role of Authentic Relationships in Caring for Patients with Frequent Hospitalizations. *Popul Health Manag*. 2016;**19**:248-56.
- Clarke JL, Bourn S, Skoufalos A, Beck EH, Castillo DJ. An Innovative Approach to Health Care Delivery for Patients with Chronic Conditions. *Popul Health Manag*. 2016.
- Kennedy GJ, Castro J, Chang M, Chauhan-James J, Fishman M. Psychiatric and Medical Comorbidity in the Primary Care Geriatric Patient—An Update. *Current psychiatry reports*. 2016;**18**:62.
- Xu Y, Wells PS. Getting (Along) With the Guidelines: Reconciling Patient Autonomy and Quality Improvement Through Shared Decision Making. *Acad Med*. 2016;**91**:925-9.

- Rashid A. A theatrical approach to multimorbidity consultations. *Clin Teach*. 2016;**13**:305-6.
- Sturmberg JP, Bennett JM, Martin CM, Picard M. 'Multimorbidity' as the manifestation of network disturbances. *J Eval Clin Pract*. 2016.
- Walker C, Peterson CL. Multimorbidity: a sociological perspective of systems. *J Eval Clin Pract*. 2016.
- DeHaven MJ. Multimorbidity, chronic disease, and community health science. *J Eval Clin Pract*. 2016.
- Bircher J, Hahn EG. "Multimorbidity" as the manifestation of network disturbances. From nosology to the Meikirch model. *J Eval Clin Pract*. 2016.
- Martin CM. What matters in "multimorbidity"? Arguably resilience and personal health experience are central to quality of life and optimizing survival. *J Eval Clin Pract*. 2016.
- Ramond-Roquin A, Fortin M. Towards increased visibility of multimorbidity research. *Journal of Comorbidity*. 2016;**6**:42-5.
- Luijckx HD, Lagro-Janssen ALM, van Weel C. Multimorbidity and the primary healthcare perspective. *Journal of Comorbidity*. 2016;**6**:46-9.
- Dennis S. Secondary prevention of chronic health conditions in patients with multimorbidity: what can physiotherapists do? *Journal of Comorbidity*. 2016;**6**:50-2.
- Chew-Graham CA, Rasmussen J, Maskrey N. Considering the healthcare needs of older people with multimorbidity: managing Alice. *Journal of Comorbidity*. 2016;**6**:53-5.
- Azaïs B, Bowis J, Wismar M. Facing the challenge of multimorbidity. *Journal of Comorbidity*. 2016;**6**:1-3.
- Boeckxstaens P, De Sutter A, Vaes B, Degryse JM. Should we keep on measuring multimorbidity? *J Clin Epidemiol*. 2016;**71**:113-4.
- Meschi T, Ticinesi A, Prati B, et al. A novel organizational model to face the challenge of multimorbid elderly patients in an internal medicine setting: a case study from Parma Hospital, Italy. *Intern Emerg Med*. 2016;**11**:667-76.
- Marengoni A, Melis RJ, Prados Torres A, Onder G. Multimorbidity: Epidemiology and Models of Care. *Biomed Res Int*. 2016;**2016**:7029027.
- Deccache C, Khau CA, d'Ivernois JF, de Andrade V, Gagnayre R: What therapeutic education for multimorbid psychiatric patients? *Gen Hosp Psychiatry*. 2014;**36**(6):769.
- Haslam D "You're an expert in me": the role of the generalist doctor in the management of patients with multimorbidity. *Journal of Comorbidity* 2015;**5**(1):132-134.
- McKee M: What do people die from? The challenges of measuring disease burden posed by multi-morbidity. *Isr J Health Policy Res*. 2015;**4**:53.

Gray R: Transforming nurse training to address multi-morbidity: the missed opportunity of the shape of caring review. *J Psychiatr Ment Health Nurs*. 2015;**22**(9):653-654.

Birriel TJ, Uchino R, Barry N, Butryn T, Sabol DM, Valenza PL *et al*: Adverse drug reactions in the era of multi-morbidity and polypharmacy. *J Basic Clin Pharm*. 2015;**6**(4):122-123.

Bousquet J, Anto JM, Wickman M, Keil T, Valenta R, Haahtela T *et al*: Are allergic multimorbidities and IgE polysensitization associated with the persistence or re-occurrence of foetal type 2 signalling? The MeDALL hypothesis. *Allergy*. 2015;**70**(9):1062-1078.

Rodriguez Perez A, Alfaro Lara ER, Nieto Martin MD, Ruiz Cantero A, Santos Ramos B: Deprescribing in patients with multimorbidity: a necessary process. *Eur J Intern Med*. 2015;**26**(7):e18-19.

Bunn F, Goodman C, Burn AM: Multimorbidity and frailty in people with dementia. *Nurs Stand*. 2015;**30**(1):45-50.

Muth C, Glasziou PP: Guideline recommended treatments in complex patients with multimorbidity. *BMJ*. 2015;**351**:h5145.

Moffat K, Mercer SW: Challenges of managing people with multimorbidity in today's healthcare systems. *BMC Fam Pract*. 2015;**16**(1):129.

Nicholson K, Terry AL, Fortin M, Williamson T, Thind A: Understanding multimorbidity in primary health care. *Can Fam Physician*. 2015;**61**(10):918, e489-990.

Millan E, Lopez Arbeloa G, Samper R, Carneiro M, Pocheville E, Aurrekoetxea J *et al*: Assessment of a Predictive Risk Model for Classifying Patients with Multimorbidity in the Basque Country. *Value Health*. 2015;**18**(7):A374.

Caballer-Tarazona V, Vivas-Consuelo D, Guadalajara-Olmeda N, Clemente-Collado A: Cost Of Multimorbidity: The Influence Of Ambulatory Pharmaceutical And Hospital Expenditure. *Value Health*. 2015;**18**(7):A537.

Valderas JM: Multimorbidity, not a health condition or complexity by another name. *Eur J Gen Pract*. 2015;**21**(4):213-214.

Goodman RA, Ling SM, Briss PA, Parrish RG, Salive ME, Finke BS: Multimorbidity Patterns in the United States: Implications for Research and Clinical Practice. *J Gerontol A Biol Sci Med Sci*. 2016;**71**(2):215-220.

van den Akker M, Gunn J, Mercer SW, Fortin M, Smith SM. Secondary analysis of data on comorbidity/multimorbidity: a call for papers. *Journal of Comorbidity*. 2015;**5**:120-121.

Rodriguez Perez A, Alfaro Lara ER, Nieto Martin MD, Ruiz Cantero A, Santos Ramos B. Deprescribing in patients with multimorbidity: A necessary process. *Eur J Intern Med*. Sep 2015;**26**(7):e18-19.

Vivas-Consuelo D, Uso-Talamantes R, Trillo-Mata JL, Mendez-Valera P. Methods to control the pharmaceutical cost impact of chronic conditions in the elderly. *Expert Rev Pharmacoecon Outcomes Res*. Jun 2015;**15**(3):425-437.

Meranius MS, Hammar LM. How does the healthcare system affect medication self-

management among older adults with multimorbidity? *Scand J Caring Sci.* Apr 28 2015.

Fabbri E, Zoli M, Gonzalez-Freire M, Salive ME, Studenski SA, Ferrucci L. Aging and Multimorbidity: New Tasks, Priorities, and Frontiers for Integrated Gerontological and Clinical Research. *J Am Med Dir Assoc.* Aug 1 2015;**16**(8):640-647.

Ng SK. A two-way clustering framework to identify disparities in multimorbidity patterns of mental and physical health conditions among Australians. *Stat Med.* May 31 2015.

Atun R. Transitioning health systems for multimorbidity. *Lancet.* Aug 22 2015;**386**(9995):721-722.

Kowal P, Arokiasamy P, Afshar S, Pati S, Snodgrass JJ. Multimorbidity: health care that counts "past one" for 1.2 billion older adults. *Lancet.* Jun 6 2015;**385**(9984):2252-2253.

Oni T, Unwin N. Why the communicable/non-communicable disease dichotomy is problematic for public health control strategies: implications of multimorbidity for health systems in an era of health transition. *Int Health.* Jun 23 2015.

Rashid A. A theatrical approach to multimorbidity consultations. *Clin Teach.* Jul 16 2015.

Sinnott C, Bradley CP. Multimorbidity or polypharmacy: two sides of the same coin? *Journal of Comorbidity.* 2015;**5**:29-31.

Treadwell J. Coping with complexity: working beyond the guidelines for patients with multimorbidities. *Journal of Comorbidity.* 2015;**5**:11-14.

Bower P. Better management of multimorbidity: a critical look at the 'Ariadne principles'. *BMC Med.* 2014;**12**:222.

Gunn J. Designing care for people with mixed mental and physical multimorbidity. *BMJ.* 2015;**350**:h712.

Marengoni A, Onder G. Guidelines, polypharmacy, and drug-drug interactions in patients with multimorbidity. *BMJ.* 2015;**350**:h1059.

Onder G, Palmer K, Navickas R, et al. Time to face the challenge of multimorbidity. A European perspective from the joint action on chronic diseases and promoting healthy ageing across the life cycle (JA-CHRODIS). *Eur J Intern Med.* Apr 2015;**26**(3):157-159.

Peytremann-Bridevaux I, Ebert ST, Senn N. Involvement of family physicians in structured programs for chronic diseases or multi-morbidity in Switzerland. *Eur J Intern Med.* Mar 2015;**26**(2):150-151.

Rushton CA, Green J, Jaarsma T, Walsh P, Stromberg A, Kadam UT. The challenge of multimorbidity in nurse education: an international perspective. *Nurse Educ Today.* Jan 2015;**35**(1):288-292.

Banerjee S. Multimorbidity--older adults need health care that can count past one. *Lancet.* Feb 14 2015;**385**(9968):587-589.

O'Dowd T. Depression and multimorbidity in psychiatry and primary care. *The Journal of clinical psychiatry.* Nov 2014;**75**(11):e1319-1320.

Stevens PE, Lamb EJ, Levin A. Integrating Guidelines, CKD, Multimorbidity, and Older Adults. *American journal of kidney diseases : the official journal of the National Kidney*

Foundation. Mar 2015;**65**(3):494-501.

Miller D, Steele Gray C, Kuluski K, Cott C. Patient-Centered Care and Patient-Reported Measures: Let's Look Before We Leap. *Patient*. Oct 30 2014.

Sturmberg JP. Multimorbidity and chronic disease: an emergent perspective. *J Eval Clin Pract*. Aug 2014;**20**(4):508-512.

van den Brink AM, Gerritsen DL, Oude Voshaar RC, Koopmans RT. Patients with mental-physical multimorbidity: do not let them fall by the wayside. *Int Psychogeriatr*. Oct 2014;**26**(10):1585-1589.

Divo MJ, Martinez CH, Mannino DM. Ageing and the epidemiology of multimorbidity. *Eur Respir J*. Oct 2014;**44**(4):1055-1068.

Drazen JM, Fabbri LM. Ageing and multimorbidity. *Eur Respir J*. Sep 2014;**44**(3):557.

Posner SF, Goodman RA. Multimorbidity at the local level: implications and research directions. *Mayo Clin Proc* 67(2):144-57. Oct 2014;**89**(10):1321-1323.

Lindquist LA, Covinsky K, Langa KM, Petty BG, Williams BC, Kutner JS. Making general internal medicine research relevant to the older patient with multiple chronic comorbidities. *J Gen Intern Med*. Jun 2014;**29**(6):915-919.

Parekh AK, Meyers DS. The Strategic Framework on Multiple Chronic Conditions. *Med Care*. Mar 2014;**52** Suppl 3:S1-2.

Leroy L, Bayliss E, Domino M, Miller BF, Rust G, Gerteis J, Miller T. The Agency for Healthcare Research and Quality Multiple Chronic Conditions Research Network: overview of research contributions and future priorities. *Med Care*. Mar 2014;**52** Suppl 3:S15-22.

Tinetti ME, Basu J. Research on multiple chronic conditions: where we are and where we need to go. *Med Care*. Mar 2014;**52** Suppl 3:S3-6.

AHRQ updates on primary care research: raising awareness about caring for patients with multiple chronic conditions. *Ann Fam Med*. Mar-Apr 2014;**12**(2):177-178.

Radner H, Yoshida K, Smolen JS, Solomon DH. Multimorbidity and rheumatic conditions-enhancing the concept of comorbidity. *Nat Rev Rheumatol*. Apr 2014;**10**(4):252-256.

Boyd CM, Kent DM. Evidence-based medicine and the hard problem of multimorbidity. *J Gen Intern Med*. Apr 2014;**29**(4):552-553.

Richardson WS, Doster LM. Comorbidity and multimorbidity need to be placed in the context of a framework of risk, responsiveness, and vulnerability. *J Clin Epidemiol*. Mar 2014;**67**(3):244-246.

Covinsky KE. Multimorbidity, guidelines, and clinical inertia. *JAMA Intern Med*. May 2014;**174**(5):819.

Sturmberg JP. Multimorbidity and chronic disease: an emergent perspective. *J Eval Clin Pract*. Apr 5 2014.

Sturmberg J, Lanham HJ. Understanding health care delivery as a complex system: Achieving best possible health outcomes for individuals and communities by focusing on interdependencies. *J Eval Clin Pract*. May 5 2014.

Murphy ME, Glynn L, Murphy AW. General practice, multimorbidity and evidence based policy making: a key challenge. *Ir Med J*. Apr 2014;**107**(4):125.

Rushton CA, Green J, Jaarsma T, Walsh P, Stromberg A, Kadam UT. The challenge of

multimorbidity in nurse education: An international perspective. *Nurse Educ Today*. May 29 2014.

Genius SJ. Pandemic of idiopathic multimorbidity. *Can Fam Physician*. Jun 2014;**60**(6):511-514.

Lindquist LA, Covinsky K, Langa KM, Petty BG, Williams BC, Kutner JS. Making General Internal Medicine Research Relevant to the Older Patient with Multiple Chronic Comorbidities. *J Gen Intern Med*. Feb 21 2014.

Uhlig K, Leff B, Kent D, Dy S, Brunnhuber K, Burgers JS, Greenfield S, Guyatt G, High K, Leipzig R, Mulrow C, Schmader K, Schunemann H, Walter LC, Woodcock J, Boyd CM. A Framework for Crafting Clinical Practice Guidelines that are Relevant to the Care and Management of People with Multimorbidity. *J Gen Intern Med*. Jan 18 2014.

Weiss CO, Varadhan R, Puhan MA, Vickers A, Bandeen-Roche K, Boyd CM, Kent DM. Multimorbidity and Evidence Generation. *J Gen Intern Med*. Jan 18 2014.

Trikalinos TA, Segal JB, Boyd CM. Addressing Multimorbidity in Evidence Integration and Synthesis. *J Gen Intern Med*. Jan 18 2014.

Schulze T, Maercker A, Horn AB. Mental Health and Multimorbidity: Psychosocial Adjustment as an Important Process for Quality of Life. *Gerontology*. Feb 28 2014.

Martin M, Battegay E, Rocke C. Editorial: Quality of Life in Multimorbidity. *Gerontology*. Feb 28 2014.

Saxe JM, Smith V, McNerney K. Chronic Pain Perspectives: A blueprint to managing multiple chronic conditions and pain. *J Fam Pract*. Dec 2013;**62**(12 Suppl 1):S4-S11.

Marengoni A. Guidelines for elderly patients with multimorbidity: how to cope with a dark night without fear. *Aging Clin Exp Res*. Dec 2013;**25**(6):703-705.

Harrison C, Britt H, Miller G, Henderson J. Multimorbidity. *Aust Fam Physician*. Dec 2013;**42**(12):845.

Harris MF, Dennis S, Pillay M. Multimorbidity - Negotiating priorities and making progress. *Aust Fam Physician*. Dec 2013;**42**(12):850-854.

Ceramidas DM, Glasgow NJ. Multi-morbidity: a system design challenge in delivering patient-centred care. *Aust Health Rev*. Jun 2013;**37**(3):309-311.

Reeve J, Blakeman T, Freeman GK, et al. Generalist solutions to complex problems: generating practice-based evidence--the example of managing multi-morbidity. *BMC Fam Pract*. 2013;**14**:112.

Roland M, Paddison C. Better management of patients with multimorbidity. *BMJ*. 2013;**346**:f2510

Langan J, Mercer SW, Smith DJ. Multimorbidity and mental health: can psychiatry rise to the challenge? *British Journal of Psychiatry*. Jun 2013;**202**:391-393.

Rudland S, Macey N. Value of a well organised team approach in primary care in managing patients with multimorbidity. *BMJ*. 2013;**346**:f3555.

Ritchie CS, Zulman DM. Research priorities in geriatric palliative care: multimorbidity. *J Palliat Med*. Aug 2013;**16**(8):843-847.

Ording AG, Sorensen HT. Concepts of comorbidities, multiple morbidities, complications, and their clinical epidemiologic analogs. *Clin Epidemiol*. 2013;**5**:199-203.

Marengoni A. Guidelines for elderly patients with multimorbidity: how to cope with a dark night without fear. *Aging Clin Exp Res*. Jul 26 2013.

Capobianco E, Lio P. Comorbidity: a multidimensional approach. *Trends Mol Med*. Sep 2013;**19**(9):515-521.

Shadmi E. Multimorbidity and equity in health. *Int J Equity Health*. Aug 20 2013;**12**(1):59.

Jakovljevic M, Ostojic L. Comorbidity and multimorbidity in medicine today: challenges and opportunities for bringing separated branches of medicine closer to each other. *Psychiatr Danub*. Jun 2013;**25** Suppl 1:18-28.

Wallace RB, Salive ME. The dimensions of multiple chronic conditions: where do we go from here? A commentary on the special issue of preventing chronic disease. *Prev Chronic Dis*. 2013;**10**:E59.

de Souto Barreto P, Vellas B, Morley JE, Rolland Y. The nursing home population: an opportunity to make advances on research on multimorbidity and polypharmacy. *J Nutr Health Aging*. Apr 2013;**17**(4):399-400.

Thomason C. Changes needed to cope with multimorbidity. *Nurs Times*. Mar 12-18 2013;**109**(10):32.

Salisbury C. Multimorbidity: time for action rather than words. *Br J Gen Pract*. Feb 2013;**63**(607):64-65.

Sturmberg JP. Caring for people with chronic disease: is 'muddling through' the best way to handle the multiple complexities? *J Eval Clin Pract*. Dec 2012;**18**(6):1220-1225.

Mercer SW, Gunn J, Bower P, Wyke S, Guthrie B. Managing patients with mental and physical multimorbidity. *BMJ*. 2012;**345**:e5559.

Burge F, Lawson B, Mitchell G. How to move to a palliative approach to care for people with multimorbidity. *BMJ*. 2012;**345**:e6324.

Kadam U. Redesigning the general practice consultation to improve care for patients with multimorbidity. *BMJ*. 2012;**345**:e6202.

Haggerty JL. Ordering the chaos for patients with multimorbidity. *BMJ*. 2012;**345**:e5915.

Guthrie B, Payne K, Alderson P, McMurdo ME, Mercer SW. Adapting clinical guidelines to take account of multimorbidity. *BMJ*. 2012;**345**:e6341.

Sturmberg JP. Caring for people with chronic disease: is 'muddling through' the best way to handle the multiple complexities? *J Eval Clin Pract*. Jul 30 2012.

Salisbury C. Multimorbidity: redesigning health care for people who use it. *Lancet*. Jul 7 2012;**380**(9836):7-9.

Hawkes N. Better training is needed to deal with increasing multimorbidity. *BMJ*. 2012;**344**:e3336.

Mangin D, Heath I, Jamouille M. Beyond diagnosis: rising to the multimorbidity challenge. *BMJ*. 2012;**344**:e3526.

Mercer SW, Guthrie B, Furler J, Watt GC, Hart JT. Multimorbidity and the inverse care law in primary care. *BMJ*. 2012;**344**:e4152.

De Maeseneer J, Boeckxstaens P. James Mackenzie Lecture 2011: multimorbidity, goal-oriented care, and equity. *Br J Gen Pract*. Jul 2012;**62**(600):e522-524.

Tinetti ME, Fried TR, Boyd CM. Designing health care for the most common chronic condition--multimorbidity. *JAMA*. Jun 20 2012;**307**(23):2493-2494.

Shepherd DJ. We need a system that accounts for multimorbidity at practice level. *BMJ*. 2012;**345**:e5464.

Kamerow D. How can we treat multiple chronic conditions? *BMJ*. 2012;**344**:e1487.

Goodman RA, Parekh AK, Koh HK. Toward a more cogent approach to the challenges of multimorbidity. *Ann Fam Med*. Mar-Apr 2012;**10**(2):100-101.

Valderas JM, Mercer SW, Fortin M. Research on patients with multiple health conditions: different constructs, different views, one voice. *Journal of Comorbidity*. 2011;**1**:1-3.

Mercer SW, Gunn J, Wyke S. Improving the health of people with multimorbidity: the need for prospective cohort studies. *Journal of Comorbidity*. 2011;**1**:4-7.

Caughey GE, Roughead EE. Multimorbidity research challenges: where to go from here? *Journal of Comorbidity*. 2011;**1**:8-10.

Tinetti, M.E. and S.A. Studenski, Comparative effectiveness research and patients with multiple chronic conditions. *N Engl J Med*, 2011. **364**(26): p. 2478-81.

Starfield B. Challenges to primary care from co- and multi-morbidity. *Prim Health Care Res Dev* 2011;**12**:1-2.

Cheng LI, Oladapo A, Rascati KL. The need for validation studies of comorbidity adjustment instruments. *Clin Ther*. 2009;**31**(7):1578-80.

Cassil A. Rising rates of chronic health conditions: what can be done?. *Issue Brief Cent Stud Health Syst Change*. 2008 Nov;(125):1-4.

Michel JP, Pautex S, Apro M, Zulian G. Frail old patients as a target population for cancer trials. *J Nutr Health Aging*. 2009 Jan;**13**(1):31-3.

Mercer SW, Smith SM, Wyke S, O'Dowd T, Watt GC. Multimorbidity in primary care: developing the research agenda. *Fam Pract*. 2009 Apr;**26**(2):79-80.

Montague, T. J., A. Gogovor, et al. "Time for chronic disease care and management." *Canadian Journal of Cardiology* 2007. **23**(12): 971-5.

Norris, S. L., K. High, et al. "Health care for older Americans with multiple chronic conditions: a research agenda." *Journal of the American Geriatrics Society* 2008. **56**(1): 149-59.

Starfield, B. "Global health, equity, and primary care." *Journal of the American Board of Family Medicine: JABFM* 2007. **20**(6): 511-3.

Weiss, K. B. "Managing complexity in chronic care: an overview of the VA state-of-the-art (SOTA) conference." *Journal of General Internal Medicine* 2007. **22** Suppl 3: 374-8.

Clarke LH, Griffin M; PACC Research Team. Failing bodies: body image and multiple chronic conditions in later life. *Qual Health Res*. 2008 Aug;**18**(8):1084-95.

Bayliss, E.A. Continuity of care in a changing health care system. Invited commentary. *Ann Fam Med* 2004; 2: TRACK comments. 2004 [cited November 29, 2005]; Available from: www.AnnFamMed.org.

Bayliss, E.A. Expanding our knowledge about processes of care for persons with multimorbidities. Invited commentary. *Ann Fam Med* 2005; 3: TRACK comments. 2005 [cited November 29, 2005]; Available from: www.AnnFamMed.org.

Bayliss, E.A., Proposals for US National Health Insurance.[Letter]. JAMA, 2003. **290**: p. 2799.

Bernardi, D., et al., Comprehensive geriatric evaluation in elderly patients with lymphoma: feasibility of a patient-tailored treatment plan.[comment]. p. 754; author reply 755, 2003 Feb 15.

Bodenheimer, T., Disease management: promises and pitfalls. N Engl J Med, 1999. **340**: p. 1202-5.

Grumbach, K., Chronic illness, comorbidities, and the need for medical generalism. Annals of Family Medicine, 2003. **1**: p. 4-7.

Huyse, F.J., Integration of psychiatric and physical health. British Journal of Psychiatry, 2005. **186**: p. 263-4.

Saltman, D., Comorbidities in general practice. Australian Family Physician, 2004. **33**(4): p. 197.

Stange, K.C., The paradox of the parts and the whole in understanding and improving general practice. Int J Qual Health Care, 2002. **14**: p. 267-8.

Stange K. C., P.W.R., Acheson L. S., Crabtree B. F., Zyzanski S. J., Miller W. L., Gotler R. S., Welcome to the Annals of Family Medicine. Ann Fam Med, 2003. **1**: p. 2-4.

Starfield, B., Primary care visits and health policy. CMAJ Canadian Medical Association Journal, 1998. **159**(7): p. 795-6.

Summerskill, W., Evidence-based practice and the individual. Lancet, 2005. **365**: p. 13-14.

Weingart, S.N., et al., Epidemiology of medical error. BMJ, 2000. **320**: p. 774-7.

Wright, N., L. Smeeth, and I. Heath, Moving beyond single and dual diagnosis in general practice: many patients have multiple morbidities, and their needs have to be addressed. BMJ, 2003. **326**: p. 512-4.

7. QUALITATIVE RESEARCH

Cummings M, Bradley J, Teal G. Patient co-design of digital health storytelling tools for multimorbidity: A phenomenological study. *Health Expect*. 2022;25(6):3073-84.

Damarell RA, Morgan DD, Tieman JJ, Senior T. Managing multimorbidity: a qualitative study of the Australian general practitioner experience. *Fam Pract*. 2022.

Foley L, Hynes L, Murphy AW, Molloy GJ. 'Just keep taking them, keep hoping they'll work': A qualitative study of adhering to medications for multimorbidity. *Br J Health Psychol*. 2022;27(3):691-715.

Giunta S, Butow P, Juraskova I, Sharpe L, Ferguson E, Laidsaar-Powell R. Empowering family carers of people with multimorbidity as partners in chronic health care: Insights from health professionals. *Patient Educ Couns*. 2022;105(12):3550-7.

Hamiduzzaman M, Torres S, Fletcher A, Islam MR, Siddiquee NA, Greenhill J. Aging, care and dependency in multimorbidity: how do relationships affect older Bangladeshi women's use of homecare and health services? *J Women Aging*. 2022;34(6):731-44.

Hardman R, Begg S, Spelten E. Self-efficacy in disadvantaged communities: Perspectives of healthcare providers and clients. *Chronic Illn*. 2022;18(4):950-63.

Llop-Medina L, Ródenas-Rigla F, Garcés-Ferrer J, Doñate-Martínez A. The Experiences and Views on Palliative Care of Older People with Multimorbidities, Their Family Caregivers and Professionals in a Spanish Hospital. *Healthcare (Basel)*. 2022;10(12).

Moody E, Martin-Misener R, Baxter L, Boulos L, Burge F, Christian E, et al. Patient perspectives on primary care for multimorbidity: An integrative review. *Health Expect*. 2022;25(6):2614-27.

Robinson ES, Cyarto E, Ogrin R, Green M, Lowthian JA. Quality of life of older Australians receiving home nursing services for complex care needs. *Health Soc Care Community*. 2022;30(6):e6091-e101.

Schuttner L, Hockett Sherlock S, Simons CE, Johnson NL, Wirtz E, Ralston JD, et al. My Goals Are Not Their Goals: Barriers and Facilitators to Delivery of Patient-Centered Care for Patients with Multimorbidity. *J Gen Intern Med*. 2022;37(16):4189-96.

Schuttner L, Lee JR, Hockett Sherlock S, Ralston JD, Rosland AM, Nelson K, et al. Primary Care Physician Perspectives on the Influence of Patient Values, Health Priorities, and Preferences on Clinical Decision-Making for Complex Patients with Multimorbidity: A Qualitative Study. *Risk Manag Healthc Policy*. 2022;15:2135-46.

Shin JW, Kim EY, Son YJ. Home-dwelling older adults' experiences of living with both frailty and multimorbidity: A meta-ethnography. *Geriatr Nurs*. 2022;47:191-200.

Whitehead L, Palamara P, Allen J, Boak J, Quinn R, George C. Nurses' perceptions and beliefs related to the care of adults living with multimorbidity: A systematic qualitative review. *J Clin Nurs*. 2022;31(19-20):2716-36.

Younas A, Porr C, Maddigan J, Moore J, Navarro P, Whitehead D. Behavioural indicators of compassionate nursing care of individuals with complex needs: A naturalistic inquiry. *J Clin Nurs*. 2022.

Mannheimer, S.M., Bergqvist, M., Bastholm-Rahmner, P., Gustafsson, L.L., Vég, A. and Schmidt-Mende, K. (2022). Home care patients' experiences from living with polypharmacy - a qualitative interview study. *BJGP Open*, p.BJGPO.2021.0181. doi:10.3399/bjgpo.2021.0181.

Brown, E., Poltawski, L., Pitchforth, E., Richards, S., Campbell, J. and Butterworth, J. (2022). Shared decision-making between older people with multimorbidity and GPs: focus group study. *British Journal of General Practice*, p.BJGP.2021.0529. doi:10.3399/bjgp.2021.0529.

Jäger, M., Lindhardt, M.C., Pedersen, J.R., Dideriksen, M., Nyberg, M., Bricca, A., Bodtger, U., Midtgaard, J. and Skou, S.T. (2022). Putting the pieces together: A qualitative study exploring perspectives on self-management and exercise behavior among people living with multimorbidity, healthcare professionals, relatives, and patient advocates. *Journal of Multimorbidity and Comorbidity*, 12, p.263355652211001. doi:10.1177/26335565221100172.

Dinh, T.S., Brueckle, M.-S., González-González, A.I., Witte, J., van den Akker, M., Gerlach, F.M., Muth, C. and On Behalf Of The Evita Study Group (2022). Stakeholder Perspectives on the Development and Implementation of a Polypharmacy Management Program in Germany: Results of a Qualitative Study. *Journal of Personalized Medicine*, [online] 12(7), p.1115. doi:10.3390/jpm12071115.

McAiney, C., Markle-Reid, M., Ganann, R., Whitmore, C., Valaitis, R., Urajnik, D.J., Fisher, K., Ploeg, J., Petrie, P., McMillan, F. and McElhane, J.E. (2022). Implementation of the Community Assets Supporting Transitions (CAST) transitional care intervention for older adults with multimorbidity and depressive symptoms: A qualitative descriptive study. *PLOS ONE*, 17(8), p.e0271500. doi:10.1371/journal.pone.0271500.

Thevelin S, Petein C, Metry B, Adam L, van Herksen A, Murphy K, et al. Experience of hospital-initiated medication changes in older people with multimorbidity: a multicentre mixed-methods study embedded in the OPTimising thERapy to prevent Avoidable hospital admissions in Multimorbid older people (OPERAM) trial. *BMJ Qual Saf* 2022. doi: bmjqs-2021-014372 [pii]

10.1136/bmjqs-2021-014372

Cohen-Stavi CJ, Key C, Molcho T, Yacobi M, Balicer RD, Shadmi E. Mixed Methods Evaluation of Reasons Why Care Deviates From Clinical Guidelines Among Patients With Multimorbidity. *Med Care Res Rev* 2022;79(1):102-13. doi: 10.1177/1077558720975543

Schuttner L, Hockett Sherlock S, Simons C, Ralston JD, Rosland AM, Nelson K, et al. Factors affecting primary care physician decision-making for patients with complex multimorbidity: a qualitative interview study. *BMC Prim Care* 2022;23(1):25. doi: 10.1186/s12875-022-01633-x

10.1186/s12875-022-01633-x [pii]

Fudge N, Swinglehurst D. Keeping in balance on the multimorbidity tightrope: A narrative analysis of older patients' experiences of living with and managing multimorbidity. *Soc Sci Med* 2022;292:114532. doi: S0277-9536(21)00864-9 [pii]

10.1016/j.socscimed.2021.114532

Brown EL, Poltawski L, Pitchforth E, Richards SH, Campbell JL, Butterworth JE. Shared decision making between older people with multimorbidity and GPs: a qualitative study. *Br J Gen Pract* 2022. doi: BJGP.2021.0529 [pii]

10.3399/BJGP.2021.0529

Brown JB, Reichert SM, Boeckxstaens P, Stewart M, Fortin M. Responding to vulnerable patients with multimorbidity: an interprofessional team approach. *BMC Prim Care* 2022;23(1):62. doi: 10.1186/s12875-022-01670-6

10.1186/s12875-022-01670-6 [pii]

McCallum M, Gray CM, Hanlon P, et al. Exploring the utility of self-determination theory in complex interventions in multimorbidity: A qualitative analysis of patient experiences of the CARE Plus intervention. *Chronic Illn* 2021;17(4):433-50. doi: 10.1177/1742395319884106

Lun P, Tang JY, Lee JQ, et al. Barriers to appropriate prescribing in older adults with multimorbidity: A modified Delphi study. *Aging Med (Milton)* 2021;4(3):180-92. doi: 10.1002/agm2.12169

Chang K, Markle-Reid M, Valaitis R, et al. Optimizing the Meaningful Engagement of Older Adults With Multimorbidity and Their Caregivers as Research Partners: A Qualitative Study. *J Appl Gerontol* 2021;40(12):1807-17. doi: 10.1177/0733464820970811

Tang JY, Lun P, Teng PHJ, et al. Intervention elements and behavior change techniques to improve prescribing for older adults with multimorbidity in Singapore: a modified Delphi study. *Eur Geriatr Med* 2021 doi: 10.1007/s41999-021-00566-5

Ngangue P, Brown JB, Forgues C, et al. Evaluating the implementation of interdisciplinary patient-centred care intervention for people with multimorbidity in primary care: a qualitative study. *BMJ Open* 2021;11(9):e046914. doi: 10.1136/bmjopen-2020-046914

Adjognon OL, Shin MH, Steffen MJA, et al. Factors affecting primary care implementation for older veterans with multimorbidity in Veterans Health Administration (VA). *Health Serv Res* 2021;56 Suppl 1:1057-68. doi: 10.1111/1475-6773.13859

Mas MA, Miralles R, Heras C, et al. Designing a Person-Centred Integrated Care Programme for People with Complex Chronic Conditions: A Case Study from Catalonia. *Int J Integr Care* 2021;21(4):22. doi: 10.5334/ijic.5653

Foley L, Hynes L, Murphy AW, et al. 'Just keep taking them, keep hoping they'll work': A qualitative study of adhering to medications for multimorbidity. *Br J Health Psychol* 2021 doi: 10.1111/bjhp.12568

Bieri M, del Rio Carral M, Santiago-Delefosse M, et al. Beliefs about Polypharmacy among Home-Dwelling Older Adults Living with Multiple Chronic Conditions, Informal Caregivers and Healthcare Professionals: A Qualitative Study. *Healthcare (Basel)* 2021;9(9) doi: 10.3390/healthcare9091204

Ritz C, Sader J, Cairo Notari S, et al. Multimorbidity and clinical reasoning through the eyes of GPs: a qualitative study. *Fam Med Community Health* 2021;9(4) doi: 10.1136/fmch-2020-000798

Kivelitz L, Schafer J, Kanat M, et al. Patient-Centeredness in Older Adults With Multimorbidity: Results of an Online Expert Delphi Study. *Gerontologist* 2021;61(7):1008-18. doi: 10.1093/geront/gnaa223

Fudge N, Swinglehurst D. Keeping in balance on the multimorbidity tightrope: A narrative analysis of older patients' experiences of living with and managing multimorbidity. *Soc Sci Med* 2022;292:114532. doi: 10.1016/j.socscimed.2021.114532

Azad A, Svard V. Patients' with Multimorbidity and Psychosocial Difficulties and Their Views on Important Professional Competence for Rehabilitation Coordinators in the Return-to-Work Process. *Int J Environ Res Public Health* 2021;18(19) doi: 10.3390/ijerph181910280

O'Connor R, Eifler M, Russell AM, et al. Caregiver involvement in managing medications among older adults with multiple chronic conditions. *J Am Geriatr Soc* 2021;69(10):2916-22. doi: 10.1111/jgs.17337

Rivers PH, Langford N, Whitehead A, et al. What influences prescribing decisions in a multimorbidity and polypharmacy context on the acute medical unit? An interprofessional, qualitative study. *J Eval Clin Pract* 2021;27(5):1076-84. doi: 10.1111/jep.13519

Kanat M, Schaefer J, Kivelitz L, et al. Patient-centeredness in the multimorbid elderly: a focus group study. *BMC Geriatr* 2021;21(1):567. doi: 10.1186/s12877-021-02448-8

Aebi NJ, Caviezel S, Schaefer R, et al. A qualitative study to investigate Swiss hospital personnel's perceived importance of and experiences with patient's mental-somatic multimorbidities. *BMC Psychiatry* 2021;21(1):349. doi: 10.1186/s12888-021-03353-5

Rzewuska M, Carolina Guidorizzi Zanetti A, Skea ZC, et al. Mental-physical multimorbidity treatment adherence challenges in Brazilian primary care: A qualitative study with patients and their healthcare providers. *PLoS One* 2021;16(5):e0251320. doi: 10.1371/journal.pone.0251320

Boye LK, Mogensen CB, Andersen PT, et al. 'One feels somewhere that one is insignificant in that system' - older multimorbid patients' between lifeworld and system in healthcare. *BMC Geriatr* 2021;21(1):397. doi: 10.1186/s12877-021-02348-x

Brandberg C, Ekstedt M, Flink M. Self-management challenges following hospital discharge for patients with multimorbidity: a longitudinal qualitative study of a motivational interviewing intervention. *BMJ Open* 2021;11(7):e046896. doi: 10.1136/bmjopen-2020-046896

Mechili EA, Saliyaj A, Xhindoli J, et al. Primary healthcare personnel challenges and barriers on the management of patients with multimorbidity in Albania. *Health Soc Care Community* 2021 doi: 10.1111/hsc.13411

Sasseville M, Chouinard MC, Fortin M. Evaluating the content of a patient-reported outcome measure for people with multimorbidity: a Delphi consensus. *Qual Life Res* 2021;30(10):2951-60. doi: 10.1007/s11136-021-02888-0

Adjognon OL, Shin MH, Steffen MJA, et al. Factors affecting primary care implementation for older veterans with multimorbidity in Veterans Health Administration (VA). *Health Serv Res* 2021;56 Suppl 1:1057-68. doi: 10.1111/1475-6773.13859

Pohontsch NJ, Schulze J, Hoeflich C, et al. Quality of care for people with multimorbidity: a focus group study with patients and their relatives. *BMJ Open* 2021;11(6):e047025. doi: 10.1136/bmjopen-2020-047025

Dambha-Miller H, Simpson G, Hobson L, et al. Integrating primary care and social services for older adults with multimorbidity: a qualitative study. *Br J Gen Pract* 2021;71(711):e753-e61. doi: 10.3399/BJGP.2020.1100

Hamiduzzaman M, Torres S, Fletcher A, et al. Aging, care and dependency in multimorbidity: how do relationships affect older Bangladeshi women's use of homecare and health services? *J Women Aging* 2021:1-14. doi: 10.1080/08952841.2021.1951115

Hardman R, Begg S, Spelten E. Multimorbidity and its effect on perceived burden, capacity and the ability to self-manage in a low-income rural primary care population: A qualitative study. *PLoS One* 2021;16(8):e0255802. doi: 10.1371/journal.pone.0255802

Rijken M, Stussgen R, Leemrijse C, et al. Priorities and preferences for care of people with multiple chronic conditions. *Health Expect* 2021;24(4):1300-11. doi: 10.1111/hex.13262

Oksavik JD, Solbjor M, Kirchhoff R, et al. Games of uncertainty: the participation of older patients with multimorbidity in care planning meetings - a qualitative study. *BMC Geriatr* 2021;21(1):242. doi: 10.1186/s12877-021-02184-z

Markle-Reid M, Ganann R, Ploeg J, et al. Engagement of older adults with multimorbidity

as patient research partners: Lessons from a patient-oriented research program. *J Comorb* 2021;11:2633556521999508. doi: 10.1177/2633556521999508

Oksavik JD, Aarseth T, Solbjor M, et al. 'What matters to you?' Normative integration of an intervention to promote participation of older patients with multi-morbidity - a qualitative case study. *BMC Health Serv Res* 2021;21(1):117. doi: 10.1186/s12913-021-06106-y

Sasseville M, Chouinard MC, Fortin M. Understanding patient outcomes to develop a multimorbidity adapted patient-reported outcomes measure: a qualitative description of patient and provider perspectives. *Health Qual Life Outcomes* 2021;19(1):43. doi: 10.1186/s12955-021-01689-w

Kuipers SJ, Nieboer AP, Cramm JM. Making care more patient centered; experiences of healthcare professionals and patients with multimorbidity in the primary care setting. *BMC Fam Pract* 2021;22(1):70. doi: 10.1186/s12875-021-01420-0

Salive ME, Suls J, Farhat T, et al. National Institutes of Health Advancing Multimorbidity Research. *Med Care* 2021;59(7):622-24. doi: 10.1097/MLR.0000000000001565

Sand CD, Rahbek K, Willadsen TG, et al. Prioritizing social identities: Patients' perspective on living with multimorbidity. *J Comorb* 2021;11:26335565211009375. doi: 10.1177/26335565211009375

Kivelitz L, Schafer J, Kanat M, et al. Patient-centeredness in older adults with multimorbidity: Results of an online expert Delphi study. *Gerontologist* 2021 doi: 10.1093/geront/gnaa223

McKenzie KJ, Pierce D, Mercer SW, et al. Do GPs use motivational interviewing skills in routine consultations with patients living with mental-physical multimorbidity? An observational study of primary care in Scotland. *Chronic Illn* 2021;17(1):29-40. doi: 10.1177/1742395318815960

Tinetti ME, Costello DM, Naik AD, et al. Outcome Goals and Health Care Preferences of Older Adults With Multiple Chronic Conditions. *JAMA Netw Open* 2021;4(3):e211271. doi: 10.1001/jamanetworkopen.2021.1271

Cohen-Stavi CJ, Key C, Molcho T, et al. Mixed Methods Evaluation of Reasons Why Care Deviates From Clinical Guidelines Among Patients With Multimorbidity. *Med Care Res Rev* 2020:1077558720975543. doi: 10.1177/1077558720975543

Joensson ABR, Guassora AD, Freil M, et al. What the doctor doesn't know: Discarded patient knowledge of older adults with multimorbidity. *Chronic Illn* 2020;16(3):212-25. doi: 10.1177/1742395318796173

Peart A, Barton C, Lewis V, et al. The experience of care coordination for people living

with multimorbidity at risk of hospitalisation: an interpretative phenomenological analysis. *Psychol Health* 2020;35(10):1228-48. doi: 10.1080/08870446.2020.1743293

Chang K, Markle-Reid M, Valaitis R, et al. Optimizing the Meaningful Engagement of Older Adults With Multimorbidity and Their Caregivers as Research Partners: A Qualitative Study. *J Appl Gerontol* 2020:733464820970811. doi: 10.1177/0733464820970811

Ploeg J, Garnett A, Fraser KD, et al. The complexity of caregiving for community-living older adults with multiple chronic conditions: A qualitative study. *J Comorb* 2020;10:2235042X20981190. doi: 10.1177/2235042X20981190

Rivers PH, Langford N, Whitehead A, et al. What influences prescribing decisions in a multimorbidity and polypharmacy context on the acute medical unit? An interprofessional, qualitative study. *J Eval Clin Pract* 2020 doi: 10.1111/jep.13519

Kim J, Ha J. The Meaning of Work and Self-Management Experiences among Elderly Workers with Multiple Chronic Diseases: A Qualitative Study. *Healthcare (Basel)* 2020;8(4) doi: 10.3390/healthcare8040471

Corbett TK, Cummings A, Lee K, et al. Planning and optimising CHAT&PLAN: A conversation-based intervention to promote person-centred care for older people living with multimorbidity. *PLoS One* 2020;15(10):e0240516. doi: 10.1371/journal.pone.0240516

Heid AR, Gerber AR, Kim DS, et al. Timing of onset and self-management of multiple chronic conditions: A qualitative examination taking a lifespan perspective. *Chronic Illn* 2020;16(3):173-89. doi: 10.1177/1742395318792066

Rimmelzwaan LM, Bogerd MJL, Schumacher BMA, et al. Multimorbidity in General Practice: Unmet Care Needs From a Patient Perspective. *Front Med (Lausanne)* 2020;7:530085. doi: 10.3389/fmed.2020.530085

Porter T, Ong BN, Sanders T. Living with multimorbidity? The lived experience of multiple chronic conditions in later life. *Health (London)* 2020;24(6):701-18. doi: 10.1177/1363459319834997

Peart A, Lewis V, Barton C, et al. Healthcare professionals providing care coordination to people living with multimorbidity: An interpretative phenomenological analysis. *J Clin Nurs* 2020;29(13-14):2317-28. doi: 10.1111/jocn.15243

Portz JD, Lum HD, Bull S, et al. Perceptions of Patient Portal Use for Advance Directive Documentation among Older Adults with Multiple Chronic Conditions. *J Soc Work End Life Palliat Care* 2020;16(3):238-49. doi: 10.1080/15524256.2020.1771806

Williams A, Sethi B. The Predicament of Caring: Work Interferences and Health of Family Caregivers of Persons With Multiple Chronic Conditions. *Gerontol Geriatr Med* 2020;6:2333721420938933. doi: 10.1177/2333721420938933

Eckerblad J, Waldreus N, Stark AJ, et al. Symptom management strategies used by older community-dwelling people with multimorbidity and a high symptom burden - a

qualitative study. *BMC Geriatr* 2020;20(1):210. doi: 10.1186/s12877-020-01602-y

Green AR, Boyd CM, Gleason KS, et al. Designing a Primary Care-Based Deprescribing Intervention for Patients with Dementia and Multiple Chronic Conditions: a Qualitative Study. *J Gen Intern Med* 2020 doi: 10.1007/s11606-020-06063-y

Zulman DM, Slightam CA, Brandt K, et al. "They are interrelated, one feeds off the other": A taxonomy of perceived disease interactions derived from patients with multiple chronic conditions. *Patient Educ Couns* 2020;103(5):1027-32. doi: 10.1016/j.pec.2019.11.020

Peart A, Barton C, Lewis V, et al. The experience of care coordination for people living with multimorbidity at risk of hospitalisation: an interpretative phenomenological analysis. *Psychol Health* 2020:1-21. doi: 10.1080/08870446.2020.1743293

Peart A, Lewis V, Barton C, et al. Healthcare professionals providing care coordination to people living with multimorbidity: An interpretative phenomenological analysis. *J Clin Nurs* 2020;29(13-14):2317-28. doi: 10.1111/jocn.15243

Boeckxstaens P, Brown JB, Reichert SM, et al. Perspectives of specialists and family physicians in interprofessional teams in caring for patients with multimorbidity: a qualitative study. *CMAJ Open* 2020;8(2):E251-E56. doi: 10.9778/cmajo.20190222

Kuipers SJ, Nieboer AP, Cramm JM. Views of patients with multi-morbidity on what is important for patient-centered care in the primary care setting. *BMC Fam Pract* 2020;21(1):71. doi: 10.1186/s12875-020-01144-7

Jonsson AR, Reventlow S, Guassora AD. How Older Men With Multimorbidity Relate to Successful Aging. *J Gerontol B Psychol Sci Soc Sci* 2020;75(5):1104-12. doi: 10.1093/geronb/gbz019

Oksavik JD, Kirchhoff R, Sogstad MKR, et al. Sharing responsibility: municipal health professionals' approaches to goal setting with older patients with multi-morbidity - a grounded theory study. *BMC Health Serv Res* 2020;20(1):141. doi: 10.1186/s12913-020-4983-3

White C, Lentin P, Farnworth L. 'I know what I am doing': A grounded theory investigation into the activities and occupations of adults living with chronic conditions. *Scand J Occup Ther* 2020;27(1):56-65. doi: 10.1080/11038128.2019.1624818

Ngangue PA, Forgues C, Nguyen T, et al. Patients, caregivers and health-care professionals' experience with an interdisciplinary intervention for people with multimorbidity in primary care: A qualitative study. *Health Expect* 2020;23(2):318-27. doi: 10.1111/hex.13035

Foo KM, Sundram M, Legido-Quigley H. Facilitators and barriers of managing patients with multiple chronic conditions in the community: a qualitative study. *BMC Public Health* 2020;20(1):273. doi: 10.1186/s12889-020-8375-8

McCallum M, Gray CM, Hanlon P, et al. Exploring the utility of self-determination theory in complex interventions in multimorbidity: A qualitative analysis of patient experiences of the CARE Plus intervention. *Chronic Illn* 2019;1742395319884106. doi: 10.1177/1742395319884106

Stumm J, Thierbach C, Peter L, et al. Coordination of care for multimorbid patients from the perspective of general practitioners - a qualitative study. *BMC Fam Pract* 2019;**20**(1):160. doi: 10.1186/s12875-019-1048-y

Junius-Walker U, Schleef T, Vogelsang U, et al. How older patients prioritise their multiple health problems: a qualitative study. *BMC Geriatr* 2019;**19**(1):362. doi: 10.1186/s12877-019-1373-y

Sirois C, Lunghi C, Berthelot W, et al. Benefits, risks and impacts on quality of life of medications used in multimorbid older adults: a Delphi study. *Int J Clin Pharm* 2019 doi: 10.1007/s11096-019-00935-y

Ploeg J, Yous ML, Fraser K, et al. Healthcare providers' experiences in supporting community-living older adults to manage multiple chronic conditions: a qualitative study. *BMC Geriatr* 2019;**19**(1):316. doi: 10.1186/s12877-019-1345-2

Sultan M, Kuluski K, McIsaac WJ, et al. Turning challenges into design principles: Telemonitoring systems for patients with multiple chronic conditions. *Health Informatics J* 2019;**25**(4):1188-200. doi: 10.1177/1460458217749882

Tinetti M, Dindo L, Smith CD, et al. Challenges and strategies in patients' health priorities-aligned decision-making for older adults with multiple chronic conditions. *PLoS One* 2019;**14**(6):e0218249. doi: 10.1371/journal.pone.0218249

Cheng C, Bai J, Yang CY, et al. Patients' experiences of coping with multiple chronic conditions: A qualitative descriptive study. *J Clin Nurs* 2019 Dec;**28**(23-24):4400-4411 doi: 10.1111/jocn.15022

Morgan SA, Eyles C, Roderick PJ, et al. Women living with multi-morbidity in the Greater Accra Region of Ghana: a qualitative study guided by the Cumulative Complexity Model. *J Biosoc Sci* 2019;**51**(4):562-77. doi: 10.1017/S0021932018000342

Parker SG, Corner L, Laing K, et al. Priorities for research in multiple conditions in later life (multi-morbidity): findings from a James Lind Alliance Priority Setting Partnership. *Age Ageing* 2019;**48**(3):401-06. doi: 10.1093/ageing/afz014

Hausmann D, Kiesel V, Zimmerli L, et al. Sensitivity for multimorbidity: The role of diagnostic uncertainty of physicians when evaluating multimorbid video case-based vignettes. *PLoS One* 2019;**14**(4):e0215049. doi: 10.1371/journal.pone.0215049

Dekker J, Buurman BM, van der Leeden M. Exercise in people with comorbidity or multimorbidity. *Health Psychol* 2019;**38**(9):822-30. doi: 10.1037/hea0000750

Smith S, Murphy E, Hannigan C, et al. Supporting older people with multimorbidity: The care burden of home health-care assistants in Ireland. *Home Health Care Serv Q*

2019;**38**(3):241-55. doi: 10.1080/01621424.2019.1614506

Salter C, Shiner A, Lenaghan E, et al. Setting goals with patients living with multimorbidity: qualitative analysis of general practice consultations. *Br J Gen Pract* 2019;**69**(684):e479-e88. doi: 10.3399/bjgp19X704129

Ford JA, Lenaghan E, Salter C, et al. Can goal-setting for patients with multimorbidity improve outcomes in primary care? Cluster randomised feasibility trial. *BMJ Open* 2019;**9**(6):e025332. doi: 10.1136/bmjopen-2018-025332

Aye SKK, Hlaing HH, Htay SS, et al. Multimorbidity and health seeking behaviours among older people in Myanmar: A community survey. *PLoS One* 2019;**14**(7):e0219543. doi: 10.1371/journal.pone.0219543

Kuluski K, Peckham A, Gill A, et al. What is Important to Older People with Multimorbidity and Their Caregivers? Identifying Attributes of Person Centered Care from the User Perspective. *Int J Integr Care* 2019;**19**(3):4. doi: 10.5334/ijic.4655

Pariser P, Pham TT, Brown JB, et al. Connecting People With Multimorbidity to Interprofessional Teams Using Telemedicine. *Ann Fam Med* 2019;**17**(Suppl 1):S57-S62. doi: 10.1370/afm.2379

Hamilton AB, Wiltsey-Stirman S, Finley EP, et al. Usual Care Among Providers Treating Women Veterans: Managing Complexity and Multimorbidity in the Era of Evidence-Based Practice. *Adm Policy Ment Health* 2019 doi: 10.1007/s10488-019-00961-y

Prazeres F, Simoes JA. Key Factors to Consider in Team Meetings when Dealing with Multimorbidity in Primary Care: Results from a Delphi Panel. *Cureus* 2019;**11**(6):e4990. doi: 10.7759/cureus.4990

McKinlay E, McDonald J, Darlow B, et al. The social networks of New Zealand patients with multimorbidity and the work of those nominated as their 'significant supporters': An exploratory study. *Health Soc Care Community* 2019;**27**(2):392-99. doi: 10.1111/hsc.12657

Scholz Mellum J, Martsof DS, Glazer G, et al. How older adults with multimorbidity manage their own care within a formal care coordination program? *Geriatr Nurs* 2019;**40**(1):56-62. doi: 10.1016/j.gerinurse.2018.06.006

Cheng C, Inder K, Chan SW. Patients' experiences of coping with multiple chronic conditions: A meta-ethnography of qualitative work. *Int J Ment Health Nurs* 2019;**28**(1):54-70. doi: 10.1111/inm.12544

Jonsson AR, Reventlow S, Guassora AD. How Older Men with Multimorbidity Relate to Successful Aging. *J Gerontol B Psychol Sci Soc Sci* 2019 doi: 10.1093/geronb/gbz019

Thomas-Purcell KB, Jacobs RJ, Seidman TL, et al. A mixed analysis approach to elucidate the multiple chronic condition experience of English- and Spanish-speaking older adults.

Clinical interventions in aging 2019;**14**:407-18. doi: 10.2147/CIA.S193215

Porter T, Ong BN, Sanders T. Living with multimorbidity? The lived experience of multiple chronic conditions in later life. *Health (London)* 2019;1363459319834997. doi: 10.1177/1363459319834997

Ploeg J, Canesi M, K DF, et al. Experiences of community-dwelling older adults living with multiple chronic conditions: a qualitative study. *BMJ Open* 2019;**9**(3):e023345. doi: 10.1136/bmjopen-2018-023345

Schmidt S, Behrens J, Lautenschlaeger C, et al. Experiences with combined personal-online case management and the self-reliance of older people with multimorbidity living alone in private households: results of an interpretative-hermeneutical analysis. *Scand J Caring Sci* 2019 doi: 10.1111/scs.12691

Ortenblad L, Meillier L, Jonsson AR. Multi-morbidity: A patient perspective on navigating the health care system and everyday life. *Chronic Illn* 2018;**14**(4):271-82. doi: 10.1177/1742395317731607

Jarling A, Rydstrom I, Ernsth-Bravell M, et al. Becoming a guest in your own home: Home care in Sweden from the perspective of older people with multimorbidities. *Int J Older People Nurs* 2018;**13**(3):e12194. doi: 10.1111/opn.12194

McKinlay E, McDonald J, Darlow B, et al. The social networks of New Zealand patients with multimorbidity and the work of those nominated as their 'significant supporters': An exploratory study. *Health Soc Care Community* 2019;**27**(2):392-99. doi: 10.1111/hsc.12657

Heid AR, Gerber AR, Kim DS, et al. Timing of onset and self-management of multiple chronic conditions: A qualitative examination taking a lifespan perspective. *Chronic Illn* 2018;1742395318792066. doi: 10.1177/1742395318792066

Daker-White G, Hays R, Blakeman T, et al. Safety work and risk management as burdens of treatment in primary care: insights from a focused ethnographic study of patients with multimorbidity. *BMC Fam Pract* 2018;**19**(1):155. doi: 10.1186/s12875-018-0844-0

Scholz Mellum J, Martsof DS, Glazer G, et al. How older adults with multimorbidity manage their own care within a formal care coordination program? *Geriatr Nurs* 2019;**40**(1):56-62. doi: 10.1016/j.gerinurse.2018.06.006

Jones JA, Reeve CA. Factors influencing the use of clinical guidelines by general practitioners working in a setting of complex multimorbidity: a case study by interviews. *BMC Fam Pract* 2018;**19**(1):157. doi: 10.1186/s12875-018-0834-2

Joensson ABR, Guassora AD, Freil M, et al. What the doctor doesn't know: Discarded patient knowledge of older adults with multimorbidity. *Chronic Illn* 2018;1742395318796173. doi: 10.1177/1742395318796173

Laursen J, Kornholt J, Betzer C, et al. General Practitioners' Barriers Toward Medication

Reviews in Polymedicated Multimorbid Patients: How can a Focus on the Pharmacotherapy in an Outpatient Clinic Support GPs? *Health Serv Res Manag Epidemiol* 2018;**5**:2333392818792169. doi: 10.1177/2333392818792169

Verhoeff M, van der Zaag HJ, Vermeeren Y, et al. Secondary care experiences of patients with multiple chronic conditions. *Neth J Med* 2018;**76**(9):397-406.

Morgan SA, Eyles C, Roderick PJ, et al. Women living with multi-morbidity in the Greater Accra Region of Ghana: a qualitative study guided by the Cumulative Complexity Model. *J Biosoc Sci* 2018:1-16. doi: 10.1017/S0021932018000342

McKenzie KJ, Pierce D, Mercer SW, et al. Do GPs use motivational interviewing skills in routine consultations with patients living with mental-physical multimorbidity? An observational study of primary care in Scotland. *Chronic Illn* 2018:1742395318815960. doi: 10.1177/1742395318815960

Backman C, Stacey D, Crick M, et al. Use of participatory visual narrative methods to explore older adults' experiences of managing multiple chronic conditions during care transitions. *BMC Health Serv Res* 2018;**18**(1):482. doi: 10.1186/s12913-018-3292-6.

Mann C, Shaw A, Wye L, et al. A computer template to enhance patient-centredness in multimorbidity reviews: a qualitative evaluation in primary care. *Br J Gen Pract* 2018;**68**(672):e495-e504. doi: 10.3399/bjgp18X696353.

Ferris R, Blaum C, Kiwak E, et al. Perspectives of Patients, Clinicians, and Health System Leaders on Changes Needed to Improve the Health Care and Outcomes of Older Adults With Multiple Chronic Conditions. *J Aging Health* 2018;**30**(5):778-99. doi: 10.1177/0898264317691166.

Fredericksen RJ, Gibbons L, Brown S, et al. Medication understanding among patients living with multiple chronic conditions: Implications for patient-reported measures of adherence. *Res Social Adm Pharm* 2018;**14**(6):540-44. doi: 10.1016/j.sapharm.2017.06.009.

Francis H, Carryer J, Wilkinson J. Self-management support? Listening to people with complex co-morbidities. *Chronic Illn* 2018:1742395318796176. doi: 10.1177/1742395318796176.

Irfan Khan A, Gill A, Cott C, et al. mHealth Tools for the Self-Management of Patients With Multimorbidity in Primary Care Settings: Pilot Study to Explore User Experience. *JMIR Mhealth Uhealth* 2018;**6**(8):e171. doi: 10.2196/mhealth.8593.

van den Brink AMA, Gerritsen DL, de Valk MMH, et al. What do nursing home residents with mental-physical multimorbidity need and who actually knows this? A cross-sectional cohort study. *Int J Nurs Stud* 2018;**81**:89-97. doi: 10.1016/j.ijnurstu.2018.02.008.

Leijten FRM, Hoedemakers M, Struckmann V, et al. Defining good health and care from the perspective of persons with multimorbidity: results from a qualitative study of focus groups in eight European countries. *BMJ Open* 2018;**8**(8):e021072. doi: 10.1136/bmjopen-2017-02107.2

Macdonald GG, Townsend AF, Adam P, et al. eHealth Technologies, Multimorbidity, and the Office Visit: Qualitative Interview Study on the Perspectives of Physicians and Nurses. *J Med Internet Res* 2018;**20**(1):e31. doi: 10.2196/jmir.8983.

Slightam CA, Brandt K, Jenchura EC, et al. "I had to change so much in my life to live with my new limitations": Multimorbid patients' descriptions of their most bothersome chronic conditions. *Chronic Illn* 2018;**14**(1):13-24. doi: 10.1177/1742395317699448.

Patton DE, Cadogan CA, Ryan C, et al. Improving adherence to multiple medications in older people in primary care: Selecting intervention components to address patient-reported barriers and facilitators. *Health Expect* 2018;**21**(1):138-48. doi: 10.1111/hex.12595.

Pagones R, Lee JL, Hurst S. Long-Term Acupuncture Therapy for Low-Income Older Adults with Multimorbidity: A Qualitative Study of Patient Perceptions. *J Altern Complement Med* 2018;**24**(2):161-67. doi: 10.1089/acm.2017.0239.

Coyle LA, Atkinson S. Imagined futures in living with multiple conditions: Positivity, relationality and hopelessness. *Soc Sci Med* 2018;**198**:53-60. doi: 10.1016/j.socscimed.2017.12.022.

Heale R, James S, Wenghofer E, et al. Nurse practitioner's perceptions of the impact of the nurse practitioner-led clinic model on the quality of care of complex patients. *Prim Health Care Res Dev* 2018:1-8. doi: 10.1017/S1463423617000913

Leeder SR, Jowsey T, McNab JW. The experiences of patients and carers living with multimorbid, non-communicable diseases. *Aust J Gen Pract* 2018;**47**(1-2):24-27.

McKenzie KJ, Pierce D, Gunn JM. Guiding patients through complexity: Motivational interviewing for patients with multimorbidity. *Aust J Gen Pract* 2018;**47**(1-2):8-13.

Smith SM, Wallace E, Salisbury C, et al. A Core Outcome Set for Multimorbidity Research (COSmm). *Ann Fam Med* 2018;**16**(2):132-38. doi: 10.1370/afm.2178.

Jarling A, Rydstrom I, Ernsth-Bravell M, et al. Becoming a guest in your own home: Home care in Sweden from the perspective of older people with multimorbidities. *Int J Older People Nurs* 2018:e12194. doi: 10.1111/opn.12194.

van Merode T, van de Ven K, van den Akker M. Patients with multimorbidity and their treatment burden in different daily life domains: a qualitative study in primary care in the Netherlands and Belgium. *J Comorb* 2018;**8**(1):9-15. doi: 10.15256/joc.2018.8.119.

Brown S, Lhussier M, Dalkin SM, et al. Care Planning: What Works, for Whom, and in What Circumstances? A Rapid Realist Review. *Qual Health Res* 2018:1049732318768807. doi: 10.1177/1049732318768807.

Knowles S, Hays R, Senra H, et al. Empowering people to help speak up about safety in primary care: Using codesign to involve patients and professionals in developing new interventions for patients with multimorbidity. *Health Expect*. 2017.

Schoenborn NL, Cayea D, McNabney M, Ray A, Boyd C. Prognosis communication with older patients with multimorbidity: Assessment after an educational intervention. *Gerontol Geriatr Educ.* 2017;**38**(4):471-481.

Pagones R, Lee JL, Hurst S. Long-Term Acupuncture Therapy for Low-Income Older Adults with Multimorbidity: A Qualitative Study of Patient Perceptions. *J Altern Complement Med.* 2017.

Schiotz ML, Host D, Christensen MB, et al. Quality of care for people with multimorbidity - a case series. *BMC Health Serv Res.* 2017;**17**(1):745.

Hays R, Daker-White G, Esmail A, et al. Threats to patient safety in primary care reported by older people with multimorbidity: baseline findings from a longitudinal qualitative study and implications for intervention. *BMC Health Serv Res.* 2017;**17**(1):754.

Vermunt NP, Harmsen M, Elwyn G, et al. A three-goal model for patients with multimorbidity: A qualitative approach. *Health Expect.* 2017.

O'Malley AS, Sarwar R, Keith R, Balke P, Ma S, McCall N. Provider Experiences with Chronic Care Management (CCM) Services and Fees: A Qualitative Research Study. *J Gen Intern Med.* 2017;**32**(12):1294-1300.

Lim CY, Berry ABL, Hirsch T, et al. Understanding What Is Most Important to Individuals with Multiple Chronic Conditions: A Qualitative Study of Patients' Perspectives. *J Gen Intern Med.* 2017;**32**(12):1278-1284.

Ho JW, Kuluski K, Im J. "It's a fight to get anything you need" - Accessing care in the community from the perspectives of people with multimorbidity. *Health Expect.* 2017;**20**(6):1311-1319.

Christensen LD, Petersen J, Andersen O, Kaae S. Physicians' Non-Uniform Approach to Prescribing Drugs to Older Patients - A Qualitative Study. *Basic Clin Pharmacol Toxicol.* 2017;**121**(6):505-511.

Kristensen MAT, Holge-Hazelton B, Waldorff FB, Guassora AD. How general practitioners perceive and assess self-care in patients with multiple chronic conditions: a qualitative study. *BMC Fam Pract.* 2017;**18**(1):109

Runz-Jørgensen SM, Schiøtz ML, Christensen U. Perceived value of eHealth among people living with multimorbidity: a qualitative study. *Journal of Comorbidity.* 2017;**7**:96-111

McKinlay EM, Morgan SJ, Gray BV, Macdonald LM, Pullon SRH. Exploring interprofessional, interagency multimorbidity care: case study based observational research. *Journal of Comorbidity.* 2017;**7**:64-78

Signal L, Semper K, Stairmand J, et al. A walking stick in one hand and a chainsaw in

the other: patients' perspectives of living with multimorbidity. *N Z Med J*. 2017;**130**(1455):65-76

Ho JW, Kuluski K, Im J. "It's a fight to get anything you need" - Accessing care in the community from the perspectives of people with multimorbidity. *Health Expect*. 2017. doi: 10.1111/hex.12571.

Larsen A, Broberger E, Petersson P. Complex caring needs without simple solutions: the experience of interprofessional collaboration among staff caring for older persons with multimorbidity at home care settings. *Scand J Caring Sci*. 2017;**31**(2):342-350. doi: 10.1111/scs.12352.

Portalupi LB, Lewis CL, Miller CD, et al. Developing a patient and family research advisory panel to include people with significant disease, multimorbidity and advanced age. *Fam Pract*. 2017;**34**(3):364-369. doi: 10.1093/fampra/cmw138.

Leijten FRM, Struckmann V, van Ginneken E, et al. The SELFIE framework for integrated care for multi-morbidity: Development and description. *Health Policy*. 2017. doi: 10.1016/j.healthpol.2017.06.002.

Rosbach M, Andersen JS. Patient-experienced burden of treatment in patients with multimorbidity - A systematic review of qualitative data. *PLoS One*. 2017;**12**(6):e0179916. doi: 10.1371/journal.pone.0179916.

Bennett WL, Robbins CW, Bayliss EA, et al. Engaging Stakeholders to Inform Clinical Practice Guidelines That Address Multiple Chronic Conditions. *J Gen Intern Med*. 2017;**32**(8):883-890. doi: 10.1007/s11606-017-4039-5.

Lim CY, Berry ABL, Hirsch T, et al. Understanding What Is Most Important to Individuals with Multiple Chronic Conditions: A Qualitative Study of Patients' Perspectives. *J Gen Intern Med*. 2017. doi: 10.1007/s11606-017-4154-3.

van Dongen JJ, de Wit M, Smeets HW, Stoffers E, van Bokhoven MA, Daniels R. "They Are Talking About Me, but Not with Me": A Focus Group Study to Explore the Patient Perspective on Interprofessional Team Meetings in Primary Care. *Patient*. 2017.

Peacock S, Sethi B, Williams A, et al. Older Adult Spouses with Multiple Chronic Conditions: Challenges, Rewards, and Coping Strategies. *Can J Aging*. 2017;**36**(2):209-222.

Bennett WL, Robbins CW, Bayliss EA, et al. Engaging Stakeholders to Inform Clinical Practice Guidelines That Address Multiple Chronic Conditions. *J Gen Intern Med*. 2017.

Ploeg J, Matthew-Maich N, Fraser K, et al. Managing multiple chronic conditions in the community: a Canadian qualitative study of the experiences of older adults, family caregivers and healthcare providers. *BMC Geriatr*. 2017;**17**(1):40.

Sinnott C, Byrne M, Bradley CP. Improving medication management for patients with multimorbidity in primary care: a qualitative feasibility study of the MY COMRADE

implementation intervention. *Pilot Feasibility Stud.* 2017;**3**:14.

Stokes T, Tumilty E, Doolan-Noble F, Gauld R. Multimorbidity, clinical decision making and health care delivery in New Zealand Primary care: a qualitative study. *BMC Fam Pract.* 2017;**18**(1):51.

Slightam CA, Brandt K, Jenchura EC, Lewis ET, Asch SM, Zulman DM. "I had to change so much in my life to live with my new limitations": Multimorbid patients' descriptions of their most bothersome chronic conditions. *Chronic Illn.* 2017:1742395317699448.

Meranius MS, Josefsson K. Health and social care management for older adults with multimorbidity: a multiperspective approach. *Scand J Caring Sci.* 2017;**31**(1):96-103.

Mc Namara KP, Breken BD, Alzubaidi HT, et al. Health professional perspectives on the management of multimorbidity and polypharmacy for older patients in Australia. *Age Ageing.* 2017;**46**(2):291-299.

Boeckxstaens P, Willems S, Lanssens M, et al. A qualitative interpretation of challenges associated with helping patients with multiple chronic diseases identify their goals. *Journal of Comorbidity.* 2016;**6**:120-126.

Mc Namara KP, Breken BD, Alzubaidi HT, et al. Health professional perspectives on the management of multimorbidity and polypharmacy for older patients in Australia. *Age Ageing.* 2016.

Prazeres F, Santiago L. The Knowledge, Awareness, and Practices of Portuguese General Practitioners Regarding Multimorbidity and its Management: Qualitative Perspectives from Open-Ended Questions. *Int J Environ Res Public Health.* 2016;**13**(11).

Yuen HK, Vogtle LK. Multi-morbidity, disability and adaptation strategies among community-dwelling adults aged 75 years and older. *Disabil Health J.* 2016;**9**(4):593-599.

DiNapoli EA, Cinna C, Whiteman KL, Fox L, Appelt CJ, Kasckow J. Mental health treatment preferences and challenges of living with multimorbidity from the veteran perspective. *Int J Geriatr Psychiatry.* 2016;**31**(10):1097-1104.

van Summeren JJ, Haaijer-Ruskamp FM, Schuling J. Eliciting Preferences of Multimorbid Elderly Adults in Family Practice Using an Outcome Prioritization Tool. *J Am Geriatr Soc.* 2016;**64**(11):e143-e148.

Schiøtz ML, Høst D, Frølich A. Involving patients with multimorbidity in service planning: perspectives on continuity and care coordination. *Journal of Comorbidity.* 2016;**6**:95-102.

Bayliss EA, McQuillan DB, Ellis JL, et al. Using Electronic Health Record Data to Measure Care Quality for Individuals with Multiple Chronic Medical Conditions. *J Am Geriatr Soc.* 2016;**64**:1839-44.

Mallow JA, Theeke LA, Theeke E, Mallow BK. Using Multidisciplinary Focus Groups to

Inform the Development of mI SMART: A Nurse-Led Technology Intervention for Multiple Chronic Conditions. *Nurs Res Pract.* 2016;**2016**:7416728.

Lyles CR, Altschuler A, Chawla N, et al. User-Centered Design of a Tablet Waiting Room Tool for Complex Patients to Prioritize Discussion Topics for Primary Care Visits. *JMIR Mhealth Uhealth.* 2016;**4**:e108.

Boehmer KR, Hargraves IG, Allen SV, Matthews MR, Maher C, Montori VM. Meaningful conversations in living with and treating chronic conditions: development of the ICAN discussion aid. *BMC Health Serv Res.* 2016;**16**:514.

Steele Gray C, Khan AI, Kuluski K, et al. Improving Patient Experience and Primary Care Quality for Patients With Complex Chronic Disease Using the Electronic Patient-Reported

Outcomes Tool: Adopting Qualitative Methods Into a User-Centered Design Approach. *JMIR research protocols.* 2016;**5**:e28.

DiNapoli EA, Cinna C, Whiteman KL, Fox L, Appelt CJ, Kasckow J. Mental health treatment preferences and challenges of living with multimorbidity from the veteran perspective. *Int J Geriatr Psychiatry.* 2016;**31**:1097-104.

Larsen A, Broberger E, Petersson P. Complex caring needs without simple solutions: the experience of interprofessional collaboration among staff caring for older persons with multimorbidity at home care settings. *Scand J Caring Sci.* 2016.

Clyne B, Cooper JA, Hughes CM, Fahey T, Smith SM, team O-Ss. 'Potentially inappropriate or specifically appropriate?' Qualitative evaluation of general practitioners views on prescribing, polypharmacy and potentially inappropriate prescribing in older people. *BMC Fam Pract.* 2016;**17**:109.

de Vos A, Cramm JM, van Wijngaarden JD, Bakker TJ, Mackenbach JP, Nieboer AP. Understanding implementation of comprehensive geriatric care programs: a multiple perspective approach is preferred. *Int J Health Plann Manage.* 2016.

Meranius MS, Josefsson K. Health and social care management for older adults with multimorbidity: a multiperspective approach. *Scand J Caring Sci.* 2016.

Fried TR, Niehoff K, Tjia J, Redeker N, Goldstein MK. A Delphi process to address medication appropriateness for older persons with multiple chronic conditions. *BMC Geriatr.* 2016;**16**:67.

Meranius MS, Hammar LM. How does the healthcare system affect medication self-management among older adults with multimorbidity? *Scand J Caring Sci.* 2016;**30**:91-8.

Mason B, Nanton V, Epiphaniou E, et al. 'My body's falling apart.' Understanding the experiences of patients with advanced multimorbidity to improve care: serial interviews with patients and carers. *BMJ Support Palliat Care.* 2016;**6**:60-5.

White C, Lentin P, Farnworth L. Multimorbidity and the process of living with ongoing illness. *Chronic Illn.* 2016;**12**:83-97.

Schoenborn NL, Cayea D, McNabney M, Ray A, Boyd C. Prognosis Communication with Older Patients with Multimorbidity: Assessment after an Educational Intervention. *Gerontol Geriatr Educ*. 2016.

Ailabouni NJ, Nishtala PS, Mangin D, Tordoff JM. General practitioners' insight into deprescribing for the multimorbid older individual: a qualitative study. *Int J Clin Pract*. 2016;**70**:261-76.

Lindvall A, Kristensson J, Willman A, Holst G. Informal Care Provided by Family Caregivers: Experiences of Older Adults With Multimorbidity. *J Gerontol Nurs* 24(12):34-40. 2016;**42**:24-31.

Reed RL, Isherwood L, Ben-Tovim D: Why do older people with multi-morbidity experience unplanned hospital admissions from the community: a root cause analysis. *BMC Health Serv Res*. 2015;**15**(1):525.

Hjelm M, Holst G, Willman A, Bohman D, Kristensson J: The work of case managers as experienced by older persons (75+) with multi-morbidity - a focused ethnography. *BMC Geriatr*. 2015;**15**:168.

Cottrell E, Yardley S: Lived experiences of multimorbidity: An interpretative meta-synthesis of patients', general practitioners' and trainees' perceptions. *Chronic Illn*. 2015;**11**(4):279-303.

Zhou Y, Lundy JM, Humphris G, Mercer SW: Do multimorbidity and deprivation influence patients' emotional expressions and doctors' responses in primary care consultations?-- An exploratory study using multilevel analysis. *Patient Educ Couns*. 2015;**98**(9):1063-1070.

Summer Meranius M, Engstrom G: Experience of self-management of medications among older people with multimorbidity. *J Clin Nurs*. 2015;**24**(19-20):2757-2764.

Loeb DF, Binswanger IA, Candrian C, Bayliss EA: Primary care physician insights into a typology of the complex patient in primary care. *Ann Fam Med*. 2015;**13**(5):451-455.

McKinlay E, Graham S, Horrill P: Culturally and linguistically diverse patients' views of multimorbidity and general practice care. *J Prim Health Care*. 2015;**7**(3):228-235.

White C, Lentin P, Farnworth L: Multimorbidity and the process of living with ongoing illness. *Chronic Illn*. 2015.

Eckerblad J, Theander K, Ekdahl A, Jaarsma T, Hellstrom I: To adjust and endure: a qualitative study of symptom burden in older people with multimorbidity. *Appl Nurs Res*. 2015;**28**(4):322-327.

Procter S, Stewart K, Reeves D, Bowen L, Purdy S, Ridd M, Salisbury C. Complex consultations in primary care: a tool for assessing the range of health problems and issues addressed in general practice consultations. *BMC Fam Pract*. 2014;**15**:105.

Ancker JS, Witteman HO, Hafeez B, Provencher T, Van de Graaf M, Wei E. The invisible work of personal health information management among people with multiple chronic conditions: qualitative interview study among patients and providers. *J Med Internet Res*. 2015;**17**(6):e137.

Zulman DM, Jenchura EC, Cohen DM, Lewis ET, Houston TK, Asch SM. How Can eHealth Technology Address Challenges Related to Multimorbidity? Perspectives from Patients with Multiple Chronic Conditions. *J Gen Intern Med*. Aug 2015;**30**(8):1063-1070.

Kuluski K, Tracy CS, Upshur RE. Perceived risk factors of health decline: a qualitative study of hospitalized patients with multimorbidity. *Risk Manag Healthc Policy*. 2015;**8**:63-72.

Hansen H, Pohontsch N, van den Bussche H, Scherer M, Schafer I. Reasons for disagreement regarding illnesses between older patients with multimorbidity and their GPs - a qualitative study. *BMC Fam Pract*. 2015;**16**:68.

Zhou Y, Lundy JM, Humphris G, Mercer SW. Do multimorbidity and deprivation influence patients' emotional expressions and doctors' responses in primary care consultations? - An exploratory study using multilevel analysis. *Patient Educ Couns*. Sep 2015;**98**(9):1063-1070.

Sondergaard E, Willadsen TG, Guassora AD, et al. Problems and challenges in relation to the treatment of patients with multimorbidity: General practitioners' views and attitudes. *Scand J Prim Health Care*. Jun 2015;**33**(2):121-126.

Summer Meranius M, Engstrom G. Experience of self-management of medications among older people with multimorbidity. *J Clin Nurs*. Oct 2015;**24**(19-20):2757-2764.

Schoenborn NL, Boyd CM, McNabney M, Ray A, Cayea D. Current Practices and Opportunities in a Resident Clinic Regarding the Care of Older Adults with Multimorbidity. *J Am Geriatr Soc*. Aug 2015;**63**(8):1645-1651.

Tarrant C, Windridge K, Baker R, Freeman G, Boulton M. 'Falling through gaps': primary care patients' accounts of breakdowns in experienced continuity of care. *Fam Pract*. Feb 2015;**32**(1):82-87.

Eton DT, Ridgeway JL, Egginton JS, et al. Finalizing a measurement framework for the burden of treatment in complex patients with chronic conditions. *Patient Relat Outcome Meas*. 2015;**6**:117-126.

Gross CP, Fried TR, Tinetti ME, et al. Decision-making and cancer screening: A qualitative study of older adults with multiple chronic conditions. *Journal of geriatric oncology*. Mar 2015;**6**(2):93-100.

Zulman DM, Jenchura EC, Cohen DM, Lewis ET, Houston TK, Asch SM. How Can eHealth Technology Address Challenges Related to Multimorbidity? Perspectives from Patients with Multiple Chronic Conditions. *J Gen Intern Med*. Feb 18 2015.

Sinnott C, Hugh SM, Boyce MB, Bradley CP. What to give the patient who has everything? A qualitative study of prescribing for multimorbidity in primary care. *Br J Gen Pract*. Mar 2015;**65**(632):e184-191.

Cottrell E, Yardley S. Lived experiences of multimorbidity: An interpretative meta-synthesis of patients', general practitioners' and trainees' perceptions. *Chronic Illn.* Mar 12 2015.

Steele Gray C, Miller D, Kuluski K, Cott C. Tying eHealth Tools to Patient Needs: Exploring the Use of eHealth for Community-Dwelling Patients With Complex Chronic Disease and Disability. *JMIR research protocols.* 2014;**3**(4):e67.

Voils CI, Sleath B, Maciejewski ML. Patient perspectives on having multiple versus single prescribers of chronic disease medications: results of a qualitative study in a veteran population. *BMC Health Serv Res.* Oct 25 2014;**14**(1):490.

Coventry PA, Dickens C, Todd C. How does mental-physical multimorbidity express itself in lived time and space? A phenomenological analysis of encounters with depression and chronic physical illness. *Soc Sci Med.* Oct 2014;**118**:108-118.

Wensing M, Huntink E, van Lieshout J, Godycki-Cwirko M, Kowalczyk A, Jager C, Steinhäuser J, Aakhus E, Flottorp S, Eccles M, Baker R. Tailored implementation of evidence-based practice for patients with chronic diseases. *PLoS One.* 2014;**9**(7):e101981.

Coventry PA, Fisher L, Kenning C, Bee P, Bower P. Capacity, responsibility, and motivation: a critical qualitative evaluation of patient and practitioner views about barriers to self-management in people with multimorbidity. *BMC Health Serv Res.* Oct 31 2014;**14**(1):536.

Clarke LH, Bennett EV, Korotchenko A. Negotiating vulnerabilities: how older adults with multiple chronic conditions interact with physicians. *Can J Aging.* Mar 2014;**33**(1):26-37.

Bayliss EA, Bonds DE, Boyd CM, Davis MM, Finke B, Fox MH, Glasgow RE, Goodman RA, Heurtin-Roberts S, Lachenmayr S, Lind C, Madigan EA, Meyers DS, Mintz S, Nilsen WJ, Okun S, Ruiz S, Salive ME, Stange KC. Understanding the context of health for persons with multiple chronic conditions: moving from what is the matter to what matters. *Ann Fam Med.* May-Jun 2014;**12**(3):260-269.

Ridgeway JL, Egginton JS, Tiedje K, Linzer M, Boehm D, Poplau S, de Oliveira DR, Odell L, Montori VM, Eton DT. Factors that lessen the burden of treatment in complex patients with chronic conditions: a qualitative study. *Patient Prefer Adherence.* 2014;**8**:339-351.

Gill A, Kuluski K, Jaakkimainen L, Naganathan G, Upshur R, Wodchis WP. "Where Do We Go from Here?" Health System Frustrations Expressed by Patients with Multimorbidity, Their Caregivers and Family Physicians. *Healthc Policy.* May 2014;**9**(4):73-89.

Ong BN, Richardson JC, Porter T, Grime J. Exploring the relationship between multimorbidity, resilience and social connectedness across the lifecourse. *Health (London).* Aug 28 2013.

Vos HM, Bor HH, Rangelrooij-Minkels MJ, Schellevis FG, Lagro-Janssen AL. Multimorbidity in older women: the negative impact of specific combinations of chronic conditions on self-rated health. *Eur J Gen Pract.* Jun 2013;**19**(2):117-122.

Mc Sharry J, Bishop FL, Moss-Morris R, Kendrick T. 'The chicken and egg thing': cognitive representations and self-management of multimorbidity in people with diabetes and depression. *Psychol Health.* 2013;**28**(1):103-119.

Walker C. Multiple conditions: exploring literature from the consumer perspective in Australia. *Health Expectations.* Oct 11 2012.

Grundberg A, Ebbeskog B, Dahlgren MA, Religa D. How community-dwelling seniors with

multimorbidity conceive the concept of mental health and factors that may influence it: A phenomenographic study. *Int J Qual Stud Health Well-being*. 2012;**7**:1-13.

Newbould J, Burt J, Bower P, et al. Experiences of care planning in England: interviews with patients with long term conditions. *BMC Fam Pract*. 2012;**13**:71.

Junius-Walker U, Wrede J, Schleef T, et al. What is important, what needs treating? How GPs perceive older patients' multiple health problems: a mixed method research study. *BMC Res Notes*. Aug 16 2012;**5**(1):443.

Loffler C, Kaduszkiewicz H, Stolzenbach CO, et al. Coping with multimorbidity in old age - a qualitative study. *BMC Fam Pract*. 2012;**13**:45.

Ek Dahl AW, Hellstrom I, Andersson L, Friedrichsen M. Too complex and time-consuming to fit in! Physicians' experiences of elderly patients and their participation in medical decision making: a grounded theory study. *BMJ Open*. 2012;**2**(3).

Schuling J, Gebben H, Veehof LJ, Haaijer-Ruskamp FM. Deprescribing medication in very elderly patients with multimorbidity: the view of Dutch GPs. A qualitative study. *BMC Fam Pract*. 2012;**13**:56.

Luijckx HD, Loeffen MJ, Lagro-Janssen AL, van Weel C, Lucassen PL, Schermer TR. GPs' considerations in multimorbidity management: a qualitative study. *Br J Gen Pract*. Jul 2012;**62**(600):e503-510.

Stanners MN, Barton CA, Shakib S, Winefield HR. A qualitative investigation of the impact of multimorbidity on GP diagnosis and treatment of depression in Australia. *Aging Ment Health*. Jul 27 2012.

Wrede J, Voigt I, Bleidorn J, Hummers-Pradier E, Dierks ML, Junius-Walker U. Complex health care decisions with older patients in general practice: Patient-centeredness and prioritization in consultations following a geriatric assessment. *Patient Educ Couns*. Aug 8 2012.

Mc Sharry J, Bishop FL, Moss-Morris R, Kendrick T. 'The chicken and egg thing': Cognitive representations and self-management of multimorbidity in people with diabetes and depression. *Psychol Health*. Aug 28 2012.

McCann L, Lloyd F, Parsons C, et al. "They come with multiple morbidities": a qualitative assessment of pharmacist prescribing. *J Interprof Care*. Mar 2012;**26**(2):127-133.

Bower P, Harkness E, Macdonald W, Coventry P, Bundy C, Moss-Morris R. Illness representations in patients with multimorbid long-term conditions: Qualitative study. *Psychol Health*. Mar 5 2012.

Townsend A. Applying Bourdieu's theory to accounts of living with multimorbidity. *Chronic Illn* 2011 Dec 2 [Epub ahead of print]. 2011.

Bower P, Macdonald W, Harkness E, et al. Multimorbidity, service organization and clinical decision making in primary care: a qualitative study. *Fam Pract* 2011;**28**(5):579-87.

O'Brien R, Wyke S, Guthrie B, Watt G, Mercer S. An 'endless struggle': a qualitative study of general practitioners' and practice nurses' experiences of managing multimorbidity in socio-economically deprived areas of Scotland. *Chronic Illn*. 2011. **7**:45-59.

Smith SM, O'Kelly S, O'Dowd T. GPs' and pharmacists' experiences of managing multimorbidity: a 'Pandora's box'. *Br J Gen Pract*. 2010. **60**(576):285-94.

- Lugtenberg M, Zegers-van Schaick JM, Westert GP, Burgers JS. Why don't physicians adhere to guideline recommendations in practice? An analysis of barriers among Dutch general practitioners. *Implement Sci.* 2009. **4**:54.
- Sells D, Sledge WH, Wieland M, Walden D, Flanagan E, Miller R, Davidson L. Cascading crises, resilience and social support within the onset and development of multiple chronic conditions. *Chronic Illn.* 2009. **5**(2):92-102.
- Schoenberg NE, Leach C, Edwards W. "It's a toss up between my hearing, my heart, and my hip": prioritizing and accommodating multiple morbidities by vulnerable older adults. *J Health Care Poor Underserved.* 2009. **20**(1):134-51.
- Elliott, R. A., D. Ross-Degnan, et al. "Strategies for coping in a complex world: adherence behavior among older adults with chronic illness." *Journal of General Internal Medicine* 2007. **22**(6): 805-10.
- Leach CR, Schoenberg NE. Striving for control: cognitive, self-care, and faith strategies employed by vulnerable black and white older adults with multiple chronic conditions. *J Cross Cult Gerontol.* 2008. **23**(4):377-99.
- Bayliss, E.A., et al., Descriptions of barriers to self-care by persons with comorbid chronic diseases. *Ann Fam Med*, 2003. **1**: p. 15-21.
- Christensen, R.E., M.D. Fetters, and L.A. Green, Opening the black box: Cognitive strategies in family practice. *Ann Fam Med*, 2005. **3**: p. 144-150.
- Jerant, A.F., M.M. von Friederichs-Fitzwater, and M. Moore, Patients' perceived barriers to active self-management of chronic conditions. *Patient Education & Counseling*, 2005. **57**(3): p. 300-7.
- Noel, P.H., et al., Collaborative care needs and preferences of primary care patients with multimorbidity. *Health Expectations*, 2005. **8**(1): p. 54-63.
- Roberto, K.A., C.M. Gigliotti, and E.K. Husser, Older women's experiences with multiple health conditions: daily challenges and care practices. *Health Care Women Int*, 2005. **26**: p. 672-92.
- Townsend, A., K. Hunt, and S. Wyke, Managing multiple morbidity in mid-life: a qualitative study of attitudes to drug use. *BMJ*, 2003. **327**(7419): p. 837.
- Williams, A., Patients with comorbidities: perceptions of acute care services. *Journal of Advanced Nursing*, 2004. **46**(1): p. 13-22.

8. INTERVENTION IDEAS

Bricca A, Jäger M, Dideriksen M, Rasmussen H, Nyberg M, Pedersen JR, et al. Personalised exercise therapy and self-management support for people with multimorbidity: Development of the MOBILIZE intervention. *Pilot Feasibility Stud.* 2022;8(1):244.

Carrier H, Zaytseva A, Bocquier A, Villani P, Fortin M, Verger P. General practitioners' attitude towards cooperation with other health professionals in managing patients with multimorbidity and polypharmacy: A cross-sectional study. *Eur J Gen Pract.* 2022;28(1):109-17.

Doyle J, McAleer P, van Leeuwen C, Smith S, Murphy E, Sillevs Smitt M, et al. The role of phone-based triage nurses in supporting older adults with multimorbidity to digitally self-manage - Findings from the ProACT proof-of-concept study. *Digit Health.* 2022;8:20552076221131140.

Eriksen CU, Kamstrup-Larsen N, Birke H, Holding SAL, Ghith N, Andersen JS, et al. Models of care for improving health-related quality of life, mental health, or mortality in persons with multimorbidity: A systematic review of randomized controlled trials. *J Multimorb Comorb.* 2022;12:26335565221134017.

Gonçalves MIR, Mendes DA, Caldeira S, Jesus E, Nunes E. Nurse-led care management models for patients with multimorbidity in hospital settings: A scoping review. *J Nurs Manag.* 2022;30(6):1960-73.

Huang H, Wang HHX, Donaghy E, Henderson D, Mercer SW. Using self-determination theory in research and evaluation in primary care. *Health Expect.* 2022;25(6):2700-8.

Jih J, Nguyen A, Woo J, Tran WC, Wang A, Gonzales N, et al. A photo-based communication intervention to promote diet-related discussions among older adults with multi-morbidity. *J Am Geriatr Soc.* 2022.

Kutz A, Koch D, Haubitz S, Conca A, Baechli C, Regez K, et al. Association of Interprofessional Discharge Planning Using an Electronic Health Record Tool With Hospital Length of Stay Among Patients with Multimorbidity: A Nonrandomized Controlled Trial. *JAMA Netw Open.* 2022;5(9):e2233667.

Lammila-Escalera E, Greenfield G, Barber S, Nicholls D, Majeed A, Hayhoe BWJ. A Systematic Review of Interventions that Use Multidisciplinary Team Meetings to Manage Multimorbidity in Primary Care. *Int J Integr Care.* 2022;22(4):6.

Martínez-Velilla N, Galbete A, Roso-Llorach A, Zambom-Ferraresi F, Sáez de Asteasu ML, Izquierdo M, et al. Specific multimorbidity patterns modify the impact of an exercise intervention in older hospitalized adults. *J Multimorb Comorb.* 2022;12:26335565221145461.

McCarthy C, Pericin I, Smith SM, Kiely B, Moriarty F, Wallace E, et al. Patient and general practitioner experiences of implementing a medication review intervention in older people with multimorbidity: Process evaluation of the SPPiRE trial. *Health Expect.* 2022;25(6):3225-37.

McParland C, Johnston B, Cooper M. A mixed-methods systematic review of nurse-led interventions for people with multimorbidity. *J Adv Nurs.* 2022;78(12):3930-51.

Mesa-Melgarejo L, Carreño Moreno S, Chaparro-Diaz L, Quintero González LA, Garcia-Quintero D, Carrillo-Algarra AJ, et al. Effectiveness of a case management model for people with multimorbidity: Mixed methods study. *J Adv Nurs*. 2022;78(11):3830-46.

Michiels-Corsten M, Gerlach N, Junius-Walker U, Schleef T, Donner-Banzhoff N, Viniol A. MediQuit - an electronic deprescribing tool: a pilot study in German primary care; GPs' and patients' perspectives. *BMC Prim Care*. 2022;23(1):252.

Nicholson K, Makovski TT, Nagyova I, van den Akker M, Stranges S. Strategies to improve health status among adults with multimorbidity: A scoping review. *Maturitas*. 2023;167:24-31.

Peter L, Stumm J, Wäscher C, Kümpel L, Heintze C, Döpfmer S. COMPASS II-Coordination of Medical Professions Aiming at Sustainable Support Protocol for a feasibility study of cooperation between general practitioner practices and community care points. *PLoS One*. 2022;17(9):e0273212.

Rankin A, Gorman A, Cole J, Cadogan CA, Barry HE, Agus A, et al. An external pilot cluster randomised controlled trial of a theory-based intervention to improve appropriate polypharmacy in older people in primary care (PolyPrime). *Pilot Feasibility Stud*. 2022;8(1):203.

Schulze J, Glassen K, Pohontsch NJ, Blozik E, Eißing T, Breckner A, et al. Measuring the Quality of Care for Older Adults With Multimorbidity: Results of the MULTiQual Project. *Gerontologist*. 2022;62(8):1135-46.

Sheng Y, Doyle J, Bond R, Jaiswal R, Gavin S, Dinsmore J. Home-based digital health technologies for older adults to self-manage multiple chronic conditions: A data-informed analysis of user engagement from a longitudinal trial. *Digit Health*. 2022;8:20552076221125957.

Thevelin S, Péteïn C, Metry B, Adam L, van Herksen A, Murphy K, et al. Experience of hospital-initiated medication changes in older people with multimorbidity: a multicentre mixed-methods study embedded in the OPTimising thERapy to prevent Avoidable hospital admissions in Multimorbid older people (OPERAM) trial. *BMJ Qual Saf*. 2022;31(12):888-98.

Yang C, Lee DTF, Wang X, Chair SY. Effects of a nurse-led medication self-management intervention on medication adherence and health outcomes in older people with multimorbidity: A randomised controlled trial. *Int J Nurs Stud*. 2022;134:104314.

Tang, J.Y., Lun, P., Teng, P.H.J., Ang, W., Tan, K.T. and Ding, Y.Y. (2022). Intervention elements and behavior change techniques to improve prescribing for older adults with multimorbidity in Singapore: a modified Delphi study. *European Geriatric Medicine*, [online] 13(3), pp.531–539. doi:10.1007/s41999-021-00566-5.

Milne-Ives, M., Fraser, L.K., Khan, A., Walker, D., van Velthoven, M.H., May, J., Wolfe, I., Harding, T. and Meinert, E. (2022). Life Course Digital Twins-Intelligent Monitoring for Early and Continuous Intervention and Prevention (LifeTIME): Proposal for a Retrospective Cohort Study. *JMIR research protocols*, [online] 11(5), p.e35738. doi:10.2196/35738.

Del Cura-González, I., López-Rodríguez, J.A., Leiva-Fernández, F., Gimeno-Miguel, A., Poblador-Plou, B., López-Verde, F., Lozano-Hernández, C., Pico-Soler, V., Bujalance-Zafra, M.J., Gimeno-Feliu, L.A., Aza-Pascual-Salcedo, M., Rogero-Blanco, M., González-Rubio, F., García-de-Blas, F., Polentinos-Castro, E., Sanz-Cuesta, T., Castillo-Jimena, M., Alonso-

García, M., Calderón-Larrañaga, A. and Valderas, J.M. (2022). How to Improve Healthcare for Patients with Multimorbidity and Polypharmacy in Primary Care: A Pragmatic Cluster-Randomized Clinical Trial of the MULTIPAP Intervention. *Journal of Personalized Medicine*, [online] 12(5), p.752. doi:10.3390/jpm12050752.

Moreno, A., Moreno, J., Salas, S., González, V., Valido, A., Guardia, P., Luque, L., Reales, A., Machuca, M., Montblanc, E., Garcia, C. and de la Vega, J.M. (2022). CroniCare: Platform for the Design and Implementation of Follow-Up, Control and Self-Management Interventions for Chronic and Multimorbidity Patients Based on Mobile Technologies. *Studies in Health Technology and Informatics*, [online] 290, pp.1012–1013. doi:10.3233/SHTI220243.

Ali, M.U., Sherifali, D., Fitzpatrick-Lewis, D., Kenny, M., Lamarche, L., Raina, P. and Mangin, D. (2022). Interventions to address polypharmacy in older adults living with multimorbidity: Review of reviews. *Canadian family physician Medecin de famille canadien*, [online] 68(7), pp.e215–e226. doi:10.46747/cfp.6807e215.

McAiney, C., Markle-Reid, M., Ganann, R., Whitmore, C., Valaitis, R., Urajnik, D.J., Fisher, K., Ploeg, J., Petrie, P., McMillan, F. and McElhaney, J.E. (2022). Implementation of the Community Assets Supporting Transitions (CAST) transitional care intervention for older adults with multimorbidity and depressive symptoms: A qualitative descriptive study. *PLOS ONE*, 17(8), p.e0271500. doi:10.1371/journal.pone.0271500.

Carretero-Gómez, J., Pérez-Martínez, P., Seguí-Ripoll, J.M., Carrasco-Sánchez, F.J., Lois Martínez, N., Fernández Pérez, E., Pérez Hernández, O., García Ordoñez, M.Á., Martín González, C., Viguera-Pérez, J.F., Puchades, F., Blasco Avaria, M.C., Pérez Soto, M.I., Ena, J., Arévalo-Lorido, J.C. and On Behalf Of Diabetes Obesity And Nutrition Working Group Of Spanish Society Of Internal Medicine (2022). High-Risk Obesity Phenotypes: Target for Multimorbidity Prevention at the ROFEMI Study. *Journal of Clinical Medicine*, [online] 11(16), p.4644. doi:10.3390/jcm11164644.

Schweda, S., Munz, B., Burgstahler, C., Niess, A.M., Roesel, I., Sudeck, G. and Krauss, I. (2022). Proof of Concept of a 6-Month Person-Oriented Exercise Intervention 'MultiPill-Exercise' among Patients at Risk of or with Multiple Chronic Diseases: Results of a One-Group Pilot Trial. *International Journal of Environmental Research and Public Health*, [online] 19(15), p.9469. doi:10.3390/ijerph19159469.

Yang, C., Lee, D.T.F., Wang, X. and Chair, S.Y. (2022). Effects of a nurse-led medication self-management intervention on medication adherence and health outcomes in older people with multimorbidity: A randomised controlled trial. *International Journal of Nursing Studies*, 134, p.104314. doi:10.1016/j.ijnurstu.2022.104314.

Skou, S.T., Mair, F.S., Fortin, M., Guthrie, B., Nunes, B.P., Miranda, J.J., Boyd, C.M., Pati, S., Mtenga, S. and Smith, S.M. (2022). Multimorbidity. *Nature Reviews Disease Primers*, [online] 8(1), pp.1–22. doi:10.1038/s41572-022-00376-4.

Ahmed, A., Khan, H.T.A. and Lawal, M. (2022). Effective Hospital Care Delivery Model for Older People in Nigeria with Multimorbidity: Recommendations for Practice. *Healthcare (Basel, Switzerland)*, [online] 10(7), p.1268. doi:10.3390/healthcare10071268.

Del Cura-González, I., López-Rodríguez, J.A., Leiva-Fernández, F., Gimeno-Miguel, A., Poblador-Plou, B., López-Verde, F., Lozano-Hernández, C., Pico-Soler, V., Bujalance-Zafra, M.J., Gimeno-Feliu, L.A., Aza-Pascual-Salcedo, M., Rogero-Blanco, M., González-Rubio, F., García-de-Blas, F., Polentinos-Castro, E., Sanz-Cuesta, T., Castillo-Jimena, M., Alonso-

García, M., Calderón-Larrañaga, A. and Valderas, J.M. (2022). How to Improve Healthcare for Patients with Multimorbidity and Polypharmacy in Primary Care: A Pragmatic Cluster-Randomized Clinical Trial of the MULTIPAP Intervention. *Journal of Personalized Medicine*, [online] 12(5), p.752. doi:10.3390/jpm12050752.

Yang, C., Lee, D.T.F., Wang, X. and Chair, S.Y. (2022). Effects of a nurse-led medication self-management intervention on medication adherence and health outcomes in older people with multimorbidity: A randomised controlled trial. *International Journal of Nursing Studies*, 134, p.104314. doi:10.1016/j.ijnurstu.2022.104314.

Schweda, S., Munz, B., Burgstahler, C., Niess, A.M., Roesel, I., Sudeck, G. and Krauss, I. (2022). Proof of Concept of a 6-Month Person-Oriented Exercise Intervention 'MultiPill-Exercise' among Patients at Risk of or with Multiple Chronic Diseases: Results of a One-Group Pilot Trial. *International Journal of Environmental Research and Public Health*, [online] 19(15), p.9469. doi:10.3390/ijerph19159469.

Bell C, Appel CW, Frolich A, Prior A, Vedsted P. Improving Health Care for Patients with Multimorbidity: A Mixed-Methods Study to Explore the Feasibility and Process of Aligning Scheduled Outpatient Appointments through Collaboration between Medical Specialties. *Int J Integr Care* 2022;22(1):17. doi: 10.5334/ijic.6013

Zamorano P, Munoz P, Espinoza M, Tellez A, Varela T, Suarez F, et al. Impact of a high- risk multimorbidity integrated care implemented at the public health system in Chile. *PLoS One* 2022;17(1):e0261953. doi: 10.1371/journal.pone.0261953. PONE-D-21-28230 [pii]

Gillespie P, Hobbins A, O'Toole L, Connolly D, Boland F, Smith SM. Cost-effectiveness of an occupational therapy-led self-management support programme for multimorbidity in primary care. *Fam Pract* 2022. doi: 6523188 [pii] 10.1093/fampra/cmacc006

Yen KH, Hsu CC, Yu PC, et al. Determinants of improved quality of life among older adults with multimorbidity receiving integrated outpatient services: A hospital-based retrospective cohort study. *Arch Gerontol Geriatr* 2021;97:104475. doi: 10.1016/j.archger.2021.104475

Chan MLT, Yu DSF. The effects of low-impact moderate-intensity stepping exercise on fatigue and other functional outcomes in older adults with multimorbidity: A randomized controlled trial. *Arch Gerontol Geriatr* 2022;98:104577. doi: 10.1016/j.archger.2021.104577

Fortin M, Stewart M, Almirall J, et al. One year follow-up and exploratory analysis of a patient-centered interdisciplinary care intervention for multimorbidity. *J Comorb* 2021;11:26335565211039780. doi: 10.1177/26335565211039780

Pineiro-Fernandez JC, Fernandez-Rial A, Suarez-Gil R, et al. Evaluation of a patient-centered integrated care program for individuals with frequent hospital readmissions and multimorbidity. *Intern Emerg Med* 2021 doi: 10.1007/s11739-021-02876-9

Khunti K, Highton PJ, Waheed G, et al. Promoting physical activity with self-management support for those with multimorbidity: a randomised controlled trial. *Br J Gen Pract* 2021;71(713):e921-e30. doi: 10.3399/BJGP.2021.0172

Lear SA, Norena M, Banner D, et al. Assessment of an Interactive Digital Health-Based

Self-management Program to Reduce Hospitalizations Among Patients With Multiple Chronic Diseases: A Randomized Clinical Trial. *JAMA Netw Open* 2021;4(12):e2140591. doi: 10.1001/jamanetworkopen.2021.40591

Kari H, Aijo-Jensen N, Kortejarvi H, et al. Effectiveness and cost-effectiveness of a people-centred care model for community-living older people versus usual care horizontal line A randomised controlled trial. *Res Social Adm Pharm* 2021 doi: 10.1016/j.sapharm.2021.07.0255

Kiely B, Connolly D, Clyne B, et al. Primary care-based link workers providing social prescribing to improve health and social care outcomes for people with multimorbidity in socially deprived areas (the LinkMM trial): Pilot study for a pragmatic randomised controlled trial. *J Comorb* 2021;11:26335565211017781. doi: 10.1177/26335565211017781

Looman W, Struckmann V, Koppen J, et al. Drivers of successful implementation of integrated care for multi-morbidity: Mechanisms identified in 17 case studies from 8 European countries. *Soc Sci Med* 2021;277:113728. doi: 10.1016/j.socscimed.2021.113728

Markle-Reid M, McAiney C, Fisher K, et al. Effectiveness of a nurse-led hospital-to-home transitional care intervention for older adults with multimorbidity and depressive symptoms: A pragmatic randomized controlled trial. *PLoS One* 2021;16(7):e0254573. doi: 10.1371/journal.pone.0254573

O'Toole L, Connolly D, Boland F, et al. Effect of the OPTIMAL programme on self-management of multimorbidity in primary care: a randomised controlled trial. *Br J Gen Pract* 2021;71(705):e303-e11. doi: 10.3399/bjgp20X714185

Fortin M, Stewart M, Ngangue P, et al. Scaling Up Patient-Centered Interdisciplinary Care for Multimorbidity: A Pragmatic Mixed-Methods Randomized Controlled Trial. *Ann Fam Med* 2021;19(2):126-34. doi: 10.1370/afm.2650

Stewart M, Fortin M, Brown JB, et al. Patient-centred innovation for multimorbidity care: a mixed-methods, randomised trial and qualitative study of the patients' experience. *Br J Gen Pract* 2021;71(705):e320-e30. doi: 10.3399/bjgp21X714293

Porter I, Davey A, Gangannagaripalli J, et al. Integrating Patient Reported Outcome Measures (PROMs) into routine nurse-led primary care for patients with multimorbidity: a feasibility and acceptability study. *Health Qual Life Outcomes* 2021;19(1):133. doi: 10.1186/s12955-021-01748-2

Moreno-Chico C, Roy C, Monforte-Royo C, et al. Effectiveness of a nurse-led, face-to-face health coaching intervention in enhancing activation and secondary outcomes of primary care users with chronic conditions. *Res Nurs Health* 2021;44(3):458-72. doi: 10.1002/nur.22132

Mayr FB, Plowman JL, Blakowski S, et al. Feasibility of a Home-Based Palliative Care Intervention for Elderly Multimorbid Survivors of Critical Illness. *Am J Crit Care* 2021;30(1):e12-e31. doi: 10.4037/ajcc2021117

Williams K, Markwardt S, Kearney SM, et al. Addressing Implementation Challenges to Digital Care Delivery for Adults With Multiple Chronic Conditions: Stakeholder Feedback in a Randomized Controlled Trial. *JMIR Mhealth Uhealth* 2021;9(2):e23498. doi: 10.2196/23498

Fisher K, Markle-Reid M, Ploeg J, et al. Self-management program versus usual care for community-dwelling older adults with multimorbidity: A pragmatic randomized controlled trial in Ontario, Canada. *J Comorb* 2020;10:2235042X20963390. doi: 10.1177/2235042X20963390

Rahman FI, Aziz F, Huque S, et al. Medication understanding and health literacy among patients with multiple chronic conditions: A study conducted in Bangladesh. *J Public Health Res* 2020;9(1):1792. doi: 10.4081/jphr.2020.1792

John JR, Tannous WK, Jones A. Outcomes of a 12-month patient-centred medical home model in improving patient activation and self-management behaviours among primary care patients presenting with chronic diseases in Sydney, Australia: a before-and-after study. *BMC Fam Pract* 2020;21(1):158. doi: 10.1186/s12875-020-01230-w

Krist AH, O'Loughlin K, Woolf SH, et al. Enhanced care planning and clinical-community linkages versus usual care to address basic needs of patients with multiple chronic conditions: a clinician-level randomized controlled trial. *Trials* 2020;21(1):517. doi: 10.1186/s13063-020-04463-3

Murdoch J, Salter C, Ford J, et al. The "unknown territory" of goal-setting: Negotiating a novel interactional activity within primary care doctor-patient consultations for patients with multiple chronic conditions. *Soc Sci Med* 2020;256:113040. doi: 10.1016/j.socscimed.2020.113040

Prados-Torres A, Cura-Gonzalez ID, Prados-Torres JD, et al. MULTIPAP Study: Improving healthcare for patients with multimorbidity. *Br J Gen Pract* 2020;70(suppl 1) doi: 10.3399/bjgp20X711257

Rodriguez-Blazquez C, Joao Forjaz M, Gimeno-Miguel A, et al. Assessing the Pilot Implementation of the Integrated Multimorbidity Care Model in Five European Settings: Results from the Joint Action CHRODIS-PLUS. *Int J Environ Res Public Health* 2020;17(15) doi: 10.3390/ijerph17155268

Kuipers SJ, Nieboer AP, Cramm JM. The Need for Co-Creation of Care with Multi-Morbidity Patients-A Longitudinal Perspective. *Int J Environ Res Public Health* 2020;17(9) doi: 10.3390/ijerph17093201

Mateo-Abad M, Gonzalez N, Fullaondo A, et al. Impact of the CareWell integrated care model for older patients with multimorbidity: a quasi-experimental controlled study in the Basque Country. *BMC Health Serv Res* 2020;20(1):613. doi: 10.1186/s12913-020-05473-2

Mateo-Abad M, Fullaondo A, Merino M, et al. Impact Assessment of an Innovative Integrated Care Model for Older Complex Patients with Multimorbidity: The CareWell Project. *Int J Integr Care* 2020;20(2):8. doi: 10.5334/ijic.4711

Birke H, Jacobsen R, Jonsson AB, et al. A complex intervention for multimorbidity in primary care: A feasibility study. *J Comorb* 2020;10:2235042X20935312. doi: 10.1177/2235042X20935312

Lang C, Voigt K, Neumann R, et al. Adherence and acceptance of a home-based telemonitoring application used by multi-morbid patients aged 65 years and older. *J Telemed Telecare* 2020:1357633X20901400. doi: 10.1177/1357633X20901400

Melchiorre MG, Papa R, Quattrini S, et al. Integrated Care Programs for People with

Multimorbidity in European Countries: eHealth Adoption in Health Systems. *Biomed Res Int* 2020;**2020**:9025326. doi: 10.1155/2020/9025326

Thorn J, Man MS, Chaplin K, et al. Cost-effectiveness of a patient-centred approach to managing multimorbidity in primary care: a pragmatic cluster randomised controlled trial. *BMJ Open* 2020;**10**(1):e030110. doi: 10.1136/bmjopen-2019-030110

Palmer K, Carfi A, Angioletti C, et al. A Methodological Approach for Implementing an Integrated Multimorbidity Care Model: Results from the Pre-Implementation Stage of Joint Action CHRODIS-PLUS. *Int J Environ Res Public Health* 2019;**16**(24) doi: 10.3390/ijerph16245044

Mann C, Shaw ARG, Guthrie B, et al. Can implementation failure or intervention failure explain the result of the 3D multimorbidity trial in general practice: mixed-methods process evaluation. *BMJ Open* 2019;**9**(11):e031438. doi: 10.1136/bmjopen-2019-031438

Berntsen GKR, Dalbakk M, Hurley JS, et al. Person-centred, integrated and pro-active care for multi-morbid elderly with advanced care needs: a propensity score-matched controlled trial. *BMC Health Serv Res* 2019;**19**(1):682. doi: 10.1186/s12913-019-4397-2

Boehmer KR, Holland DE, Vanderboom CE. Identifying and addressing gaps in the implementation of a community care team for care of Patients with multiple chronic conditions. *BMC Health Serv Res* 2019;**19**(1):843. doi: 10.1186/s12913-019-4709-6

Nieto-Martin MD, De la Higuera-Vila L, Bernabeu-Wittel M, et al. A multidisciplinary approach for patients with multiple chronic conditions: IMPACTO study. *Med Clin (Barc)* 2019;**153**(3):93-99. doi: 10.1016/j.medcli.2019.01.014

Egan BM, Sutherland SE, Tilkemeier PL, et al. A cluster-based approach for integrating clinical management of Medicare beneficiaries with multiple chronic conditions. *PLoS One* 2019;**14**(6):e0217696. doi: 10.1371/journal.pone.0217696

Mazyra AL, Garvin P, Ekdahl AW. Outpatient comprehensive geriatric assessment: effects on frailty and mortality in old people with multimorbidity and high health care utilization. *Aging Clin Exp Res* 2019;**31**(4):519-25. doi: 10.1007/s40520-018-1004-z

Hernandez-Zambrano SM, Mesa-Melgarejo L, Carrillo-Algarra AJ, et al. Effectiveness of a case management model for the comprehensive provision of health services to multi-pathological people. *J Adv Nurs* 2019;**75**(3):665-75. doi: 10.1111/jan.13892

Soto-Gordoa M, de Manuel E, Fullaondo A, et al. Impact of stratification on the effectiveness of a comprehensive patient-centered strategy for multimorbid patients. *Health Serv Res* 2019;**54**(2):466-73. doi: 10.1111/1475-6773.13094

Boehmer KR, Guerton NM, Soyring J, et al. Capacity Coaching: A New Strategy for Coaching Patients Living With Multimorbidity and Organizing Their Care. *Mayo Clin Proc* **67**(2):144-57 2019;**94**(2):278-86. doi: 10.1016/j.mayocp.2018.08.021

Salisbury C, Man MS, Chaplin K, et al. A patient-centred intervention to improve the management of multimorbidity in general practice: the 3D RCT. Southampton (UK)2019.

Swietek KE, Domino ME, Beadles C, et al. Do Medical Homes Improve Quality of Care for Persons with Multiple Chronic Conditions? *Health Serv Res* 2018;**53**(6):4667-81. doi: 10.1111/1475-6773.13024

Melchiorre MG, Lamura G, Barbabella F, et al. eHealth for people with multimorbidity: Results from the ICARE4EU project and insights from the "10 e's" by Gunther Eysenbach. *PLoS One* 2018;**13**(11):e0207292. doi: 10.1371/journal.pone.0207292

Soto-Gordoa M, de Manuel E, Fullaondo A, et al. Impact of stratification on the effectiveness of a comprehensive patient-centered strategy for multimorbid patients. *Health Serv Res* 2018 doi: 10.1111/1475-6773.13094

Salisbury C, Man MS, Bower P, et al. Management of multimorbidity using a patient-centred care model: a pragmatic cluster-randomised trial of the 3D approach. *Lancet* 2018;**392**(10141):41-50. doi: 10.1016/S0140-6736(18)31308-4.

Collins DM, Downer B, Kumar A, et al. Impact of Multiple Chronic Conditions on Activity Limitations Among Older Mexican-American Care Recipients. *Prev Chronic Dis* 2018;**15**:E51. doi: 10.5888/pcd15.170358.

Swietek KE, Domino ME, Beadles C, et al. Do Medical Homes Improve Quality of Care for Persons with Multiple Chronic Conditions? *Health Serv Res* 2018 doi: 10.1111/1475-6773.13024.

Vainieri M, Quercioli C, Maccari M, et al. Reported experience of patients with single or multiple chronic diseases: empirical evidence from Italy. *BMC Health Serv Res* 2018;**18**(1):659. doi: 10.1186/s12913-018-3431-0.

Gonzalez-Bueno J, Calvo-Cidoncha E, Sevilla-Sanchez D, et al. Patient-Centered Prescription Model to improve therapeutic adherence in patients with multimorbidity. *Farm Hosp* 2018;**42**(3):128-34. doi: 10.7399/fh.10961.

Nicholson C, Davies JM, George R, et al. What are the main palliative care symptoms and concerns of older people with multimorbidity?-a comparative cross-sectional study using routinely collected Phase of Illness, Australia-modified Karnofsky Performance Status and Integrated Palliative Care Outcome Scale data. *Ann Palliat Med* 2018 doi: 10.21037/apm.2018.06.07.

Mazya AL, Garvin P, Ekdahl AW. Outpatient comprehensive geriatric assessment: effects on frailty and mortality in old people with multimorbidity and high health care utilization. *Aging Clin Exp Res* 2018 doi: 10.1007/s40520-018-1004-z.

Panagioti M, Reeves D, Meacock R, et al. Is telephone health coaching a useful population health strategy for supporting older people with multimorbidity? An evaluation of reach, effectiveness and cost-effectiveness using a 'trial within a cohort'. *BMC Med* 2018;**16**(1):80. doi: 10.1186/s12916-018-1051-5.

Barker K, Holland AE, Lee AL, et al. A rehabilitation programme for people with multimorbidity versus usual care: A pilot randomized controlled trial. *J Comorb* 2018;**8**(1):2235042X18783918. doi: 10.1177/2235042X18783918.

Chaplin K, Bower P, Man MS, et al. Understanding usual care for patients with multimorbidity: baseline data from a cluster-randomised trial of the 3D intervention in primary care. *BMJ Open* 2018;**8**(8):e019845. doi: 10.1136/bmjopen-2017-019845.

Melchiorre MG, Papa R, Rijken M, et al. eHealth in integrated care programs for people with multimorbidity in Europe: Insights from the ICARE4EU project. *Health Policy*

2018;**122**(1):53-63. doi: 10.1016/j.healthpol.2017.08.006.

Palmer K, Marengoni A, Forjaz MJ, et al. Multimorbidity care model: Recommendations from the consensus meeting of the Joint Action on Chronic Diseases and Promoting Healthy Ageing across the Life Cycle (JA-CHRODIS). *Health Policy* 2018;**122**(1):4-11. doi: 10.1016/j.healthpol.2017.09.006.

Rijken M, Hujala A, van Ginneken E, et al. Managing multimorbidity: Profiles of integrated care approaches targeting people with multiple chronic conditions in Europe. *Health Policy* 2018;**122**(1):44-52. doi: 10.1016/j.healthpol.2017.10.002.

van der Heide I, Snoeijs S, Quattrini S, et al. Patient-centeredness of integrated care programs for people with multimorbidity. Results from the European ICARE4EU project. *Health Policy* 2018;**122**(1):36-43. doi: 10.1016/j.healthpol.2017.10.005.

Hanson GJ, Borah BJ, Moriarty JP, et al. Cost-Effectiveness of a Care Transitions Program in a Multimorbid Older Adult Cohort. *J Am Geriatr Soc* 2018;**66**(2):297-301. doi: 10.1111/jgs.15203.

Janssens J, de Kort SJ, Achterberg WP, et al. Medical and moral considerations regarding complex medical decisions in older patients with multimorbidity: a compact deliberation framework. *BMC Geriatr* 2018;**18**(1):25. doi: 10.1186/s12877-018-0707-5.

Reed RL, Roeger L, Howard S, et al. A self-management support program for older Australians with multiple chronic conditions: a randomised controlled trial. *Med J Aust* 2018;**208**(2):69-74.

Valdivieso B, Garcia-Sempere A, Sanfelix-Gimeno G, et al. The effect of telehealth, telephone support or usual care on quality of life, mortality and healthcare utilization in elderly high-risk patients with multiple chronic conditions. A prospective study. *Med Clin (Barc)* 2018 doi: 10.1016/j.medcli.2018.03.013.

Stokes J, Man MS, Guthrie B, Mercer SW, Salisbury C, Bower P. The Foundations Framework for Developing and Reporting New Models of Care for Multimorbidity. *Ann Fam Med*. 2017;**15**(6):570-577.

Zimmerman L, Wilson FA, Schmaderer MS, et al. Cost-Effectiveness of a Care Transition Intervention Among Multimorbid Patients. *West J Nurs Res*. 2017;**39**(5):622-642. doi: 10.1177/0193945916673834.

Muche-Borowski C, Luhmann D, Schafer I, et al. Development of a meta-algorithm for guiding primary care encounters for patients with multimorbidity using evidence-based and case-based guideline development methodology. *BMJ Open*. 2017;**7**(6):e015478. doi: 10.1136/bmjopen-2016-015478.

Stokes J, Kristensen SR, Checkland K, Cheraghi-Sohi S, Bower P. Does the impact of case management vary in different subgroups of multimorbidity? Secondary analysis of a quasi-experiment. *BMC Health Serv Res*. 2017;**17**(1):521. doi: 10.1186/s12913-017-2475-x.

Melchiorre MG, Papa R, Rijken M, van Ginneken E, Hujala A, Barbabella F. eHealth in integrated care programs for people with multimorbidity in Europe: Insights from the ICARE4EU project. *Health Policy*. 2017. doi: 10.1016/j.healthpol.2017.08.006.

Jager C, Steinhauser J, Freund T, Kuse S, Szecsenyi J, Wensing M. A tailored programme to implement recommendations for multimorbid patients with polypharmacy in primary care practices-process evaluation of a cluster randomized trial. *Implement Sci.* 2017;**12**(1):31.

Sampalli T, Dickson R, Hayden J, Edwards L, Salunkhe A. Meeting the needs of a complex population: a functional health- and patient-centered approach to managing multimorbidity. *Journal of Comorbidity.* 2016;**6**:76–84.

Meschi T, Ticinesi A, Prati B, et al. A novel organizational model to face the challenge of multimorbid elderly patients in an internal medicine setting: a case study from Parma Hospital, Italy. *Intern Emerg Med.* 2016;**11**:667-76.

Mercer SW, O'Brien R, Fitzpatrick B, et al. The development and optimisation of a primary care-based whole system complex intervention (CARE Plus) for patients with multimorbidity living in areas of high socioeconomic deprivation. *Chronic Illn.* 2016;**12**:165-81.

Grundberg A, Hansson A, Hilleras P, Religa D. District nurses' perspectives on detecting mental health problems and promoting mental health among community-dwelling seniors with multimorbidity. *J Clin Nurs.* 2016;**25**:2590-9.

Muth C, Harder S, Uhlmann L, et al. Pilot study to test the feasibility of a trial design and complex intervention on PRIoritising MULtimedication in Multimorbidity in general practices (PRIMUMpilot). *BMJ Open.* 2016;**6**:e011613.

Crowe M, Jordan J, Burrell B, et al. Clinical effectiveness of transdiagnostic health management interventions for older people with multimorbidity: a quantitative systematic review. *J Adv Nurs.* 2016.

Mercer SW, Fitzpatrick B, Guthrie B, et al. The CARE Plus study - a whole-system intervention to improve quality of life of primary care patients with multimorbidity in areas of high socioeconomic deprivation: exploratory cluster randomised controlled trial and cost-utility analysis. *BMC Med.* 2016;**14**:88.

Sinnott C, Mercer SW, Payne RA, Duerden M, Bradley CP, Byrne M: Improving medication management in multimorbidity: development of the Multimorbidity COLlaborative Medication Review And DEcision Making (MY COMRADE) intervention using the Behaviour Change Wheel. *Implement Sci.* 2015;**10**:132.

Pratt R, Hibberd C, Cameron IM, Maxwell M. The Patient Centered Assessment Method (PCAM): integrating the social dimensions of health into primary care. *Journal of Comorbidity.* 2015;**5**:110–119.

Sampalli T, Desy M, Dhir M, Edwards L, Dickson R, Blackmore G. Improving wait times to care for individuals with multimorbidities and complex conditions using value stream mapping. *Int J Health Policy Manag.* Jul 2015;**4**(7):459-466.

Vila A, Villegas E, Cruanyes J, et al. Cost-effectiveness of a Barcelona home care program for individuals with multimorbidity. *J Am Geriatr Soc.* May 2015;**63**(5):1017-1024.

Garvey J, Connolly D, Boland F, Smith SM. OPTIMAL, an occupational therapy led self-management support programme for people with multimorbidity in primary care: a randomized controlled trial. *BMC Fam Pract*. 2015;**16**:59.

Morgan MA, Coates MJ, Dunbar JA. Using care plans to better manage multimorbidity. *Australas Med J*. 2015;**8**(6):208-215.

Wharton T, Manu E, Vitale CA. Enhancing provider knowledge and patient screening for palliative care needs in chronic multimorbid patients receiving home-based primary care. *Am J Hosp Palliat Care*. Feb 2015;**32**(1):78-83.

Coventry P, Lovell K, Dickens C, et al. Integrated primary care for patients with mental and physical multimorbidity: cluster randomised controlled trial of collaborative care for patients with depression comorbid with diabetes or cardiovascular disease. *BMJ*. 2015;**350**:h638.

Ivbijaro GO, Enum Y, Khan AA, Lam SS, Gabzdyl A. Collaborative care: models for treatment of patients with complex medical-psychiatric conditions. *Current psychiatry reports*. Nov 2014;**16**(11):506.

Muth C, van den Akker M, Blom JW, et al. The Ariadne principles: how to handle multimorbidity in primary care consultations. *BMC Med*. 2014;**12**:223.

Lin EH, Von Korff M, Peterson D, Ludman EJ, Ciechanowski P, Katon W. Population targeting and durability of multimorbidity collaborative care management. *Am J Manag Care*. Nov 2014;**20**(11):887-895.

Wallace E, Salisbury C, Guthrie B, Lewis C, Fahey T, Smith SM. Managing patients with multimorbidity in primary care. *Bmj*. 2015;**350**:h176.

Rijken M, Bekkema N, Boeckxstaens P, Schellevis FG, De Maeseneer JM, Groenewegen PP. Chronic Disease Management Programmes: an adequate response to patients' needs? *Health Expectations*. Oct 2014;**17**(5):608-621.

Park YH, Chang H. Effect of a health coaching self-management program for older adults with multimorbidity in nursing homes. *Patient Prefer Adherence*. 2014;**8**:959-970.

Daker-White G, Hays R, Esmail A, Minor B, Barlow W, Brown B, Blakeman T, Bower P. MAXimising Involvement in MULtiMorbidity (MAXIMUM) in primary care: protocol for an observation and interview study of patients, GPs and other care providers to identify ways of reducing patient safety failures. *BMJ Open*. 2014;**4**(8):e005493.

Trikalinos TA, Segal JB, Boyd CM. Addressing multimorbidity in evidence integration and synthesis. *J Gen Intern Med*. Apr 2014;**29**(4):661-669.

Smith SM, Bayliss EA, Mercer SW, Gunn J, Vestergaard M, Wyke S, Salisbury C, Fortin M. How to design and evaluate interventions to improve outcomes for patients with multimorbidity. *Journal of Comorbidity*. 2013;**3**:10-17.

Mc Sharry J, Bishop FL, Moss-Morris R, Kendrick T. 'The chicken and egg thing': cognitive representations and self-management of multimorbidity in people with diabetes and depression. *Psychol Health*. 2013;**28**(1):103-119.

Martin CM, Vogel C, Grady D, et al. Implementation of complex adaptive chronic care: the Patient Journey Record system (PaJR). *J Eval Clin Pract*. Dec 2012;**18**(6):1226-1234.

Patient-centered care for older adults with multiple chronic conditions: a stepwise approach from the American Geriatrics Society: American Geriatrics Society Expert Panel

on the Care of Older Adults with Multimorbidity. *J Am Geriatr Soc.* Oct 2012;**60**(10):1957-1968.

Guiding principles for the care of older adults with multimorbidity: an approach for clinicians: American Geriatrics Society Expert Panel on the Care of Older Adults with Multimorbidity. *J Am Geriatr Soc.* Oct 2012;**60**(10):E1-E25.

Sampalli T, Fox RA, Dickson R, Fox J. Proposed model of integrated care to improve health outcomes for individuals with multimorbidities. *Patient Prefer Adherence.* 2012;**6**:757-764.

Altiner A, Schafer I, Mellert C, et al. Activating GENERAL practitioners dialogue with patients on their Agenda (MultiCare AGENDA) study protocol for a cluster randomized controlled trial. *BMC Fam Pract.* Dec 12 2012;**13**(1):118.

Cohen E, Bruce-Barrett C, Kingsnorth S, Keilty K, Cooper A, Daub S. Integrated Complex Care Model: Lessons Learned from Inter-organizational Partnership. *Healthc Q.* 2011;**14** Spec No 3:64-70.

Parekh, A.K., et al., Managing multiple chronic conditions: a strategic framework for improving health outcomes and quality of life. *Public Health Rep,* 2011. **126**: p. 460-71.

Thiem U, Theile G, Junius-Walker U, et al. Prerequisites for a new health care model for elderly people with multimorbidity: the PRISCUS research consortium. *Z Gerontol Geriatr* 2011;**44**:115-20.

Braithwaite RS, Fiellin D, Justice AC. The payoff time: a flexible framework to help clinicians decide when patients with comorbid disease are not likely to benefit from practice guidelines. *Med Care.* 2009 Jun;**47**(6):610-7.

Smith GC. From consultation-liaison psychiatry to integrated care for multiple and complex needs. *Aust N Z J Psychiatry.* 2009 Jan;**43**(1):1-12.

Bayliss, E. A., H. B. Bosworth, et al. "Supporting self-management for patients with complex medical needs: recommendations of a working group." *Chronic Illness* 2007. **3**(2): 167-75.

Boult, C., L. Reider, et al. "Early effects of "Guided Care" on the quality of health care for multimorbid older persons: a cluster-randomized controlled trial." *J Gerontol A Biol Sci Med Sci* 2008. **63**: 321-7.

Boyd, C. M., C. Boult, et al. "Guided care for multimorbid older adults." *Gerontologist* 2007. **47**(5): 697-704.

Boyd, C. M., E. Shadmi, et al. "A pilot test of the effect of guided care on the quality of primary care experiences for multimorbid older adults." *Journal of General Internal Medicine* 2008. **23**(5): 536-42.

Hanni, K. D., E. Mendoza, et al. "A methodology for evaluating organizational change in community-based chronic disease interventions." *Preventing Chronic Disease* 2007. **4**(4): A105.

Kahn, L. S., C. H. Fox, et al. "Facilitating quality improvement in physician management of comorbid chronic disease in an urban minority practice." *Journal of the National Medical Association* 2007. **99**(4): 377-83.

Lavori, P. W. and R. Dawson "Adaptive treatment strategies in chronic disease." *Annual Review of Medicine* 2008. **59**: 443-53.

Berenson, R.A. and J. Horvath, Confronting the barriers to chronic care management in

- Medicare. Health Affairs, 2003. **Suppl Web Exclusives**: p. W3-37-53.
- Brown, A.F., et al., Guidelines for improving the care of the older person with diabetes mellitus. Journal of the American Geriatrics Society, 2003. **51**(5 Suppl Guidelines): p. S265-80.
- Davis, B., Assessing adults with mental disorders in primary care. Nurse Practitioner, 2004. **29**: p. 19-27; quiz 27-9.
- Durso, S.C., Using clinical guidelines designed for older adults with diabetes mellitus and complex health status. JAMA, 2006. **295**: p. 1935-40.
- Howell, T., Managing medical and psychiatric comorbidities. WMJ, 2004. **103**(6): p. 23-7.
- Macleod, U. and E. Mitchell, Comorbidity in general practice. Practitioner, 2005. **249**(1669): p. 282-4.
- Mollica, R.L. and J. Gillespie. Care coordination for people with chronic conditions. 2003 [cited 7 Nov 2005]; Available from: http://www.partnershipforsolutions.org/DMS/files/Care_coordination.pdf.
- Pierce, D. and I. Wilson, Psychiatric comorbidity in general practice. Aust Fam Physician, 2004. **33**: p. 217-220.
- Redelmeier, D.A., S.H. Tan, and G.L. Booth, The treatment of unrelated disorders in patients with chronic medical diseases. N Engl J Med, 1998. **338**: p. 1516-20.
- Schraeder, C., et al., Managing elders with comorbidities. Journal of Ambulatory Care Management, 2005. **28**(3): p. 201-9.
- Stevenson, J., et al., Managing comorbidities in patients at the end of life. BMJ, 2004. **329**: p. 909-12.
- Wagner, E.H., B.T. Austin, and M. Von Korff, Organizing care for patients with chronic illness. Milbank Quarterly, 1996. **74**(4): p. 511-44.
- Welch, H.G., et al., Estimating treatment benefits for the elderly: the effect of competing risks. Annals of Internal Medicine, 1996. **124**(6): p. 577-84.

9. OTHERS

9.1. Physical activity

Behera S, Pradhan J. A combination of moderate and vigorous physical activities reduces the burden of multimorbidity: findings from Longitudinal Ageing Study in India. *J Health Popul Nutr.* 2022;41(1):42.

Delpino FM, de Lima APM, da Silva BGC, Nunes BP, Caputo EL, Bielemann RM. Physical Activity and Multimorbidity Among Community-Dwelling Older Adults: A Systematic Review With Meta-Analysis. *Am J Health Promot.* 2022;36(8):1371-85.

Jørgensen LB, Bricca A, Bernhardt A, Juhl CB, Tang LH, Mortensen SR, et al. Objectively measured physical activity levels and adherence to physical activity guidelines in people with multimorbidity-A systematic review and meta-analysis. *PLoS One.* 2022;17(10):e0274846.

Klinedinst TC, Terhorst L, Rodakowski J. Multimorbidity groups based on numbers of chronic conditions are associated with daily activity. *Chronic Illn.* 2022;18(3):634-42.

Lee JM, Ryan EJ. The Relationship between the Frequency and Duration of Physical Activity and Depression in Older Adults with Multiple Chronic Diseases. *J Clin Med.* 2022;11(21).

Pizarro-Mena R, Duran-Aguero S, Parra-Soto S, Vargas-Silva F, Bello-Lepe S, Fuentes-Alburquenque M. Effects of a Structured Multicomponent Physical Exercise Intervention on Quality of Life and Biopsychosocial Health among Chilean Older Adults from the Community with Controlled Multimorbidity: A Pre-Post Design. *Int J Environ Res Public Health.* 2022;19(23).

Ryan A, Smith SM, Cummins V, Murphy C, Galvin R. Development and feasibility of an inter-agency physical activity and education programme for adults with multimorbidity in primary care: *Activ8.* *J Multimorb Comorb.* 2022;12:26335565221142350.

Newsom, J.T., Denning, E.C., Elman, M.R., Botosaneanu, A., Allore, H.G., Nagel, C.L., Dorr, D.A. and Quiñones, A.R. (2022). Physical Activity as a Mediator Between Race/Ethnicity and Changes in Multimorbidity. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, [online] 77(8), pp.1529–1538. doi:10.1093/geronb/gbab148.

Alonzo, R., Lalva, T., Couper, R.G. and Wilk, P. (2022). Association between physical activity and life satisfaction among adults with multimorbidity in Canada. *Canadian Journal of Public Health.* doi:10.17269/s41997-022-00635-7.

Boro, B. and Saikia, N. (2022). Association of multimorbidity and physical activity among older adults in India: an analysis from the Longitudinal Ageing Survey of India (2017-2018). *BMJ open*, [online] 12(5), p.e053989. doi:10.1136/bmjopen-2021-053989.

Delpino, F.M., de Lima, A.P.M., da Silva, B.G.C., Nunes, B.P., Caputo, E.L. and Bielemann, R.M. (2022). Physical Activity and Multimorbidity Among Community-Dwelling Older Adults: A Systematic Review With Meta-Analysis. *American journal of health promotion: AJHP*, [online] p.8901171221104458. doi:10.1177/08901171221104458. Review article

Bedard, C., King-Dowling, S., Obeid, J., Timmons, B.W. and Ferro, M.A. (2022). Correlates of Moderate-to-Vigorous Physical Activity in Children With Physical Illness and Physical-Mental Multimorbidity. *Health Education & Behavior: The Official Publication of the Society*

for Public Health Education, [online] p.10901981221100697.
doi:10.1177/10901981221100697.

Li, Y., Li, X., Yu, B., Li, J., He, R., Nima, Q. and Zhou, J. (2022). Association between chronic disease multimorbidity and leisure-time physical activity: Evidence from the China Multiethnic Cohort study. *Frontiers in Medicine*, [online] 9, p.874456.
doi:10.3389/fmed.2022.874456.

Chan MLT, Yu DSF. The effects of low-impact moderate-intensity stepping exercise on fatigue and other functional outcomes in older adults with multimorbidity: A randomized controlled trial. *Arch Gerontol Geriatr* 2022;98:104577. doi: S0167-4943(21)00240-5 [pii]

10.1016/j.archger.2021.104577

Alonzo R, Lalva T, Couper RG, Wilk P. Association between physical activity and life satisfaction among adults with multimorbidity in Canada. *Can J Public Health* 2022. doi: 10.17269/s41997-022-00635-7

10.17269/s41997-022-00635-7 [pii]

Bricca A, Harris LK, Jager M, et al. Infographic. Benefits and harms of exercise therapy in people with multimorbidity. *Br J Sports Med* 2021;55(18):1059-60. doi: 10.1136/bjsports-2021-104367

O'Regan A, Hannigan A, Glynn L, et al. A cluster analysis of device-measured physical activity behaviours and the association with chronic conditions, multi-morbidity and healthcare utilisation in adults aged 45 years and older. *Prev Med Rep* 2021;24:101641. doi: 10.1016/j.pmedr.2021.101641

Balogun SA, Aitken D, Wu F, et al. Linear and Nonlinear Associations Between Physical Activity, Body Composition, and Multimorbidity Over 10 Years Among Community-Dwelling Older Adults. *J Gerontol A Biol Sci Med Sci* 2021;76(11):2015-20. doi: 10.1093/gerona/glab086

Liang Y, Lai FTT, Kwan JLY, et al. Sport and Recreational Physical Activities Attenuate the Predictive Association of Multimorbidity With Increased Geriatric Depressive Symptoms: A 14-Year Follow-Up Study of Community-Dwelling Older Adults. *J Aging Phys Act* 2021;1-9. doi: 10.1123/japa.2021-0070

Carballeira E, Censi KC, Maseda A, et al. Low-volume cycling training improves body composition and functionality in older people with multimorbidity: a randomized controlled trial. *Sci Rep* 2021;11(1):13364. doi: 10.1038/s41598-021-92716-9

Christofoletti M, Sandreschi PF, Quadros EN, et al. Physical activity and sedentary behavior as multimorbidity discriminators among elderly Brazilians: a cross-sectional study. *Sao Paulo Med J* 2021;139(4):372-79. doi: 10.1590/1516-3180.2020.0504.R1.1802021

Newsom JT, Denning EC, Elman MR, et al. Physical Activity as a Mediator between Race/Ethnicity and Changes in Multimorbidity. *J Gerontol B Psychol Sci Soc Sci* 2021 doi: 10.1093/geronb/gbab148

He L, Biddle SJH, Lee JT, et al. The prevalence of multimorbidity and its association with physical activity and sleep duration in middle aged and elderly adults: a longitudinal analysis from China. *Int J Behav Nutr Phys Act* 2021;18(1):77. doi: 10.1186/s12966-

021-01150-7

Gomes RDS, Barbosa AR, Meneghini V, et al. Association between chronic diseases, multimorbidity and insufficient physical activity among older adults in southern Brazil: a cross-sectional study. *Sao Paulo Med J* 2020;138(6):545-53. doi: 10.1590/1516-3180.2020.0282.R1.15092020

Andrade-Lima A, Werneck AO, Szwarcwald CL, et al. The role of physical activity in the association between multimorbidity and depressive symptoms: Data from 60,202 adults from the Brazilian National Health Survey. *J Psychosom Res* 2020;134:110122. doi: 10.1016/j.jpsychores.2020.110122

Latorre-Roman PA, Carmona-Torres JM, Cobo-Cuenca AI, et al. Physical Activity, Ability to Walk, Weight Status, and Multimorbidity Levels in Older Spanish People: The National Health Survey (2009-2017). *Int J Environ Res Public Health* 2020;17(12) doi: 10.3390/ijerph17124333

Salman A, Sellami M. Do Older Adults with Multimorbidity Meet the Recommended Levels of Physical Activity? An Analysis of Scottish Health Survey. *Int J Environ Res Public Health* 2019;16(19) doi: 10.3390/ijerph16193748

Subramaniam M, Zhang Y, Lau JH, et al. Patterns of physical activity and health-related quality of life amongst patients with multimorbidity in a multi-ethnic Asian population. *BMC Public Health* 2019;19(1):1612. doi: 10.1186/s12889-019-7941-4

Christofoletti M, Duca GFD, Umpierre D, et al. Chronic noncommunicable diseases multimorbidity and its association with physical activity and television time in a representative Brazilian population. *Cad Saude Publica* 2019;35(11):e00016319. doi: 10.1590/0102-311X00016319

Li Y, White K, O'Shields KR, et al. Light-Intensity Physical Activity and Cardiometabolic Risk Among Older Adults With Multiple Chronic Conditions. *Am J Health Promot* 2019;33(4):507-15. doi: 10.1177/0890117118796459

Steeves JA, Shiroma EJ, Conger SA, et al. Physical activity patterns and multimorbidity burden of older adults with different levels of functional status: NHANES 2003-2006. *Disabil Health J* 2019;12(3):495-502. doi: 10.1016/j.dhjo.2019.02.005

Chudasama YV, Khunti KK, Zaccardi F, et al. Physical activity, multimorbidity, and life expectancy: a UK Biobank longitudinal study. *BMC Med* 2019;17(1):108. doi: 10.1186/s12916-019-1339-0

Ryan A, Murphy C, Boland F, et al. What Is the Impact of Physical Activity and Physical Function on the Development of Multimorbidity in Older Adults Over Time? A Population-Based Cohort Study. *J Gerontol A Biol Sci Med Sci* 2018;73(11):1538-44. doi: 10.1093/gerona/glx251

Marques A, Peralta M, Gouveia ER, et al. Physical activity buffers the negative relationship between multimorbidity, self-rated health and life satisfaction. *J Public Health (Oxf)* 2018;40(3):e328-e35. doi: 10.1093/pubmed/fdy012

McCaskill GM, Bolland KA, Brown CJ, et al. Self-Report of Aerobic Activity among Older African Americans with Multiple Chronic Conditions. *J Cross Cult Gerontol* 2018;33(3):287-98. doi: 10.1007/s10823-018-9345-9

Dankel SJ, Loenneke JP, Loprinzi PD. The Impact of Overweight/Obesity Duration and Physical Activity on Medical Multimorbidity: Examining the WATCH Paradigm. *Am J Health Promot* 2018;**32**(8):1747-50. doi: 10.1177/0890117118768893

Li Y, White K, O'Shields KR, et al. Light-Intensity Physical Activity and Cardiometabolic Risk Among Older Adults With Multiple Chronic Conditions. *Am J Health Promot* 2018;890117118796459. doi: 10.1177/0890117118796459.

Volaklis KA, Thorand B, Peters A, et al. Physical activity, muscular strength, and polypharmacy among older multimorbid persons: Results from the KORA-Age study. *Scand J Med Sci Sports* 2018;**28**(2):604-12. doi: 10.1111/sms.12884.

Ryan A, Murphy C, Boland F, et al. What is the impact of physical activity and physical function on the development of Multimorbidity in older adults over time? A population based cohort study. *J Gerontol A Biol Sci Med Sci* 2018 doi: 10.1093/gerona/glx251.

Marques A, Santos DA, Peralta M, et al. Regular physical activity eliminates the harmful association of television watching with multimorbidity. A cross-sectional study from the European Social Survey. *Prev Med* 2018;**109**:28-33. doi: 10.1016/j.ypmed.2018.01.015.

Marques A, Peralta M, Gouveia ER, et al. Physical activity buffers the negative relationship between multimorbidity, self-rated health and life satisfaction. *J Public Health (Oxf)* 2018 doi: 10.1093/pubmed/fdy012.

McCaskill GM, Bolland KA, Brown CJ, et al. Self-Report of Aerobic Activity among Older African Americans with Multiple Chronic Conditions. *J Cross Cult Gerontol* 2018 doi: 10.1007/s10823-018-9345-9.

Dankel SJ, Loenneke JP, Loprinzi PD. The Impact of Overweight/Obesity Duration and Physical Activity on Medical Multimorbidity: Examining the WATCH Paradigm. *Am J Health Promot* 2018;890117118768893. doi: 10.1177/0890117118768893.

de Souto Barreto P. Exercise for Multimorbid Patients in Primary Care: One Prescription for All? *Sports Med.* 2017;**47**(11):2143-2153.

Loprinzi PD. Associations between bouted and non-bouted physical activity on multimorbidity. *Clin Physiol Funct Imaging.* 2017;**37**(6):782-784.

Keats MR, Cui Y, DeClercq V, et al. Multimorbidity in Atlantic Canada and association with low levels of physical activity. *Prev Med.* 2017;**105**:326-331.

Jones J, Jones GD, Thacker M, Faithfull S. Physical activity interventions are delivered consistently across hospitalized older adults but multimorbidity is associated with poorer rehabilitation outcomes: A population-based cohort study. *J Eval Clin Pract.* 2017;**23**(6):1469-1477.

Dankel SJ, Loenneke JP, Loprinzi PD. Combined Associations of Muscle-Strengthening Activities and Accelerometer-Assessed Physical Activity on Multimorbidity: Findings From NHANES. *Am J Health Promot.* 2017;**31**(4):274-277. doi: 10.4278/ajhp.150520-QUAN-894.

Martinez-Gomez D, Guallar-Castillon P, Garcia-Esquinas E, Bandinelli S, Rodriguez-Artalejo F. Physical Activity and the Effect of Multimorbidity on All-Cause Mortality in Older Adults. *Mayo Clin Proc* 67(2):144-57. 2017;**92**(3):376-382.

Vancampfort D, Koyanagi A, Ward PB, et al. Chronic physical conditions, multimorbidity

and physical activity across 46 low- and middle-income countries. *Int J Behav Nutr Phys Act.* 2017;**14**(1):6.

Volaklis KA, Thorand B, Peters A, et al. Physical activity, muscular strength, and polypharmacy among older multimorbid persons: Results from the KORA-Age study. *Scand J Med Sci Sports.* 2017.

Martinez-Gomez D, Guallar-Castillon P, Rodriguez-Artalejo F, Bandinelli S. Attenuation of the Effect of Multimorbidity on Cardiovascular Mortality by Physical Activity in Older Adults. *J Am Med Dir Assoc.* 2016.

Loprinzi PD, Addoh O, Joyner C. Multimorbidity, mortality, and physical activity. *Chronic Illn.* 2016;**12**(4):272-280.

Loprinzi PD. Multimorbidity, cognitive function, and physical activity. *Age (Dordr).* 2016;**38**:8.

Loprinzi PD. Associations between bouts and non-bouts of physical activity on multimorbidity. *Clin Physiol Funct Imaging.* 2016.

Loprinzi PD. Light-Intensity Physical Activity and Medical Multimorbidity. *South Med J.* 2016;**109**:174-7.

Loprinzi PD, Addoh O, Joyner C. Multimorbidity, mortality, and physical activity. *Chronic Illn.* 2016.

Dankel SJ, Loenneke JP, Loprinzi PD: Combined Associations of Muscle-Strengthening Activities and Accelerometer-Assessed Physical Activity on Multimorbidity: Findings From NHANES. *Am J Health Promot.* 2016.

Dhalwani NN, O'Donovan G, Zaccardi F, Hamer M, Yates T, Davies M *et al*: Long terms trends of multimorbidity and association with physical activity in older English population. *Int J Behav Nutr Phys Act.* 2016;**13**(1):8.

Dankel SJ, Loenneke JP, Loprinzi PD. Participation in muscle-strengthening activities as an alternative method for the prevention of multimorbidity. *Prev Med.* Aug 9 2015;**81**:54-57.

Loprinzi PD. Sedentary behavior and medical multimorbidity. *Physiol Behav.* Nov 1 2015;**151**:395-397.

Cimarras-Otal C, Calderon-Larranaga A, Poblador-Plou B, et al. Association between physical activity, multimorbidity, self-rated health and functional limitation in the Spanish population. *BMC Public Health.* 2014;**14**:1170.

Autenrieth CS, Kirchberger I, Heier M, et al. Physical activity is inversely associated with multimorbidity in elderly men: Results from the KORA-Age Augsburg Study. *Prev Med.* 2013;**57**:17-19.

Welmer AK, Kareholt I, Angleman S, Rydwick E, Fratiglioni L. Can chronic multimorbidity explain the age-related differences in strength, speed and balance in older adults? *Aging Clin Exp Res.* Sep 5 2012.

De Vries NM, Van Ravensberg CD, Hobbelen JS, Olde Rikkert MG, Staak SB, Nijhuis-van der Sanden MW. Effects of physical exercise therapy on mobility, physical functioning, physical activity and quality of life in community-dwelling older adults with impaired

mobility, physical disability and/or multi-morbidity: A meta-analysis. *Ageing Resource Review*, 11 novembre 2011 (Epub ahead of print). 2011.

Liu-Ambrose T, Ashe MC, Marra C, Conditions Research Team PA. Among Older Adults with Multiple Chronic Conditions, Physical Activity is Independently and Inversely Associated with Health Care Utilization. *Br J Sports Med*. 2010;**44**(14):1024-8.

Rydwik, E., K. Frandin, and G. Akner, Physical training in institutionalized elderly people with multiple diagnoses--a controlled pilot study.[erratum appears in *Arch Gerontol Geriatr*. 2005 Nov-Dec;41(3):319 Note: Kerstin, Frandin [corrected to Frandin, Kerstin]]. *Archives of Gerontology & Geriatrics*, 2005. **40**(1): p. 29-44.

9.2.CONTINUITY OF CARE

Meyer AM, Bartram MP, Antczak P, Becker I, Benzing T, Polidori MC. A Tailored Discharge Program Improves Frailty and Mood in Patients Undergoing Usual Rehabilitative Care: A Randomized Controlled Trial. *J Am Med Dir Assoc*. 2022;**23**(12):1962.e1-.e13.

Safi D, Barreto Abrams J, Rios M, Rodés E, Díaz-Santos M, Suárez P. Culturally Competent Assessment of Neurocognitive Functioning in Latinos with Complex Multimorbidity: A Case Study. *Geriatrics (Basel)*. 2022;**7**(5).

Nicolet A, Peytremann-Bridevaux I, Bagnoud C, Perraudin C, Wagner J, Marti J. Continuity of care and multimorbidity in the 50+ Swiss population: An analysis of claims data. *SSM Popul Health* 2022;**17**:101063. doi: 10.1016/j.ssmph.2022.101063

S2352-8273(22)00042-8 [pii]

Goldberg DG, Gimm G, Burla SR, et al. Care Experiences of Patients with Multiple Chronic Conditions in a Payer-Based Patient-Centered Medical Home. *Popul Health Manag* 2019 doi: 10.1089/pop.2019.0189

Wang C, Kuo HC, Cheng SF, et al. Continuity of care and multiple chronic conditions impact frequent use of outpatient services. *Health Informatics J* 2019:1460458218824720. doi: 10.1177/1460458218824720

DuGoff EH. Continuity of Care in Older Adults With Multiple Chronic Conditions: How Well Do Administrative Measures Correspond With Patient Experiences? *J Healthc Qual* 2018;**40**(3):120-28. doi: 10.1097/JHQ.0000000000000051.

Ehman KM, Deyo-Svendsen M, Merten Z, Kramlinger AM, Garrison GM. How Preferences for Continuity and Access Differ Between Multimorbidity and Healthy Patients in a Team Care Setting. *J Prim Care Community Health*. 2017;**8**(4):319-323.

DuGoff EH. Continuity of Care in Older Adults With Multiple Chronic Conditions: How Well Do Administrative Measures Correspond With Patient Experiences? *J Healthc Qual*. 2017.

Bynum JP, Chang CH, Austin A, Carmichael D, Meara E. Outcomes in Older Adults with Multimorbidity Associated with Predominant Provider of Care Specialty. *J Am Geriatr Soc*. 2017.

Ehman KM, Deyo-Svendsen M, Merten Z, Kramlinger AM, Garrison GM. How Preferences

for Continuity and Access Differ Between Multimorbidity and Healthy Patients in a Team Care Setting. *J Prim Care Community Health*. 2017;2150131917704556.

Napolitano F, Napolitano P, Garofalo L, Recupito M, Angelillo IF. Assessment of Continuity of Care among Patients with Multiple Chronic Conditions in Italy. *PLoS One*. 2016;**11**:e0154940.

Cheng SH, Chen CC. Effects of continuity of care on medication duplication among the elderly. *Med Care*. Feb 2014;52(2):149-156.

Golden SL, Nageswaran S. Caregiver voices: coordinating care for children with complex chronic conditions. *Clin Pediatr (Phila)*. Aug 2012;51(8):723-729.

Alfaro Lara ER, Vega Coca MD, Galvan Banqueri M, et al. Selection of tools for reconciliation, compliance and appropriateness of treatment in patients with multiple chronic conditions. *Eur J Intern Med*. Sep 2012;23(6):506-512.

Salisbury C, Johnson L, Purdy S, Valderas JM, Montgomery AA. Epidemiology and impact of multimorbidity in primary care: a retrospective cohort study. *Br J Gen Pract* 2011;61:e12-21.

Aspin C et al. Health policy responses to rising rates of multi-morbid chronic illness in Australia and New Zealand. *Aust N Z J Public Health*. 2010. **34**(4):386-93.

Higashi, T., N. S. Wenger, et al. "Relationship between number of medical conditions and quality of care." *New England Journal of Medicine* 2007. **356**(24): 2496-504.

Smith, S. M., A. Ferede, et al. "Multimorbidity in younger deprived patients: an exploratory study of research and service implications in general practice." *BMC Family Practice* 2008. **9**: 6.

Nutting, P.A., et al., Continuity of primary care: to whom does it matter and when? *Ann Fam Med*, 2003. **1**: p. 149-55.

9.3.SELF-CARE

He W, Cao L, Liu R, Wu Y, Zhang W. Factors associated with internet use and health information technology use among older people with multi-morbidity in the United States: findings from the National Health Interview Survey 2018. *BMC Geriatr.* 2022;22(1):733.

Lambert SD, Bartlett SJ, McCusker J, Yaffe M, Ciampi A, Belzile E, et al. Development and psychometric evaluation of the CanSmart questionnaire to measure chronic disease self-management tasks. *BMC Psychol.* 2022;10(1):293.

Nambisan P, Stange KC, Lyytinen K, Kahana E, Duthie E, Potnek M. A Comprehensive Digital Self-care Support System for Older Adults With Multiple Chronic Conditions: Development, Feasibility, and Usability Testing of myHESTIA. *J Appl Gerontol.* 2023;42(2):170-84.

Paukkonen L, Oikarinen A, Kähkönen O, Kyngäs H. Adherence to self-management in patients with multimorbidity and associated factors: A cross-sectional study in primary health care. *J Clin Nurs.* 2022;31(19-20):2805-20.

LeBlanc RG, Chiodo L, Jacelon CS. Social relationship influence on self-care and health among older people living with long term conditions: A mixed-methods study. *Int J Older People Nurs* 2022:e12450. doi: 10.1111/opn.12450

Paukkonen L, Oikarinen A, Kahkonen O, et al. Adherence to self-management in patients with multimorbidity and associated factors: A cross-sectional study in primary health care. *J Clin Nurs* 2021 doi: 10.1111/jocn.16099

Breckner A, Roth C, Glassen K, et al. Self-management perspectives of elderly patients with multimorbidity and practitioners - status, challenges and further support needed? *BMC Fam Pract* 2021;22(1):238. doi: 10.1186/s12875-021-01584-9

Doyle J, Murphy E, Gavin S, et al. A Digital Platform to Support Self-management of Multiple Chronic Conditions (ProACT): Findings in Relation to Engagement During a One-Year Proof-of-Concept Trial. *J Med Internet Res* 2021;23(12):e22672. doi: 10.2196/22672

Kang E, Kim S, Rhee YE, et al. Self-management strategies and comorbidities in chronic disease patients: associations with quality of life and depression. *Psychol Health Med* 2021;26(8):1031-43. doi: 10.1080/13548506.2020.1838585

Sultan N, Swinglehurst D. Self-Management in Older Pakistanis Living With Multimorbidity in East London. *Qual Health Res* 2021;31(11):2111-22. doi: 10.1177/10497323211019355

Iovino P, Lyons KS, De Maria M, et al. Patient and caregiver contributions to self-care in multiple chronic conditions: A multilevel modelling analysis. *Int J Nurs Stud* 2020;103574. doi: 10.1016/j.ijnurstu.2020.103574

Finney Rutten LJ, Hesse BW, St Sauver JL, et al. Health Self-Efficacy Among Populations with Multiple Chronic Conditions: the Value of Patient-Centered Communication. *Adv Ther.* 2016;**33**:1440-51.

Kenning C, Coventry PA, Gibbons C, Bee P, Fisher L, Bower P. Does patient experience of multimorbidity predict self-management and health outcomes in a prospective study in primary care? *Fam Pract.* Jun 2015;**32**(3):311-316

O'Toole L, Connolly D, Smith S. Impact of an occupation-based self-management programme on chronic disease management. *Aust Occup Ther J.* Feb 2013;**60**(1):30-38.

Clarke LH, Bennett EV. Constructing the moral body: Self-care among older adults with multiple chronic conditions. *Health (London)*. Jul 5 2012.

Schuz B, Wurm S, Warner LM, Ziegelmann JP. Self-efficacy and multiple illness representations in older adults: a multilevel approach. *Psychol Health*. Jan 2012;**27**(1):13-29.

Harrison M, Reeves D, Harkness E, et al. A secondary analysis of the moderating effects of depression and multimorbidity on the effectiveness of a chronic disease self-management programme. *Patient Educ Couns*. Apr 2012;**87**(1):67-73.

Morris RL, Sanders C, Kennedy AP, Rogers A. Shifting priorities in multimorbidity: a longitudinal qualitative study of patient's prioritization of multiple conditions. *Chronic Illn* 2011;**7**:147-61.

Bayliss EA, John F, Steiner JF, Fernald DH, Crane LA, Main DS. Descriptions of barriers to self-care by persons with comorbid chronic diseases. *Ann Fam Med* 2003;**1**:15-21.

Jerant, A.F., M.M. von Friederichs-Fitzwater, and M. Moore, Patients' perceived barriers to active self-management of chronic conditions. *Patient Education & Counseling*, 2005. **57**(3): p. 300-7.

9.4 MEDICAL ERRORS/MEDICAL EDUCATION

Correction: Optimising medication management for polymedicated home-dwelling older adults with multiple chronic conditions: a mixed-methods study protocol. (2022). *BMJ Open*, 12(7), p.e030030corr1. doi:10.1136/bmjopen-2019-030030corr1.

Aoki T, Watanuki S. Multimorbidity and patient-reported diagnostic errors in the primary care setting: multicentre cross-sectional study in Japan. *BMJ Open* 2020;10(8):e039040. doi: 10.1136/bmjopen-2020-039040

Hausmann D, Kiesel V, Zimmerli L, et al. Sensitivity for multimorbidity: The role of diagnostic uncertainty of physicians when evaluating multimorbid video case-based vignettes. *PLoS One* 2019;14(4):e0215049. doi: 10.1371/journal.pone.0215049

Schoenborn NL, Boyd C, Cayea D, Nakamura K, Xue QL, Ray A *et al*: Incorporating prognosis in the care of older adults with multimorbidity: description and evaluation of a novel curriculum. *BMC Med Educ*. 2015;15:215.

Maguire S, Hanley K, Quinn K, Sheeran J, Stewart P: Teaching multimorbidity management to GP trainees: a pilot workshop. *Educ Prim Care*. 2015;26(6):410-415.

Bodenheimer, T., Disease management: promises and pitfalls. *N Engl J Med*, 1999. **340**: p. 1202-5.

Brennan, T.A., et al., Incidence of adverse events and negligence in hospitalized patients. Results of the Harvard Medical Practice Study I. *New England Journal of Medicine*, 1991. **324**(6): p. 370-6.

Wilson, R.M., et al., Quality in Australian Health Care Study. *Medical Journal of Australia*, 1996. **164**(12): p. 17.

9.5 COVID-19

Tisminetzky M, Delude C, Hebert T, Carr C, Goldberg RJ, Gurwitz JH. Age, Multiple Chronic Conditions, and COVID-19: A Literature Review. *J Gerontol A Biol Sci Med Sci* 2022;77(4):872-78. doi: 6046388 [pii]10.1093/gerona/glaa320

Tisminetzky M, Delude C, Hebert T, et al. Age, Multiple Chronic Conditions, and COVID-19: A literature review. *J Gerontol A Biol Sci Med Sci* 2020 doi: 10.1093/gerona/glaa320

McQueenie R, Foster HME, Jani BD, et al. Multimorbidity, polypharmacy, and COVID-19 infection within the UK Biobank cohort. *PLoS One* 2020;15(8):e0238091. doi: 10.1371/journal.pone.0238091

Poblador-Plou B, Carmona-Pirez J, Ioakeim-Skoufa I, et al. Baseline Chronic Comorbidity and Mortality in Laboratory-Confirmed COVID-19 Cases: Results from the PRECOVID Study in Spain. *Int J Environ Res Public Health* 2020;17(14) doi: 10.3390/ijerph17145171

Pati S, Mahapatra P, Kanungo S, et al. Managing Multimorbidity (Multiple Chronic Diseases) Amid COVID-19 Pandemic: A Community Based Study From Odisha, India. *Front Public Health* 2020;8:584408. doi: 10.3389/fpubh.2020.584408

Nunes BP, Souza ASS, Nogueira J, et al. Multimorbidity and population at risk for severe COVID-19 in the Brazilian Longitudinal Study of Aging. *Cad Saude Publica* 2020;36(12):e00129620. doi: 10.1590/0102-311X00129620

Fernandez-Nino JA, Guerra-Gomez JA, Idrovo AJ. Multimorbidity patterns among COVID-19 deaths: proposal for the construction of etiological models. *Rev Panam Salud Publica* 2020;44:e166. doi: 10.26633/RPSP.2020.166

Woolford SJ, D'Angelo S, Curtis EM, et al. COVID-19 and associations with frailty and multimorbidity: a prospective analysis of UK Biobank participants. *Aging Clin Exp Res* 2020;32(9):1897-905. doi: 10.1007/s40520-020-01653-6

Mair FS, Foster HM, Nicholl BI. Multimorbidity and the COVID-19 pandemic - An urgent call to action. *J Comorb* 2020;10:2235042X20961676. doi: 10.1177/2235042X20961676

Ecks S. Multimorbidity, Polyiatrogenesis, and COVID-19. *Μεδ Αντηροπολ* : 2020; '34(4):'488-503. doi:'10.1111/μα;.12626

De Maria M, Ferro F, Vellone E, et al. Self-care of patients with multiple chronic conditions and their caregivers during the COVID-19 pandemic: A qualitative descriptive study. *J Adv Nurs* 2021 doi: 10.1111/jan.15115

De Maria, M., Ferro, F., Vellone, E., Ausili, D., Luciani, M. and Matarese, M. (2021). Self-care of patients with multiple chronic conditions and their caregivers during the COVID-19 pandemic: A qualitative descriptive study. *Journal of Advanced Nursing*. doi:10.1111/jan.15115.

Chudasama YV, Zaccardi F, Gillies CL, et al. Patterns of multimorbidity and risk of severe SARS-CoV-2 infection: an observational study in the U.K. *BMC Infect Dis* 2021;21(1):908. doi: 10.1186/s12879-021-06600-y

Azzeri A, Ramlee MNA, Noor MIM, Jaafar MH, Rocmah TN, Dahlui M. Economic Burden of SARS-CoV-2 Patients with Multi-Morbidity: A Systematic Review Protocol. *Int J Environ Res Public Health*. 2022;19(20).

Bucholc M, Bradley D, Bennett D, Patterson L, Spiers R, Gibson D, et al. Identifying pre-existing conditions and multimorbidity patterns associated with in-hospital mortality in patients with COVID-19. *Sci Rep*. 2022;12(1):17313.

Cardoso JP, Calazans MIP, Carneiro A, Costa CM, Monteiro ELO, Aristizábal LYG, et al. Association between multimorbidity, intensive care unit admission, and death in patients with COVID-19 in Brazil: a cross-section study, 2020. *Sao Paulo Med J*. 2022.

Carretero-Bravo J, Ramos-Fiol B, Ortega-Martín E, Suárez-Lledó V, Salazar A, O'Ferrall-González C, et al. Multimorbidity Patterns and Their Association with Social Determinants, Mental and Physical Health during the COVID-19 Pandemic. *Int J Environ Res Public Health*. 2022;19(24).

Catalano A, Dansero L, Gilcrease W, Macciotta A, Saugo C, Manfredi L, et al. Multimorbidity and SARS-CoV-2 related outcomes: analysis on an Italian sample of 12.793 infected patients. *JMIR Public Health Surveill*. 2022.

Delerue Matos A, Fonseca de Paiva A, Cunha C, Voss G. Precautionary behaviours of individuals with multimorbidity during the COVID-19 pandemic. *Eur J Ageing*. 2022;19(4):827-35.

Downer MB, Sinha SK. Multimorbidity and COVID-19 in Canada: How the Pandemic Has Highlighted a Key and Yet Underappreciated Risk Factor. *Can Geriatr J*. 2022;25(4):404-6.

Makovski TT, Ghattas J, Monnier Besnard S, Ambrozova M, Vasinova B, Feteira-Santos R, et al. Aetiological and prognostic roles of frailty, multimorbidity and socioeconomic characteristics in the development of SARS-CoV-2 health outcomes: protocol for systematic reviews of population-based studies. *BMJ Open*. 2022;12(11):e063573.

Rose GL, Bonnell LN, Clifton J, Natkin LW, Hitt JR, O'Rourke-Lavoie J. Outcomes of Delay of Care After the Onset of COVID-19 for Patients Managing Multiple Chronic Conditions. *J Am Board Fam Med*. 2022;35(6):1081-91.

Ruzafa-Martinez M, García-González J, Morales-Asencio JM, Leal-Costa C, Hernández-Méndez S, Hernández-López MJ, et al. Consequences of the Covid-19 pandemic on complex multimorbid elderly: Follow-up of a community-based cohort. SAMAC3 Study. *J Nurs Scholarsh*. 2022.

Szychowska A, Zimny-Zajac A, Dziańkowska-Zaborszczyk E, Grodzicki T, Drygas W, Zdrojewski T. Physical Activity versus Selected Health Behaviors, Subjective Physical and Psychological Health and Multimorbidity in a Large Cohort of Polish Seniors during the COVID-19 Pandemic (Results of the National Test for Poles' Health). *Int J Environ Res Public Health*. 2022;20(1).

Ticinesi A, Parise A, Cerundolo N, Nouvenne A, Prati B, Chiussi G, et al. Multimorbidity and Frailty Are the Key Characteristics of Patients Hospitalized with COVID-19 Breakthrough Infection during Delta Variant Predominance in Italy: A Retrospective Study. *J Clin Med*. 2022;11(18).

Zhu Y, Liu Y, Jiang H. Geriatric Health Care During the COVID-19 Pandemic: Managing the Health Crisis. *Clin Interv Aging*. 2022;17:1365-78.