

Multimorbidity Literature Search Results: July to December 2023

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1. Epidemiology of multimorbidity and its outcomes (inc. health economics)

1. Ahmad TA, Gopal DP, Chelala C, Dayem Ullah AZ, Taylor SJ. Multimorbidity in people living with and beyond cancer: a scoping review. *Am J Cancer Res.* 2023;13(9):4346-65.
2. Ahmed W, Muhammad T, Muneera K. Prevalence of early and late onset of chronic diseases and multimorbidity and its association with physical, mental and functional health among older Indian adults. *BMC Geriatr.* 2023;23(1):563. doi: 10.1186/s12877-023-04264-8.
3. Alshakhs M, Goedecke PJ, Bailey JE, Madlock-Brown C. Racial differences in healthcare expenditures for prevalent multimorbidity combinations in the USA: a cross-sectional study. *BMC Med.* 2023;21(1):399. doi: 10.1186/s12916-023-03084-2.
4. Alvarez-Galvez J, Ortega-Martin E, Ramos-Fiol B, Suarez-Lledo V, Carretero-Bravo J. Epidemiology, mortality, and health service use of local-level multimorbidity patterns in South Spain. *Nat Commun.* 2023;14(1):7689. doi: 10.1038/s41467-023-43569-5.
5. Ansari S, Anand A, Hossain B. Exploring multimorbidity clusters in relation to healthcare use and its impact on self-rated health among older people in India. *PLOS Glob Public Health.* 2023;3(12):e0002330. doi: 10.1371/journal.pgph.0002330.
6. Baneshi MR, Eynstone-Hinkins J, McElwee P, Mishra GD, Moran L, Waller M, et al. What can death records tell us about multimorbidity? *J Epidemiol Community Health.* 2023;77(8):507-14. doi: 10.1136/jech-2023-220654.
7. Chu WM, Ho HE, Yeh CJ, Wei JC, Arai H, Lee MC. Additive effect of frailty with distinct multimorbidity patterns on mortality amongst middle-aged and older adults in Taiwan: A 16-year population-based study. *Geriatr Gerontol Int.* 2023;23(9):684-91. doi: 10.1111/ggi.14647.
8. de Gans ST, Maessen GC, van de Pol MHJ, van Apeldoorn MJ, van Ingen-Stokbroekx MAL, van der Sloot N, et al. Effect of interprofessional and intraprofessional clinical collaboration on patient related outcomes in multimorbid older patients - a retrospective cohort study on

the Intensive Collaboration Ward. *BMC Geriatr.* 2023;23(1):519. doi: 10.1186/s12877-023-04232-2.

9. de Gans ST, Maessen GC, van de Pol MHJ, van Apeldoorn MJ, van Ingen-Stokbroekx MAL, van der Sloot N, et al. Effect of interprofessional and intraprofessional clinical collaboration on patient related outcomes in multimorbid older patients - a retrospective cohort study on the Intensive Collaboration Ward. *BMC Geriatr.* 2023;23(1):519. doi: 10.1186/s12877-023-04232-2.

10. Feng X, Sarma H, Seubsman SA, Sleigh A, Kelly M. The Impact of Multimorbidity on All-Cause Mortality: A Longitudinal Study of 87,151 Thai Adults. *Int J Public Health.* 2023;68:1606137. doi: 10.3389/ijph.2023.1606137.

11. Gilbert T, Cordier Q, Polazzi S, Street A, Conroy S, Duclos A. Combining the Hospital Frailty Risk Score With the Charlson and Elixhauser Multimorbidity Indices to Identify Older Patients at Risk of Poor Outcomes in Acute Care. *Med Care.* 2024;62(2):117-24. doi: 10.1097/mlr.0000000000001962.

12. Gupta P, Cunningham SA, Ali MK, Mohan S, Mahapatra P, Pati SC. Multimorbidity clusters and associated health care cost among patients attending psychiatric clinics in Odisha, India. *Indian J Psychiatry.* 2023;65(7):736-41. doi: 10.4103/indianjpsychiatry.indianjpsychiatry_463_22.

13. Kone AP, Martin L, Scharf D, Gabriel H, Dean T, Costa I, et al. The impact of multimorbidity on severe COVID-19 outcomes in community and congregate settings. *Dialogues Health.* 2023;2:100128. doi: 10.1016/j.dialog.2023.100128.

14. Královcová M, Karvunidis T, Matějovič M. Critical care for multimorbid patients. *Vnitr Lek.* 2023;69(3):166-72. doi: 10.36290/vnl.2023.029.

15. Lee SI, Hanley S, Vowles Z, Plachcinski R, Moss N, Singh M, et al. The development of a core outcome set for studies of pregnant women with multimorbidity. *BMC Med.* 2023;21(1):314. doi: 10.1186/s12916-023-03013-3.

16. Lleal M, Corral-Vazquez C, Baré M, Comet R, Herranz S, Baigorri F, et al. Multimorbidity patterns in COVID-19 patients and their relationship with infection severity: MRisk-COVID study. *PLoS One.* 2023;18(8):e0290969. doi: 10.1371/journal.pone.0290969.

17. Lyons J, Akbari A, Abrams KR, Azcoaga Lorenzo A, Ba Dhafari T, Chess J, et al. Trajectories in chronic disease accrual and mortality across the lifespan in Wales, UK (2005-2019), by area deprivation profile: linked electronic health records cohort study on 965,905 individuals. *Lancet Reg Health Eur.* 2023;32:100687. doi: 10.1016/j.lanepe.2023.100687.
18. Mino-León D, Giraldo-Rodríguez L, Rojas-Huerta A, Prado-Galbarro FJ, Reyes-Morales H. Multimorbidity, Functionality, Socioeconomic and Behavioral Conditions Linked with Mortality in a Cohort of Adults: A Latent Class Analysis. *Arch Med Res.* 2023;54(6):102869. doi: 10.1016/j.arcmed.2023.102869.
19. Monhart Z. Clinical assessment and management of patients with multimorbidity. *Vnitr Lek.* 2023;69(3):173-80. doi: 10.36290/vnl.2023.030.
20. Nazar G, Díaz-Toro F, Concha-Cisternas Y, Leiva-Ordoñez AM, Troncoso-Pantoja C, Celis-Morales C, et al. Latent class analyses of multimorbidity and all-cause mortality: A prospective study in Chilean adults. *PLoS One.* 2023;18(12):e0295958. doi: 10.1371/journal.pone.0295958.
21. Nazar G, Díaz-Toro F, Petermann-Rocha F, Lanuza F, Troncoso C, Leiva-Ordóñez AM, et al. Multimorbidity and 11-year mortality in adults: a prospective analysis using the Chilean National Health Survey. *Health Promot Int.* 2023;38(6). doi: 10.1093/heapro/daad176.
22. Ng XR, Tey YXS, Lew KJ, Lee PSS, Lee ES, Sim SZ. Cross-sectional study assessing health outcome priorities of older adults with multimorbidity at a primary care setting in Singapore. *BMJ Open.* 2023;13(12):e079990. doi: 10.1136/bmjopen-2023-079990.
23. Pasea L, Dashtban A, Mizani M, Bhuvu A, Morris T, Mamza JB, et al. Risk factors, outcomes and healthcare utilisation in individuals with multimorbidity including heart failure, chronic kidney disease and type 2 diabetes mellitus: a national electronic health record study. *Open Heart.* 2023;10(2). doi: 10.1136/openhrt-2023-002332.
24. Prior A, Vestergaard CH, Vedsted P, Smith SM, Virgilsen LF, Rasmussen LA, et al. Healthcare fragmentation, multimorbidity, potentially inappropriate medication, and mortality: a Danish nationwide cohort study. *BMC Med.* 2023;21(1):305. doi: 10.1186/s12916-023-03021-3.

25. Ren Z, Xia S, Sun J, Wang D, Du Y, Li N, et al. Internet use, cardiometabolic multimorbidity, and death in older adults: a multi-cohort study spanning developing and developed countries. *Global Health*. 2023;19(1):81. doi: 10.1186/s12992-023-00984-z.
26. Rohaiem SN, Khan BF, Al-Julaih GH, Mohammedin AS. Atraumatic Fractures in Multi-Morbid Older Adults: A Series of Five Cases and Review of Literature. *Cureus*. 2023;15(12):e51333. doi: 10.7759/cureus.51333.
27. Savikangas T, Savolainen T, Tirkkonen A, Alén M, Hautala AJ, Laukkanen JA, et al. The Impact of Multimorbidity Patterns on Changes in Physical Activity and Physical Capacity Among Older Adults Participating in a Year-Long Exercise Intervention. *J Aging Phys Act*. 2023:1-12. doi: 10.1123/japa.2022-0397.
28. Valletta M, Vetrano DL, Xia X, Rizzuto D, Roso-Llorach A, Calderón-Larrañaga A, et al. Multimorbidity patterns and 18-year transitions from normal cognition to dementia and death: A population-based study. *J Intern Med*. 2023;294(3):326-35. doi: 10.1111/joim.13683.
29. Vaman RS, Valamparampil MJ, Dalmita NJ, Reghukumar A, Anish TS. Immediate cause and the role of multimorbidity in deaths associated with COVID 19 among hospitalized patients in a low resource district in Kerala India: A record-based case-control analysis. *J Family Med Prim Care*. 2023;12(8):1593-601. doi: 10.4103/jfmpc.jfmpc_2061_22.
30. Walsh S, Gillespie P. Exploring the link between Multimorbidity and direct healthcare costs in Ireland: A cross-sectional study. *J Multimorb Comorb*. 2023;13:26335565231219421. doi: 10.1177/26335565231219421.
31. Wang Z, Zeng Z. Effects of multimorbidity patterns and socioeconomic status on catastrophic health expenditure of widowed older adults in China. *Front Public Health*. 2023;11:1188248. doi: 10.3389/fpubh.2023.1188248.
32. Wikström K, Linna M, Reissell E, Laatikainen T. Multimorbidity transitions and the associated healthcare cost among the Finnish adult population during a two-year follow-up. *J Multimorb Comorb*. 2023;13:26335565231202325. doi: 10.1177/26335565231202325.
33. Wilk P, Moran V, Alperin MNP, Bohn T, Fagherazzi G, Zeegers MP, et al. The role of multimorbidity and socio-economic characteristics as potential risk factors for Long Covid: evidence from the multilevel analysis of the Survey of Health, Ageing and Retirement in

Europe's corona surveys (2020-2021). *Age Ageing*. 2023;52(12). doi: 10.1093/ageing/afad225.

34. Wu G, Cai M, Wang C, Zou H, Wang X, Hua J, et al. Ambient air pollution and incidence, progression to multimorbidity and death of hypertension, diabetes, and chronic kidney disease: A national prospective cohort. *Sci Total Environ*. 2023;881:163406. doi: 10.1016/j.scitotenv.2023.163406.

35. Wu J, Zhang H, Shao J, Chen D, Xue E, Huang S, et al. Healthcare for Older Adults with Multimorbidity: A Scoping Review of Reviews. *Clin Interv Aging*. 2023;18:1723-35. doi: 10.2147/cia.S425576.

36. Zamorano P, Espinoza MA, Varela T, Abbott T, Tellez A, Armijo N, et al. Economic evaluation of a multimorbidity patient centered care model implemented in the Chilean public health system. *BMC Health Serv Res*. 2023;23(1):1041. doi: 10.1186/s12913-023-09970-y.

37. Zhang K, You H, Yu L, Wu Q, Xu X. Inequality of opportunity in outpatient expenditure among the elderly with multimorbidity: evidence from China. *Int J Equity Health*. 2023;22(1):153. doi: 10.1186/s12939-023-01953-z.

38. Zhang T, Su M, Li D, Zhang W, Yang F, Li W. Equity in health service utilisation among middle-aged and elderly people with multiple chronic conditions in China: evidence from longitudinal data of 2011-2018 CHARLS. *BMJ Open*. 2023;13(10):e072320. doi: 10.1136/bmjopen-2023-072320.

39. Zöller B, Pirouzifard M, Holmquist B, Sundquist J, Halling A, Sundquist K. Multimorbidity can run in families-what are implications for clinical practice? *Bmj*. 2023;382:1633. doi: 10.1136/bmj.p1633.

2. Epidemiology of multimorbidity prediction and associations with risk factors

1. Alamnia TT, Sargent GM, Kelly M. Patterns of Non-Communicable Disease, Multimorbidity, and Population Awareness in Bahir Dar, Northwest Ethiopia: A Cross-Sectional Study. *Int J Gen Med.* 2023;16:3013-31. doi: 10.2147/ijgm.S421749.
2. Albagmi FM, Hussain M, Kamal K, Sheikh MF, AlNujaidi HY, Bah S, et al. Predicting Multimorbidity Using Saudi Health Indicators (Sharik) Nationwide Data: Statistical and Machine Learning Approach. *Healthcare (Basel).* 2023;11(15). doi: 10.3390/healthcare11152176.
3. Alsaleh MM, Allery F, Choi JW, Hama T, McQuillin A, Wu H, et al. Prediction of disease comorbidity using explainable artificial intelligence and machine learning techniques: A systematic review. *Int J Med Inform.* 2023;175:105088. doi: 10.1016/j.ijmedinf.2023.105088.
4. Amine I, Guillien A, Philippat C, Anguita-Ruiz A, Casas M, de Castro M, et al. Environmental exposures in early-life and general health in childhood. *Environ Health.* 2023;22(1):53. doi: 10.1186/s12940-023-01001-x.
5. Amirzada M, Buczak-Stec E, König HH, Hajek A. Multimorbidity patterns in the German general population aged 40 years and over. *Arch Gerontol Geriatr.* 2023;114:105067. doi: 10.1016/j.archger.2023.105067.
6. Applegate BK, Pasquire N, Ouellette HM. The Prevalence of Physical and Mental Health Multimorbidity Among People Held in U.S. Jails. *J Correct Health Care.* 2024;30(1):7-13. doi: 10.1089/jchc.23.05.0040.
7. Azcoaga-Lorenzo A, Fagbamigbe AF, Agrawal U, Black M, Usman M, Lee SI, et al. Maternal multimorbidity and preterm birth in Scotland: an observational record-linkage study. *BMC Med.* 2023;21(1):352. doi: 10.1186/s12916-023-03058-4.
8. Bao Y, Lu P, Wang M, Zhang X, Song A, Gu X, et al. Exploring multimorbidity profiles in middle-aged inpatients: a network-based comparative study of China and the United Kingdom. *BMC Med.* 2023;21(1):495. doi: 10.1186/s12916-023-03204-y.
9. Batista R, Reaume M, Roberts R, Seale E, Rhodes E, Sucha E, et al. Prevalence and patterns of multimorbidity among linguistic groups of patients receiving home care in Ontario:

a retrospective cohort study. *BMC Geriatr.* 2023;23(1):725. doi: 10.1186/s12877-023-04267-5.

10. Brown HK, Fung K, Cohen E, Dennis CL, Grandi SM, Rosella LC, et al. Patterns of multiple chronic conditions in pregnancy: Population-based study using latent class analysis. *Paediatr Perinat Epidemiol.* 2024;38(2):111-20. doi: 10.1111/ppe.13016.

11. Caballero FF, Lana A, Struijk EA, Arias-Fernández L, Yévenes-Briones H, Cárdenas-Valladolid J, et al. Prospective Association Between Plasma Concentrations of Fatty Acids and Other Lipids, and Multimorbidity in Older Adults. *J Gerontol A Biol Sci Med Sci.* 2023;78(10):1763-70. doi: 10.1093/gerona/glad122.

12. Caballero FF, Lana A, Struijk EA, Arias-Fernández L, Yévenes-Briones H, Cárdenas-Valladolid J, et al. Prospective Association Between Plasma Concentrations of Fatty Acids and Other Lipids, and Multimorbidity in Older Adults. *J Gerontol A Biol Sci Med Sci.* 2023;78(10):1763-70. doi: 10.1093/gerona/glad122.

13. Chen C, Zhao Y, Wu Y, Zhong P, Su B, Zheng X. Socioeconomic, Health Services, and Multimorbidity Disparities in Chinese Older Adults. *Am J Prev Med.* 2023. doi: 10.1016/j.amepre.2023.12.012.

14. Chen HL, Yu XH, Yin YH, Shan EF, Xing Y, Min M, et al. Multimorbidity patterns and the association with health status of the oldest-old in long-term care facilities in China: a two-step analysis. *BMC Geriatr.* 2023;23(1):851. doi: 10.1186/s12877-023-04507-8.

15. Chen S, Marshall T, Jackson C, Cooper J, Crowe F, Nirantharakumar K, et al. Sociodemographic characteristics and longitudinal progression of multimorbidity: A multistate modelling analysis of a large primary care records dataset in England. *PLoS Med.* 2023;20(11):e1004310. doi: 10.1371/journal.pmed.1004310.

16. Chen S, Si Y, Hanewald K, Li B, Wu C, Xu X, et al. Association between multimorbidity and informal long-term care use in China: a nationwide cohort study. *BMC Geriatr.* 2023;23(1):700. doi: 10.1186/s12877-023-04371-6.

17. Chlabicz M, Jamiołkowski J, Sowa P, Zalewska M, Kiszkiel Ł, Ciołkiewicz M, et al. Multimorbidity Patterns in the Urban Population in Poland. *J Clin Med.* 2023;12(18). doi: 10.3390/jcm12185860.

18. Chu CS, Cheng SL, Bai YM, Su TP, Tsai SJ, Chen TJ, et al. Multimorbidity Pattern and Risk for Mortality Among Patients With Dementia: A Nationwide Cohort Study Using Latent Class Analysis. *Psychiatry Investig.* 2023;20(9):861-9. doi: 10.30773/pi.2023.0112.
19. Chukwusa E, Font-Gilabert P, Manthorpe J, Healey A. The association between social care expenditure and multiple-long term conditions: A population-based area-level analysis. *J Multimorb Comorb.* 2023;13:26335565231208994. doi: 10.1177/26335565231208994.
20. Chukwusa E, Font-Gilabert P, Manthorpe J, Healey A. The association between social care expenditure and multiple-long term conditions: A population-based area-level analysis. *J Multimorb Comorb.* 2023;13:26335565231208994. doi: 10.1177/26335565231208994.
21. Conroy MC, Reeves GK, Allen NE. Multi-morbidity and its association with common cancer diagnoses: a UK Biobank prospective study. *BMC Public Health.* 2023;23(1):1300. doi: 10.1186/s12889-023-16202-9.
22. Conroy MC, Reeves GK, Allen NE. Multi-morbidity and its association with common cancer diagnoses: a UK Biobank prospective study. *BMC Public Health.* 2023;23(1):1300. doi: 10.1186/s12889-023-16202-9.
23. Cordova R, Viallon V, Fontvieille E, Peruchet-Noray L, Jansana A, Wagner KH, et al. Consumption of ultra-processed foods and risk of multimorbidity of cancer and cardiometabolic diseases: a multinational cohort study. *Lancet Reg Health Eur.* 2023;35:100771. doi: 10.1016/j.lanepe.2023.100771.
24. Craig A, Mapanga W, Mtintsilana A, Dlamini S, Norris S. Exploring the national prevalence of mental health risk, multimorbidity and the associations thereof: a repeated cross-sectional panel study. *Front Public Health.* 2023;11:1217699. doi: 10.3389/fpubh.2023.1217699.
25. Craig A, Mtintsilana A, Mapanga W, Dlamini SN, Norris SA. Socioeconomic position, perceived weight, lifestyle risk, and multimorbidity in young adults aged 18 to 35 years: a Multi-country Study. *BMC Public Health.* 2023;23(1):1360. doi: 10.1186/s12889-023-16234-1.
26. Crowther J, Butterly EW, Hannigan LJ, Guthrie B, Wild SH, Mair FS, et al. Correlations between comorbidities in trials and the community: An individual-level participant data meta-analysis. *J Multimorb Comorb.* 2023;13:26335565231213571. doi: 10.1177/26335565231213571.

27. Cuadros DF, Moreno CM, Tomita A, Singh U, Olivier S, Castle A, et al. Geospatial assessment of the convergence of communicable and non-communicable diseases in South Africa. *J Multimorb Comorb.* 2023;13:26335565231204119. doi: 10.1177/26335565231204119.
28. Deng M, Lu Y, Li X, Zhou X, Hou G. Association between sarcopenia and multimorbidity among middle-aged and older adults in China: Findings from the China Health and Retirement Longitudinal Study. *Exp Gerontol.* 2024;185:112348. doi: 10.1016/j.exger.2023.112348.
29. Deng P, Liu C, Chen M, Si L. Knowledge domain and emerging trends in multimorbidity and frailty research from 2003 to 2023: a scientometric study using citespace and VOSviewer. *Health Econ Rev.* 2023;13(1):46. doi: 10.1186/s13561-023-00460-9.
30. Dinh TTH, Bonner A. Exploring the relationships between health literacy, social support, self-efficacy and self-management in adults with multiple chronic diseases. *BMC Health Serv Res.* 2023;23(1):923. doi: 10.1186/s12913-023-09907-5.
31. Dismore L, Hurst C, Granic A, Tullo E, Witham MD, Dodds RM, et al. Why are older adults living with the complexity of multiple long-term conditions, frailty and a recent deterioration in health under-served by research? A narrative synthesis review of the literature. *J Frailty Sarcopenia Falls.* 2023;8(4):230-9. doi: 10.22540/jfsf-08-230.
32. Dooley EE, Chen L, Ghazi L, Hornikel B, Martinez-Amezcuca P, Palta P, et al. Multimorbidity is associated with lower total 24-hour movement activity among US adults. *Prev Med Rep.* 2023;36:102483. doi: 10.1016/j.pmedr.2023.102483.
33. Ekezie W, Martin CA, Baggaley RF, Teece L, Nazareth J, Pan D, et al. Association between ethnicity and migration status with the prevalence of single and multiple long-term conditions in UK healthcare workers. *BMC Med.* 2023;21(1):433. doi: 10.1186/s12916-023-03109-w.
34. Eto F, Samuel M, Henkin R, Mahesh M, Ahmad T, Angdembe A, et al. Ethnic differences in early onset multimorbidity and associations with health service use, long-term prescribing, years of life lost, and mortality: A cross-sectional study using clustering in the UK Clinical Practice Research Datalink. *PLoS Med.* 2023;20(10):e1004300. doi: 10.1371/journal.pmed.1004300.

35. Fagbamigbe AF, Agrawal U, Azcoaga-Lorenzo A, MacKerron B, Özyiğit EB, Alexander DC, et al. Clustering long-term health conditions among 67728 people with multimorbidity using electronic health records in Scotland. *PLoS One*. 2023;18(11):e0294666. doi: 10.1371/journal.pone.0294666.
36. Feng Z, Ma Z, Hu W, He Q, Li T, Chu J, et al. Bidirectional Association Between Multimorbidity and Frailty and the Role of Depression in Older Europeans. *J Gerontol A Biol Sci Med Sci*. 2023;78(11):2162-9. doi: 10.1093/gerona/glad178.
37. Ferris J, Fiedeldey LK, Kim B, Clemens F, Irvine MA, Hosseini SH, et al. Systematic review and meta-analysis of disease clustering in multimorbidity: a study protocol. *BMJ Open*. 2023;13(12):e076496. doi: 10.1136/bmjopen-2023-076496.
38. Ferro MA. Understanding multimorbidity early in life takes a step forward. *Lancet Public Health*. 2023;8(9):e662-e3. doi: 10.1016/s2468-2667(23)00174-3.
39. Fessler L, Maltagliati S, Sieber S, Cullati S, Tessitore E, Craviari C, et al. Physical activity matters for everyone's health, but individuals with multimorbidity benefit more. *Prev Med Rep*. 2023;34:102265. doi: 10.1016/j.pmedr.2023.102265.
40. Griselda M, Alfian SD, Wicaksono IA, Wawruch M, Abdulah R. Findings from the Indonesian family life survey on patterns and factors associated with multimorbidity. *Sci Rep*. 2023;13(1):18607. doi: 10.1038/s41598-023-42603-2.
41. Guo C, Liu Z, Fan H, Wang H, Zhang X, Fan C, et al. Associations of healthy lifestyle and three latent socioeconomic status patterns with physical multimorbidity among middle-aged and older adults in China. *Prev Med*. 2023;175:107693. doi: 10.1016/j.ypmed.2023.107693.
42. Haapanen MJ, Vetrano DL, Mikkola TM, Calderón-Larrañaga A, Dekhtyar S, Kajantie E, et al. Early growth, stress, and socioeconomic factors as predictors of the rate of multimorbidity accumulation across the life course: a longitudinal birth cohort study. *Lancet Healthy Longev*. 2024;5(1):e56-e65. doi: 10.1016/s2666-7568(23)00231-3.
43. Han BH, Bronson J, Washington L, Yu M, Kelton K, Tsai J, et al. Co-occurring Medical Multimorbidity, Mental Illness, and Substance Use Disorders Among Older Criminal Legal System-Involved Veterans. *Med Care*. 2023;61(7):477-83. doi: 10.1097/mlr.0000000000001864.

44. Hayanga B, Stafford M, Saunders CL, Bécares L. Ethnic inequalities in age-related patterns of multiple long-term conditions in England: Analysis of primary care and nationally representative survey data. *Sociol Health Illn.* 2023. doi: 10.1111/1467-9566.13724.
45. Hayanga B, Stafford M, Saunders CL, Bécares L. Ethnic inequalities in age-related patterns of multiple long-term conditions in England: Analysis of primary care and nationally representative survey data. *Sociol Health Illn.* 2023. doi: 10.1111/1467-9566.13724.
46. Heikkilä K, Metsälä J, Pulakka A, Nilsen SM, Kivimäki M, Risnes K, et al. Preterm birth and the risk of multimorbidity in adolescence: a multiregister-based cohort study. *Lancet Public Health.* 2023;8(9):e680-e90. doi: 10.1016/s2468-2667(23)00145-7.
47. Hounkpatin H, Simpson G, Santer M, Farmer A, Dambha-Miller H. The association between stress and multiple long-term conditions: A cohort study. *J Psychosom Res.* 2024;176:111566. doi: 10.1016/j.jpsychores.2023.111566.
48. Hu Y, Wang Z, He H, Pan L, Tu J, Shan G. Prevalence and patterns of multimorbidity in China during 2002-2022: A systematic review and meta-analysis. *Ageing Res Rev.* 2024;93:102165. doi: 10.1016/j.arr.2023.102165.
49. Iwakiri R, Hamaya H, Nakayama T, Kataoka A, Murano Y, Okawa T, et al. Multimorbidity, consisting of a combination of chronic diseases and geriatric syndromes, predicts the risk of difficulty in discharge home in older patients admitted to acute care hospital. *Geriatr Gerontol Int.* 2023. doi: 10.1111/ggi.14727.
50. Jain P, Binder A, Chen B, Parada H, Jr., 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.* 2023;78(12):2274-81. doi: 10.1093/gerona/glac190.
51. Jin Y, Brown R, Bhattarai M, Song J. Urban-rural differences in associations among perceived stress, resilience and self-care in Chinese older adults with multiple chronic conditions. *Int J Older People Nurs.* 2024;19(1):e12591. doi: 10.1111/opn.12591.
52. Jin Y, Brown R, Bhattarai M, Song J. Urban-rural differences in associations among perceived stress, resilience and self-care in Chinese older adults with multiple chronic conditions. *Int J Older People Nurs.* 2024;19(1):e12591. doi: 10.1111/opn.12591.

53. Kamp M, Achilonu O, Kisiangani I, Nderitu DM, Mpangase PT, Tadesse GA, et al. Multimorbidity in African ancestry populations: a scoping review. *BMJ Glob Health*. 2023;8(12). doi: 10.1136/bmjgh-2023-013509.
54. Kamp M, Achilonu O, Kisiangani I, Nderitu DM, Mpangase PT, Tadesse GA, et al. Multimorbidity in African ancestry populations: a scoping review. *BMJ Glob Health*. 2023;8(12). doi: 10.1136/bmjgh-2023-013509.
55. Kantilafiti M, Giannakou K, Chrysostomou S. Multimorbidity and food insecurity in adults: A systematic review and meta-analysis. *PLoS One*. 2023;18(7):e0288063. doi: 10.1371/journal.pone.0288063.
56. Kantilafiti M, Giannakou K, Chrysostomou S. Multimorbidity and food insecurity in adults: A systematic review and meta-analysis. *PLoS One*. 2023;18(7):e0288063. doi: 10.1371/journal.pone.0288063.
57. Kantilafiti M, Hadjikou A, Chrysostomou S. Meal Frequency and Multi-Morbidity in a Cypriot Population: A Cross-Sectional Study. *Foods*. 2023;12(18). doi: 10.3390/foods12183330.
58. Kyprianidou M, Chrysostomou S, Andreou K, Alexandrou A, Panagiotou R, Christophi CA, et al. The association between dietary intake of macro- and micronutrients and multimorbidity: a cross-sectional study in Cyprus. *J Nutr Sci*. 2023;12:e118. doi: 10.1017/jns.2023.102.
59. Lee SI, Hanley S, Vowles Z, Plachcinski R, Moss N, Singh M, et al. The development of a core outcome set for studies of pregnant women with multimorbidity. *BMC Med*. 2023;21(1):314. doi: 10.1186/s12916-023-03013-3.
60. Lemke KW, Forrest CB, Leff BA, Boyd CM, Gudzone KA, Pollack CE, et al. Patterns of Morbidity Across the Lifespan: A Population Segmentation Framework for Classifying Health Care Needs for All Ages. *Med Care*. 2023. doi: 10.1097/mlr.0000000000001898.
61. Li Y, Guo B, Meng Q, Yin L, Chen L, Wang X, et al. Associations of long-term exposure to air pollution and physical activity with the risk of systemic inflammation-induced multimorbidity in Chinese adults: results from the China multi-ethnic cohort study (CMEC). *BMC Public Health*. 2023;23(1):2556. doi: 10.1186/s12889-023-17518-2.

62. Lieber J, Banjara SK, Mallinson PAC, Mahajan H, Bhogadi S, Addanki S, et al. Burden, determinants, consequences and care of multimorbidity in rural and urbanising Telangana, India: protocol for a mixed-methods study within the APCAPS cohort. *BMJ Open*. 2023;13(11):e073897. doi: 10.1136/bmjopen-2023-073897.
63. Lopes Vieira MM, Borges VS, Oliveira EJP, Bof de Andrade F. Functional limitation in the older Brazilian adults: Association with multimorbidity and socioeconomic conditions. *PLoS One*. 2023;18(11):e0294935. doi: 10.1371/journal.pone.0294935.
64. Lum DH, Choi MM, Cheung JOH, Ng DWY, Leung JCN, Zhou L, et al. Multimorbidity representation in randomized controlled trials of selective serotonin reuptake inhibitors: A systematic analysis of published trials. *J Affect Disord*. 2024;344:261-6. doi: 10.1016/j.jad.2023.10.074.
65. Lutomski JE, Hoekstra T, Akker MVD, Blom J, Calderón-Larrañaga A, Marengoni A, et al. Multimorbidity patterns in older persons and their association with self-reported quality of life and limitations in activities of daily living. *Arch Gerontol Geriatr*. 2023;115:105134. doi: 10.1016/j.archger.2023.105134.
66. Lv B, Zhang L, Meng K. Effect of multiple chronic conditions on family doctor contracting in the elderly in China: the moderating role of socioeconomic status. *BMC Public Health*. 2023;23(1):1540. doi: 10.1186/s12889-023-16438-5.
67. Ma R, Romano E, Ashworth M, Yadegarfar ME, Dregan A, Ronaldson A, et al. Multimorbidity clusters among people with serious mental illness: a representative primary and secondary data linkage cohort study. *Psychol Med*. 2023;53(10):4333-44. doi: 10.1017/s003329172200109x.
68. MacKinnon MJ, Picchio CA, Nomah DK, Segura AR, van Selm L, Fernández E, et al. Chronic conditions and multimorbidity among West African migrants in greater Barcelona, Spain. *Front Public Health*. 2023;11:1142672. doi: 10.3389/fpubh.2023.1142672.
69. MacRae C, Mercer SW, Lawson A, Marshall A, Pearce J, Abubakar E, et al. Impact of individual, household, and area characteristics on health and social care outcomes for people with multimorbidity: Protocol for a multilevel analysis. *PLoS One*. 2023;18(10):e0282867. doi: 10.1371/journal.pone.0282867.

70. Maimaitiwusiman Z, Wumaier A, Xiao W, Xuekelati S, Halan B, Xiang H, et al. Ethnic and geographic variations in multiple chronic conditions among community-dwelling older people in Xinjiang: a cross-sectional study. *BMC Geriatr.* 2023;23(1):455. doi: 10.1186/s12877-023-04159-8.
71. Mamo SK, Pearlman J, Wheeler KA. Associations Between Age-Related Hearing Loss, Cognitive Impairment, and Multiple Chronic Conditions in a Group Care Setting. *J Speech Lang Hear Res.* 2023;66(12):5087-108. doi: 10.1044/2023_jslhr-23-00067.
72. McCloskey JK, Ellis JL, Uratsu CS, Drace ML, Ralston JD, Bayliss EA, et al. Telehealth During COVID-19 for Adults with Multiple Chronic Conditions: Associations with Self-Reported Food Insecurity and with Physical Limitations. *Telemed J E Health.* 2023;29(10):1446-54. doi: 10.1089/tmj.2022.0206.
73. Menear M, Duhoux A, Bédard M, Paquette JS, Baron M, Breton M, et al. Understanding the impacts of the COVID-19 pandemic on the care experiences of people with mental-physical multimorbidity: protocol for a mixed methods study. *BMC Prim Care.* 2023;24(1):154. doi: 10.1186/s12875-023-02106-5.
74. Mira R, Newton JT, Sabbah W. The association between edentulism and progress of multimorbidity over 12 years among older American adults. *Community Dent Health.* 2023. doi: 10.1922/CDH_00150Mira05.
75. Mohamud MA, Campbell DJT, Wick J, Leung AA, Fabreau GE, Tonelli M, et al. 20-year trends in multimorbidity by race/ethnicity among hospitalized patient populations in the United States. *Int J Equity Health.* 2023;22(1):137. doi: 10.1186/s12939-023-01950-2.
76. Nartey Y, Chalitsios CV, Khan N, Simpson G, Dambha-Miller H, Farmer A. Factors associated with multimorbidity in England: an analysis of the English Longitudinal Study of Ageing. *Lancet.* 2023;402 Suppl 1:S73. doi: 10.1016/s0140-6736(23)02126-8.
77. Ng Fat L, Patil P, Mindell JS, Manikam L, Scholes S. Ethnic differences in multimorbidity after accounting for social-economic factors, findings from The Health Survey for England. *Eur J Public Health.* 2023;33(6):959-67. doi: 10.1093/eurpub/ckad146.
78. Ni W, Yuan X, Zhang Y, Zhang H, Zheng Y, Xu J. Sociodemographic and lifestyle determinants of multimorbidity among community-dwelling older adults: findings from

346,760 SHARE participants. *BMC Geriatr.* 2023;23(1):419. doi: 10.1186/s12877-023-04128-1.

79. Ni Y, Zhou Y, Kivimäki M, Cai Y, Carrillo-Larco RM, Xu X, et al. Socioeconomic inequalities in physical, psychological, and cognitive multimorbidity in middle-aged and older adults in 33 countries: a cross-sectional study. *Lancet Healthy Longev.* 2023;4(11):e618-e28. doi: 10.1016/s2666-7568(23)00195-2.

80. Niebuur J, Vonk JM, Du Y, de Bock GH, Lunter G, Krabbe PFM, et al. Lifestyle factors related to prevalent chronic disease multimorbidity: A population-based cross-sectional study. *PLoS One.* 2023;18(7):e0287263. doi: 10.1371/journal.pone.0287263.

81. Nishida Y, Anzai T, Takahashi K, Kozuma T, Kanda E, Yamauchi K, et al. Multimorbidity patterns in the working age population with the top 10% medical cost from exhaustive insurance claims data of Japan Health Insurance Association. *PLoS One.* 2023;18(9):e0291554. doi: 10.1371/journal.pone.0291554.

82. Nistor P, Chang-Kit B, Nicholson K, Anderson KK, Stranges S. The relationship between sleep health and multimorbidity in community dwelling populations: Systematic review and global perspectives. *Sleep Med.* 2023;109:270-84. doi: 10.1016/j.sleep.2023.07.002.

83. North TL, Harrison S, Bishop DC, Wootton RE, Carter AR, Richardson TG, et al. Educational inequality in multimorbidity: causality and causal pathways. A mendelian randomisation study in UK Biobank. *BMC Public Health.* 2023;23(1):1644. doi: 10.1186/s12889-023-16369-1.

84. Pati S, Sinha A, Verma P, Kshatri J, Kanungo S, Sahoo KC, et al. Childhood health and educational disadvantage are associated with adult multimorbidity in the global south: findings from a cross-sectional analysis of nationally representative surveys in India and Brazil. *J Epidemiol Community Health.* 2023;77(10):617-24. doi: 10.1136/jech-2022-219507.

85. Peila R, Xue X, Shadyab AH, Wactawski-Wende J, Espeland MA, Snetselaar LG, et al. Association Between the Healthy Lifestyle Index and Risk of Multimorbidity in the Women's Health Initiative. *J Gerontol A Biol Sci Med Sci.* 2023;78(12):2282-93. doi: 10.1093/gerona/glad170.

86. Pizzol D, Trott M, Butler L, Barnett Y, Ford T, Neufeld SA, et al. Relationship between severe mental illness and physical multimorbidity: a meta-analysis and call for action. *BMJ Ment Health*. 2023;26(1). doi: 10.1136/bmjment-2023-300870.
87. Portela D, Pereira Rodrigues P, Freitas A, Costa E, Bousquet J, Fonseca JA, et al. Impact of multimorbidity patterns in hospital admissions: the case study of asthma. *J Asthma*. 2023;60(9):1723-33. doi: 10.1080/02770903.2023.2185154.
88. Price AJ, Jobe M, Sekitoleko I, Crampin AC, Prentice AM, Seeley J, et al. Epidemiology of multimorbidity in low-income countries of sub-Saharan Africa: Findings from four population cohorts. *PLOS Glob Public Health*. 2023;3(12):e0002677. doi: 10.1371/journal.pgph.0002677.
89. Raver E, Jung J, Xu WY. Medicare Advantage Disenrollment Patterns Among Beneficiaries With Multiple Chronic Conditions. *Jama*. 2023;330(2):185-7. doi: 10.1001/jama.2023.10369.
90. Rees-Punia E, Masters M, Teras LR, Leach CR, Williams GR, Newton CC, et al. Long-term multimorbidity trajectories in older adults: The role of cancer, demographics, and health behaviors. *Cancer*. 2024;130(2):312-21. doi: 10.1002/cncr.35047.
91. Ren Z, Xu Y, Sun J, Han Y, An L, Liu J. Chronic diseases and multimorbidity patterns, their recent onset, and risk of new-onset Parkinson's disease and related functional degeneration in older adults: a prospective cohort study. *EClinicalMedicine*. 2023;65:102265. doi: 10.1016/j.eclinm.2023.102265.
92. Rhubart D, Kowalkowski J, Yerger J. Rural-Urban disparities in self-reported physical/mental multimorbidity: A cross-sectional study of self-reported mental health and physical health among working age adults in the U.S. *J Multimorb Comorb*. 2023;13:26335565231218560. doi: 10.1177/26335565231218560.
93. Rodrigues A, Batista SRR, Santos A, Canheta ABS, Nunes BP, de Oliveira Rezende AT, et al. Multimorbidity and complex multimorbidity in Brazilians with severe obesity. *Sci Rep*. 2023;13(1):16629. doi: 10.1038/s41598-023-43545-5.
94. SadrAzar A, Sanaie S, Tutunchi H, Sheikh B, Faramarzi E, Jourabchi-Ghadim N. Is early age at menarche associated with multimorbidity? Findings from the Azar Cohort study. *Eur J Obstet Gynecol Reprod Biol*. 2023;287:46-51. doi: 10.1016/j.ejogrb.2023.05.029.

95. Schluter PJ, Jamieson HA. Multimorbidity associated with urinary incontinence among older women and men with complex needs in Aotearoa | New Zealand. *Neurourol Urodyn*. 2023;42(8):1745-55. doi: 10.1002/nau.25279.
96. Shah S, Abbas G, Aslam A, Randhawa FA, Khan FU, Khurram H, et al. Assessment of health-related quality of life among patients with obesity, hypertension and type 2 diabetes mellitus and its relationship with multimorbidity. *PLoS One*. 2023;18(8):e0289502. doi: 10.1371/journal.pone.0289502.
97. Shah S, Abbas G, Aslam A, Randhawa FA, Khan FU, Khurram H, et al. Assessment of health-related quality of life among patients with obesity, hypertension and type 2 diabetes mellitus and its relationship with multimorbidity. *PLoS One*. 2023;18(8):e0289502. doi: 10.1371/journal.pone.0289502.
98. Shang B, Chen R, Luo C, Lv F, Wu J, Shao X, et al. The relationship between alexithymia, depression, anxiety, and stress in elderly with multiple chronic conditions in China: a network analysis. *Front Psychiatry*. 2023;14:1209936. doi: 10.3389/fpsy.2023.1209936.
99. Sinha A, Kanungo S, Bhattacharya D, Kaur H, Pati S. Non-communicable disease multimorbidity among tribal older adults in India: evidence from Study on Global AGEing and adult health, 2015. *Front Public Health*. 2023;11:1217753. doi: 10.3389/fpubh.2023.1217753.
100. Sison SDM, Lin KJ, Najafzadeh M, Ko D, Paterno E, Bessette LG, et al. Common non-cardiovascular multimorbidity groupings and clinical outcomes in older adults with major cardiovascular disease. *J Am Geriatr Soc*. 2023;71(10):3179-88. doi: 10.1111/jgs.18479.
101. Smith L, López Sánchez GF, Fernandez-Egea E, Ford T, Parris C, Underwood BR, et al. Eating disorders and physical multimorbidity in the English general population. *Eat Weight Disord*. 2023;28(1):72. doi: 10.1007/s40519-023-01600-0.
102. Smith L, Yon DK, Butler L, Kostev K, Brayne C, Barnett Y, et al. Factors That Influence Meeting the Recommended Weekly Physical Activity Target Among Older People With Physical Multimorbidity: Evidence From 6 Low- and Middle-Income Countries. *J Phys Act Health*. 2024;21(3):247-55. doi: 10.1123/jpah.2023-0473.
103. Song D, Liu D, Ning W, Chen Y, Yang J, Zhao C, et al. Incidence, prevalence and characteristics of multimorbidity in different age groups among urban hospitalized patients in China. *Sci Rep*. 2023;13(1):18798. doi: 10.1038/s41598-023-46227-4.

104. Song Z, Wang W, Zhao Y, Xiao W, Du J, Liu Z, et al. Observational and genetic associations of adiposity with cardiopulmonary multimorbidity: Linear and nonlinear Mendelian randomization analysis. *Obesity (Silver Spring)*. 2024;32(2):398-408. doi: 10.1002/oby.23934.
105. Spijker JJA, Rentería E. Shifts in Chronic Disease Patterns Among Spanish Older Adults With Multimorbidity Between 2006 and 2017. *Int J Public Health*. 2023;68:1606259. doi: 10.3389/ijph.2023.1606259.
106. Stagg AL, Harber-Aschan L, Hatch SL, Fear NT, Dorrington S, Madan I, et al. Risk factors for the progression to multimorbidity among UK urban working-age adults. A community cohort study. *PLoS One*. 2023;18(9):e0291295. doi: 10.1371/journal.pone.0291295.
107. Suh JW, Floud S, Reeves GK, Cairns BJ, Wright FL. Multimorbidity of cardiovascular disease subtypes in a prospective cohort of 1.2 million UK women. *Open Heart*. 2023;10(2). doi: 10.1136/openhrt-2023-002552.
108. Swarbrick C, Poulton T, Martin P, Partridge J, Moppett IK. Study protocol for a national observational cohort investigating frailty, delirium and multimorbidity in older surgical patients: the third Sprint National Anaesthesia Project (SNAP 3). *BMJ Open*. 2023;13(12):e076803. doi: 10.1136/bmjopen-2023-076803.
109. Syurin S, Vinnikov D. Occupational multimorbidity in the nickel industry workers. *Int J Circumpolar Health*. 2023;82(1):2231618. doi: 10.1080/22423982.2023.2231618.
110. Tagliafico L, Maizza G, Marani C, Della Rovere F, Schiavetti I, Signori A, et al. Prevalence of Palliative Care Needs in Older Adults With Multimorbidity: A Multicentric Point Prevalence Study. *J Am Med Dir Assoc*. 2023;24(9):1278-81. doi: 10.1016/j.jamda.2023.05.015.
111. Tagliafico L, Maizza G, Marani C, Della Rovere F, Schiavetti I, Signori A, et al. Prevalence of Palliative Care Needs in Older Adults With Multimorbidity: A Multicentric Point Prevalence Study. *J Am Med Dir Assoc*. 2023;24(9):1278-81. doi: 10.1016/j.jamda.2023.05.015.
112. Tan MMC, Barbosa MG, Pinho P, Assefa E, Keinert AA M, Hanlon C, et al. Determinants of multimorbidity in low- and middle-income countries: A systematic review of longitudinal studies and discovery of evidence gaps. *Obes Rev*. 2024;25(2):e13661. doi: 10.1111/obr.13661.

113. Tazzeo C, Zucchelli A, Vetrano DL, Demurtas J, Smith L, Schoene D, et al. Risk factors for multimorbidity in adulthood: A systematic review. *Ageing Res Rev.* 2023;91:102039. doi: 10.1016/j.arr.2023.102039.
114. Thomsen EL, Boisen KA, Andersen A, Jørgensen SE, Teilmann G, Michelsen SI. Low Level of Well-being in Young People With Physical-Mental Multimorbidity: A Population-Based Study. *J Adolesc Health.* 2023;73(4):707-14. doi: 10.1016/j.jadohealth.2023.05.014.
115. Valabhji J, Barron E, Pratt A, Hafezparast N, Dunbar-Rees R, Turner EB, et al. Prevalence of multiple long-term conditions (multimorbidity) in England: a whole population study of over 60 million people. *J R Soc Med.* 2023;1410768231206033. doi: 10.1177/01410768231206033.
116. Varanasi R, Sinha A, Nayak D, Manchanda RK, Janardhanan R, Tandon S, et al. Prevalence and correlates of multimorbidity among patients attending AYUSH primary care settings in Delhi-National Capital Region, India. *BMC Complement Med Ther.* 2023;23(1):429. doi: 10.1186/s12906-023-04158-7.
117. Vega-Cabello V, Struijk EA, Caballero FF, Lana A, Arias-Fernández L, Banegas JR, et al. Dietary Micronutrient Adequacy and Risk of Multimorbidity in Community-dwelling Older Adults. *Am J Clin Nutr.* 2023;118(1):34-40. doi: 10.1016/j.ajcnut.2023.05.008.
118. Vega-Cabello V, Struijk EA, Caballero FF, Yévenes-Briones H, Ortolá R, Calderón-Larrañaga A, et al. Diet quality and multimorbidity in older adults: a prospective cohort study. *J Gerontol A Biol Sci Med Sci.* 2023. doi: 10.1093/gerona/glad285.
119. Veronese N, Koyanagi A, Soysal P, Sapienza V, Ragusa FS, Bolzetta F, et al. Dynapenic abdominal obesity and incident multimorbidity: findings from the English longitudinal study on ageing. *Aging Clin Exp Res.* 2023;35(8):1671-8. doi: 10.1007/s40520-023-02455-2.
120. Wang Q, Schmidt AF, Lennon LT, Papacosta O, Whincup PH, Wannamethee SG. Prospective associations between diet quality, dietary components, and risk of cardiometabolic multimorbidity in older British men. *Eur J Nutr.* 2023;62(7):2793-804. doi: 10.1007/s00394-023-03193-x.
121. Wang YH, Enguidanos S. The Relationship Between Multiple Chronic Conditions and Physician Visits in Advance Care Planning Activities. *Am J Hosp Palliat Care.* 2023;40(9):965-70. doi: 10.1177/10499091221136854.

122. Weinberger M, Ahmed AE, Singer DE. Impact of Sleep Profiles on Multimorbidity Among US Active-Duty Service Members in the 2018 Health-Related Behaviors Survey. *Nat Sci Sleep*. 2023;15:1019-32. doi: 10.2147/nss.S434813.
123. Wilk P, Ruiz-Castell M, Stranges S, Bohn T, Fagherazzi G, Nicholson K, et al. Relationship between multimorbidity, functional limitation, and quality of life among middle-aged and older adults: findings from the longitudinal analysis of the 2013-2020 Survey of Health, Ageing, and Retirement in Europe (SHARE). *Qual Life Res*. 2024;33(1):169-81. doi: 10.1007/s11136-023-03508-9.
124. Wu H, Gu Y, Du W, Meng G, Wu H, Zhang S, et al. Different types of screen time, physical activity, and incident dementia, Parkinson's disease, depression and multimorbidity status. *Int J Behav Nutr Phys Act*. 2023;20(1):130. doi: 10.1186/s12966-023-01531-0.
125. Xiong F, Wang Y, Zhu J, Li S, Guan Q, Jing Z. Association of multimorbidity patterns with motoric cognitive risk syndrome among older adults: Evidence from a China longitudinal study. *Int J Geriatr Psychiatry*. 2023;38(11):e6021. doi: 10.1002/gps.6021.
126. Xiong K, Mao H, Zhang Q, Lei C, Liang Y. Associations between vision impairment and multimorbidity among older Chinese adults: results from the China health and retirement longitudinal study. *BMC Geriatr*. 2023;23(1):688. doi: 10.1186/s12877-023-04393-0.
127. Xu HW, Liu H, Luo Y, Wang K, To MN, Chen YM, et al. Comparing a new multimorbidity index with other multimorbidity measures for predicting disability trajectories. *J Affect Disord*. 2024;346:167-73. doi: 10.1016/j.jad.2023.11.014.
128. Yang B, He H, Nie Q, Yang Y. Exploring the relationship between depression and multimorbidity in Chinese middle-aged and older people based on propensity score matching. *J Psychosom Res*. 2023;174:111490. doi: 10.1016/j.jpsychores.2023.111490.
129. Yang C, Teh YE, Chua NGS, Lee KLS, Ng RQM. An overview of multimorbidity and polypharmacy in older people living with HIV. *Geriatr Gerontol Int*. 2023. doi: 10.1111/ggi.14717.
130. Yang K, Yang S, Chen Y, Cao G, Xu R, Jia X, et al. Multimorbidity Patterns and Associations with Gait, Balance and Lower Extremity Muscle Function in the Elderly: A Cross-Sectional Study in Northwest China. *Int J Gen Med*. 2023;16:3179-92. doi: 10.2147/ijgm.S418015.

131. Ye B, Zhou Y, Chen M, Chen C, Tan J, Xu X. The association between depression during perimenopause and progression of chronic conditions and multimorbidity: results from a Chinese prospective cohort. *Arch Womens Ment Health*. 2023;26(5):697-705. doi: 10.1007/s00737-023-01354-9.
132. Yévenes-Briones H, Caballero FF, Struijk EA, Arias-Fernández L, Lana A, Rey-Martinez J, et al. Association Between Speech Reception Threshold in Noise and Multimorbidity: The UK Biobank Study. *Otolaryngol Head Neck Surg*. 2024;170(2):480-9. doi: 10.1002/ohn.507.
133. Zhang F, Chang H, Schaefer SM, Gou J. Biological age and brain age in midlife: relationship to multimorbidity and mental health. *Neurobiol Aging*. 2023;132:145-53. doi: 10.1016/j.neurobiolaging.2023.09.003.
134. Zhang S, Yang F, Wang L, Si S, Zhang J, Xue F. Personalized prediction for multiple chronic diseases by developing the multi-task Cox learning model. *PLoS Comput Biol*. 2023;19(9):e1011396. doi: 10.1371/journal.pcbi.1011396.
135. Zhang Y, Chen H, Lim CCW, Carrillo-Larco RM, Yan LL, Mishra GD, et al. Intake of sugary beverages with chronic conditions and multimorbidity: a prospective cohort study of UK Biobank. *Int J Epidemiol*. 2023;52(5):1473-85. doi: 10.1093/ije/dyad057.
136. Zhang Y, Jiang X, Mentzer AJ, McVean G, Lunter G. Topic modeling identifies novel genetic loci associated with multimorbidities in UK Biobank. *Cell Genom*. 2023;3(8):100371. doi: 10.1016/j.xgen.2023.100371.
137. Zhang Y, Sun M, Wang Y, Xu T, Ning N, Tong L, et al. Association of cardiovascular health using Life's Essential 8 with noncommunicable disease multimorbidity. *Prev Med*. 2023;174:107607. doi: 10.1016/j.ypmed.2023.107607.
138. Zhang Y, Zhou Y, Cheng Y, Carrillo-Larco RM, Fawad M, Chen S, et al. Association of birth and childhood weight with risk of chronic diseases and multimorbidity in adulthood. *Commun Med (Lond)*. 2023;3(1):105. doi: 10.1038/s43856-023-00335-4.
139. Zhang Y, Zhou Y, Cheng Y, Carrillo-Larco RM, Fawad M, Chen S, et al. Association of birth and childhood weight with risk of chronic diseases and multimorbidity in adulthood. *Commun Med (Lond)*. 2023;3(1):105. doi: 10.1038/s43856-023-00335-4.

140. Zheng X, Xue B, Xiao S, Li X, Chen Y, Shi L, et al. Development and validation of a multimorbidity risk prediction nomogram among Chinese middle-aged and older adults: a retrospective cohort study. *BMJ Open*. 2023;13(11):e077573. doi: 10.1136/bmjopen-2023-077573.
141. Zhou Y, Ni Y, Jones M, Dai X, Lim CCW, Zhu A, et al. Sleep Behaviors and Progression of Multimorbidity in Middle-Aged and Older Adults: A Prospective Cohort Study From China. *J Gerontol A Biol Sci Med Sci*. 2023;78(10):1871-80. doi: 10.1093/gerona/glad087.
142. Zöller B, Pirouzifard M, Holmquist B, Sundquist J, Halling A, Sundquist K. Familial aggregation of multimorbidity in Sweden: national explorative family study. *BMJ Med*. 2023;2(1):e000070. doi: 10.1136/bmjmed-2021-000070.
143. Ageno A, Català N, Pons M. Acquisition of temporal patterns from electronic health records: an application to multimorbid patients. *BMC Med Inform Decis Mak*. 2023;23(1):189. doi: 10.1186/s12911-023-02287-0.

3. Interventions for multimorbidity

1. Ando T, Sasaki T, Abe Y, Nishimoto Y, Hirata T, Haruta J, et al. Measurement of polydoctoring as a crucial component of fragmentation of care among patients with multimorbidity: Cross-sectional study in Japan. *J Gen Fam Med*. 2023;24(6):343-9. doi: 10.1002/jgf2.651.
3. Andreacchi AT, Brini A, Van den Heuvel E, Muniz-Terrera G, Mayhew A, St John P, et al. An Exploration of Methods to Resolve Inconsistent Self-Reporting of Chronic Conditions and Impact on Multimorbidity in the Canadian Longitudinal Study on Aging. *J Aging Health*. 2023:8982643231215476. doi: 10.1177/08982643231215476.
4. Arakelyan S, Mikula-Noble N, Ho L, Lone N, Anand A, Lyall MJ, et al. Effectiveness of holistic assessment-based interventions for adults with multiple long-term conditions and frailty: an umbrella review of systematic reviews. *Lancet Healthy Longev*. 2023;4(11):e629-e44. doi: 10.1016/s2666-7568(23)00190-3.

5. Berthelsen C, Møller N, Bunkenborg G. Transitional care model for older adults with multiple chronic conditions: An evaluation of benefits utilising an umbrella review. *J Clin Nurs*. 2024;33(2):481-96. doi: 10.1111/jocn.16913.
6. Bezzina C, Pope L. Multimorbidity and the need to rethink Medical Education. *J Multimorb Comorb*. 2023;13:26335565231207811. doi: 10.1177/26335565231207811.
7. Cajamarca G, Proust V, Herskovic V, Cádiz RF, Verdezoto N, Fernández FJ. Technologies for Managing the Health of Older Adults with Multiple Chronic Conditions: A Systematic Literature Review. *Healthcare (Basel)*. 2023;11(21). doi: 10.3390/healthcare11212897.
8. Cajamarca G, Proust V, Herskovic V, Cádiz RF, Verdezoto N, Fernández FJ. Technologies for Managing the Health of Older Adults with Multiple Chronic Conditions: A Systematic Literature Review. *Healthcare (Basel)*. 2023;11(21). doi: 10.3390/healthcare11212897.
9. Carlson DM, Yarns BC. Managing medical and psychiatric multimorbidity in older patients. *Ther Adv Psychopharmacol*. 2023;13:20451253231195274. doi: 10.1177/20451253231195274.
10. Carlson DM, Yarns BC. Managing medical and psychiatric multimorbidity in older patients. *Ther Adv Psychopharmacol*. 2023;13:20451253231195274. doi: 10.1177/20451253231195274.
11. Carlson DM, Yarns BC. Managing medical and psychiatric multimorbidity in older patients. *Ther Adv Psychopharmacol*. 2023;13:20451253231195274. doi: 10.1177/20451253231195274.
12. Chen YH, Lin LC, Hsiung Y, Wu SC. Effects of a biopsychosocial-spiritual group therapy on quality of life among institutionalized older adults with disabilities: A randomized controlled trial. *Int J Ment Health Nurs*. 2023;32(5):1335-45. doi: 10.1111/inm.13172.
13. Chen YH, Lin LC, Hsiung Y, Wu SC. Effects of a biopsychosocial-spiritual group therapy on quality of life among institutionalized older adults with disabilities: A randomized controlled trial. *Int J Ment Health Nurs*. 2023;32(5):1335-45. doi: 10.1111/inm.13172.
14. Chiang SL, Shen CL, Lee MS, Lin CH, Lin CH. Effectiveness of a 12-week tele-exercise training program on cardiorespiratory fitness and heart rate recovery in patients with

cardiometabolic multimorbidity. *Worldviews Evid Based Nurs.* 2023;20(4):339-50. doi: 10.1111/wvn.12607.

15. Chiang SL, Shen CL, Lee MS, Lin CH, Lin CH. Effectiveness of a 12-week tele-exercise training program on cardiorespiratory fitness and heart rate recovery in patients with cardiometabolic multimorbidity. *Worldviews Evid Based Nurs.* 2023;20(4):339-50. doi: 10.1111/wvn.12607.

16. Chica-Pérez A, Dobarrio-Sanz I, Ruiz-Fernández MD, Correa-Casado M, Fernández-Medina IM, Hernández-Padilla JM. Effects of home visiting programmes on community-dwelling older adults with chronic multimorbidity: a scoping review. *BMC Nurs.* 2023;22(1):266. doi: 10.1186/s12912-023-01421-7.

17. Chivela FL, Burch AE, Asagbra O. An Assessment of Patient Portal Messaging Use by Patients With Multiple Chronic Conditions Living in Rural Communities: Retrospective Analysis. *J Med Internet Res.* 2023;25:e44399. doi: 10.2196/44399.

18. Eriksen CU, Kamstrup-Larsen N, Birke H, Holding SAL, Ghith N, Andersen JS, et al. Commentary on the systematic review: 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.* 2023;13:26335565231220204. doi: 10.1177/26335565231220204.

19. Fessler L, Maltagliati S, Sieber S, Cullati S, Tessitore E, Craviari C, et al. Physical activity matters for everyone's health, but individuals with multimorbidity benefit more. *Prev Med Rep.* 2023;34:102265. doi: 10.1016/j.pmedr.2023.102265.

20. Fraser SD, Stannard S, Holland E, Boniface M, Hoyle RB, Wilkinson R, et al. Multidisciplinary ecosystem to study lifecourse determinants and prevention of early-onset burdensome multimorbidity (MELD-B) - protocol for a research collaboration. *J Multimorb Comorb.* 2023;13:26335565231204544. doi: 10.1177/26335565231204544.

21. Gallo LC, Fortmann AL, Clark TL, Roesch SC, Bravin JI, Spierling Bagnic SR, et al. Mi Puente (My Bridge) Care Transitions Program for Hispanic/Latino Adults with Multimorbidity: Results of a Randomized Controlled Trial. *J Gen Intern Med.* 2023;38(9):2098-106. doi: 10.1007/s11606-022-08006-1.

22. Gil Conde M, Peyroteo M, Maria A, Maia MR, Gregório J, Paulo MS, et al. Protocol for a cluster randomised trial of a goal-oriented care approach for multimorbidity patients supported by a digital platform. *BMJ Open*. 2023;13(11):e070044. doi: 10.1136/bmjopen-2022-070044.
23. Koirala B, Badawi S, Frost S, Ferguson C, Hager DN, Street L, et al. Study protocol for Care cOORDInation And sympTom managEment (COORDINATE) programme: a feasibility study. *BMJ Open*. 2023;13(12):e072846. doi: 10.1136/bmjopen-2023-072846.
24. Langenberg C, Hingorani AD, Whitty CJM. Biological and functional multimorbidity-from mechanisms to management. *Nat Med*. 2023;29(7):1649-57. doi: 10.1038/s41591-023-02420-6.
25. Lawless MT, Archibald MM, Ambagtsheer RC, Pinero de Plaza MA, Kitson AL. My Wellbeing Journal: Development of a communication and goal-setting tool to improve care for older adults with chronic conditions and multimorbidity. *Health Expect*. 2023;27(1). doi: 10.1111/hex.13890.
26. Littenberg B, Clifton J, Crocker AM, Baldwin LM, Bonnell LN, Breshears RE, et al. A Cluster Randomized Trial of Primary Care Practice Redesign to Integrate Behavioral Health for Those Who Need It Most: Patients With Multiple Chronic Conditions. *Ann Fam Med*. 2023;21(6):483-95. doi: 10.1370/afm.3027.
27. Lo YT, Chen MH, Chen PH, Lu FH, Chang CM, Yang YC. Effectiveness of an Integrated Ambulatory Care Program in Health Care and Medication Use in Patients With Multimorbidity and Polypharmacy. *Qual Manag Health Care*. 2024;33(1):18-28. doi: 10.1097/qmh.0000000000000434.
28. MacFarlane A, McCallum M, Stewart M. Improving person-centered care for people with multimorbidity: the potential of participatory learning and action research. *J Multimorb Comorb*. 2023;13:26335565231207075. doi: 10.1177/26335565231207075.
29. Manoharan D, Brown S, Colbeck-Rogers M, Tabaqchali H, Rothwell C, Burford B, et al. Equipping tomorrow's doctors on learning needs around multiple long-term conditions: a scoping review. *Future Healthc J*. 2023;10(Suppl 3):34. doi: 10.7861/fhj.10-3-s34.

30. Marashi-Hosseini L, Jafarirad S, Hadianfard AM. A fuzzy based dietary clinical decision support system for patients with multiple chronic conditions (MCCs). *Sci Rep.* 2023;13(1):12166. doi: 10.1038/s41598-023-39371-4.
31. Masoli JAH, Todd O, Burton JK, Wolff C, Walesby KE, Hewitt J, et al. New horizons in the role of digital data in the healthcare of older people. *Age Ageing.* 2023;52(8). doi: 10.1093/ageing/afad134.
32. McMenamin A, Turi E, Schlak A, Poghosyan L. A Systematic Review of Outcomes Related to Nurse Practitioner-Delivered Primary Care for Multiple Chronic Conditions. *Med Care Res Rev.* 2023;80(6):563-81. doi: 10.1177/10775587231186720.
33. Mendoza-Quispe D, Perez-Leon S, Alarcon-Ruiz CA, Gaspar A, Cuba-Fuentes MS, Zunt JR, et al. Scoping review of measures of treatment burden in patients with multimorbidity: advancements and current gaps. *J Clin Epidemiol.* 2023;159:92-105. doi: 10.1016/j.jclinepi.2023.05.013.
34. Neves B, Haghighi ED, Pereira HV, Costa F, Carlos JS, Ferreira D, et al. Impact of a wearable-based physical activity and sleep intervention in multimorbidity patients: protocol for a randomized controlled trial. *BMC Geriatr.* 2023;23(1):853. doi: 10.1186/s12877-023-04511-y.
35. Parry E, Ahmed K, Evans S, Guest E, Klaire V, Koodaruth A, et al. GP assessment of unmet need in a complex multimorbid population using a data-driven and clinical triage system: a prospective cohort study. *BJGP Open.* 2023;7(4). doi: 10.3399/bjgpo.2023.0078.
36. Peila R, Xue X, Shadyab AH, Wactawski-Wende J, Espeland MA, Snetselaar LG, et al. Association Between the Healthy Lifestyle Index and Risk of Multimorbidity in the Women's Health Initiative. *J Gerontol A Biol Sci Med Sci.* 2023;78(12):2282-93. doi: 10.1093/gerona/glad170.
37. Pellet J, Weiss M, Zúñiga F, Mabire C. Improving patient activation with a tailored nursing discharge teaching intervention for multimorbid inpatients: A quasi-experimental study. *Patient Educ Couns.* 2024;118:108024. doi: 10.1016/j.pec.2023.108024.
38. Pilotto A, Volta E, Barbagelata M, Argusti A, Camurri A, Casiddu N, et al. The PRO-HOME Project. A multicomponent intervention for the protected discharge from the hospital of

multimorbid and polytreated older individuals by using innovative technologies: A pilot study. *Health Expect.* 2023;27(1). doi: 10.1111/hex.13872.

39. Prazeres F, Castro L, Teixeira A. The role of social support as a moderator between resilience and levels of burden of multimorbidity management among general practitioners: a cross-sectional study in Portugal. *Fam Pract.* 2023. doi: 10.1093/fampra/cmad109.

40. Rafferty J, Lee A, Lyons RA, Akbari A, Peek N, Jalali-Najafabadi F, et al. Using hypergraphs to quantify importance of sets of diseases by healthcare resource utilisation: A retrospective cohort study. *PLoS One.* 2023;18(12):e0295300. doi: 10.1371/journal.pone.0295300.

41. Rauzi MR, Abbate LM, Lum HD, Cook PF, Stevens-Lapsley JE. Multicomponent telerehabilitation programme for older veterans with multimorbidity: a programme evaluation. *BMJ Mil Health.* 2023. doi: 10.1136/military-2023-002535.

42. Russell AM, Bonham M, Lovett R, Pack A, Wolf MS, O'Connor R. Characterizing Caregiver Roles and Conflict in Health Management Support to Older People With Multiple Chronic Conditions. *J Appl Gerontol.* 2024;43(4):386-95. doi: 10.1177/07334648231211456.

43. Seghers P, Rostoft S, O'Hanlon S, O'Sullivan B, Portielje JEA, Wildiers H, et al. Challenges of caring for older patients with multimorbidity including cancer. *J Geriatr Oncol.* 2023;14(7):101588. doi: 10.1016/j.jgo.2023.101588.

44. Svärd V, Jannas S. Organisational prerequisites for coordinating the return-to-work process for people with multimorbidity and psychosocial difficulties. *Disabil Rehabil.* 2023;45(18):2915-24. doi: 10.1080/09638288.2022.2114019.

45. Teng PHJ, Lun P, Tang JY, Tan KT, Ang W, Ding YY. Using multiple approaches to develop a physician-pharmacist collaborative care intervention to facilitate appropriate prescribing for older adults with multimorbidity. *Arch Gerontol Geriatr.* 2023;115:105110. doi: 10.1016/j.archger.2023.105110.

46. Verhoeff M, de Groot JF, Peters-Siskens H, van Kan E, Vermeeren Y, van Munster BC. A hospital care coordination team intervention for patients with multimorbidity: A practice-based, participatory pilot study. *Chronic Illn.* 2023;17423953231196611. doi: 10.1177/17423953231196611.

47. Verhoeff M, Weil LI, Chu H, Vermeeren Y, de Groot J, Burgers JS, et al. Clusters of medical specialties around patients with multimorbidity - employing fuzzy c-means clustering to explore multidisciplinary collaboration. *BMC Health Serv Res.* 2023;23(1):975. doi: 10.1186/s12913-023-09961-z.
48. Wasan T, Hayhoe B, Cicek M, Lammila-Escalera E, Nicholls D, Majeed A, et al. The effects of community interventions on unplanned healthcare use in patients with multimorbidity: a systematic review. *J R Soc Med.* 2024;117(1):24-35. doi: 10.1177/01410768231186224.
49. Younas A, Inayat S, Dal Molin A, Durante A. Nurses' Challenges to Developing Interpersonal Relationships During Integrated Care for Complex Patients. *West J Nurs Res.* 2023;45(10):894-901. doi: 10.1177/01939459231189789.
50. 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.* 2023;32(13-14):4024-36. doi: 10.1111/jocn.16542.
51. Zhao R, Zhang J, Li M, Loban E, Nicolas S, Martiland E, et al. Primary care physicians' work conditions and their confidence in managing multimorbidity: a quantitative analysis using Job Demands-Resources Model. *Fam Pract.* 2023. doi: 10.1093/fampra/cmadv099.

4. Multimorbidity policy and editorials

1. Boachie MK, Khoza M, Goldstein S, Munsamy M, Hofman K, Thsehla E. The Impact of COVID-19 Lockdown on Service Utilization Among Chronic Disease Patients in South Africa. *Health Serv Insights.* 2023;16:11786329231215040. doi: 10.1177/11786329231215040.
2. Bogerd MJ, Exmann CJ, Slottje P, Bont J, van Hout HPJ. Predicting 'anticipated benefit' from an extended consultation to personalise care in multimorbidity: A development and internal validation study of a prioritisation algorithm in general practice. *Br J Gen Pract.* 2023. doi: 10.3399/bjgp.2023.0114.
3. Bowers SP, Black P, McCheyne L, Wilson D, Mills SEE, Agrawal U, et al. Current definitions of advanced multimorbidity: a protocol for a scoping review. *BMJ Open.* 2023;13(11):e076903. doi: 10.1136/bmjopen-2023-076903.

4. 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*. 2023;18(3):321-8. doi: 10.1017/s1744133122000214.
5. Consorti F, Torre D, Luzi D, Pecoraro F, Ricci F, Tamburis O. The challenge of clinical reasoning in chronic multimorbidity: time and interactions in the Health Issues Network model. *Diagnosis (Berl)*. 2023;10(4):348-52. doi: 10.1515/dx-2023-0041.
6. Dhafari TB, Pate A, Azadbakht N, Bailey R, Rafferty J, Jalali-Najafabadi F, et al. A scoping review finds a growing trend in studies validating multimorbidity patterns and identifies five broad types of validation methods. *J Clin Epidemiol*. 2024;165:111214. doi: 10.1016/j.jclinepi.2023.11.004.
7. Halstead S, Siskind D, Warren N. Making meaning of multimorbidity and severe mental illness: A viewpoint. *Aust N Z J Psychiatry*. 2024;58(1):12-20. doi: 10.1177/00048674231195560.
8. Khunti K, Sathanapally H, Mountain P. Multiple long term conditions, multimorbidity, and co-morbidities: we should reconsider the terminology we use. *Bmj*. 2023;383:2327. doi: 10.1136/bmj.p2327.
10. Kivimäki M, Frank P. Tackling socioeconomic disparities in multimorbidity. *Lancet Reg Health Eur*. 2023;32:100689. doi: 10.1016/j.lanepe.2023.100689.
11. Lake C, Mishra A, Conroy M. Embedding a multiple health condition approach across NHS Greater Manchester. *Future Healthc J*. 2023;10(3):211-8. doi: 10.7861/fhj.2023-0081.
13. Maun A, Björkelund C, Arvidsson E. Primary care utilisation, adherence to guideline-based pharmacotherapy and continuity of care in primary care patients with chronic diseases and multimorbidity - a cross-sectional study. *BMC Prim Care*. 2023;24(1):237. doi: 10.1186/s12875-023-02191-6.
14. Pati S, MacRae C, Henderson D, Weller D, Guthrie B, Mercer S. Defining and measuring complex multimorbidity: a critical analysis. *Br J Gen Pract*. 2023;73(733):373-6. doi: 10.3399/bjgp23X734661.

15. Rohwer A, Toews I, Uwimana-Nicol J, Nyirenda JLZ, Niyibizi JB, Akiteng AR, et al. Models of integrated care for multi-morbidity assessed in systematic reviews: a scoping review. *BMC Health Serv Res.* 2023;23(1):894. doi: 10.1186/s12913-023-09894-7.
16. Salm C, Mentzel A, Sofroniou M, Metzner G, Farin E, Voigt-Radloff S, et al. Analysis of the key themes in the healthcare of older people with multimorbidity in Germany: a framework analysis as part of the LoChro trial. *BMJ Open.* 2023;13(8):e069814. doi: 10.1136/bmjopen-2022-069814.
17. Saul H, Cassidy S, Deeney B, Imison C, Reeve J. How to reduce medications for people with multiple long term conditions. *Bmj.* 2023;382:1708. doi: 10.1136/bmj.p1708.
18. Seghers P, Rostoft S, O'Hanlon S, Degol L, Kenis C, Wildiers H, et al. A care pathway for older patients with multimorbidity including cancer - Design of the GERONTE pathway. *J Geriatr Oncol.* 2024;15(2):101654. doi: 10.1016/j.jgo.2023.101654.
19. Simpson G, Stuart B, Hijryana M, Akyea RK, Stokes J, Gibson J, et al. Eliciting and prioritising determinants of improved care in multimorbidity: A modified online Delphi study. *J Multimorb Comorb.* 2023;13:26335565231194552. doi: 10.1177/26335565231194552.
20. Spedale V, Mazzola P. Managing multimorbidity in midlife may reduce the risk of developing dementia as we age. *Evid Based Nurs.* 2023. doi: 10.1136/ebnurs-2023-103779.
21. Stannard S, Berrington A, Paranjothy S, Owen R, Fraser S, Hoyle R, et al. A conceptual framework for characterising lifecourse determinants of multiple long-term condition multimorbidity. *J Multimorb Comorb.* 2023;13:26335565231193951. doi: 10.1177/26335565231193951.
22. Stannard S, Berrington A, Paranjothy S, Owen R, Fraser S, Hoyle R, et al. A conceptual framework for characterising lifecourse determinants of multiple long-term condition multimorbidity. *J Multimorb Comorb.* 2023;13:26335565231193951. doi: 10.1177/26335565231193951.
23. Stewart J, Bradley J, Smith S, McPeake J, Walsh T, Haines K, et al. Do critical illness survivors with multimorbidity need a different model of care? *Crit Care.* 2023;27(1):485. doi: 10.1186/s13054-023-04770-6.

24. The Lancet Global H. Joined up care is needed to address multimorbidity. *Lancet Glob Health*. 2023;11(9):e1314. doi: 10.1016/s2214-109x(23)00277-2.
25. van Blarikom E, Fudge N, Swinglehurst D. Multimorbidity as chronic crisis: 'Living on' with multiple long-term health conditions in a socially disadvantaged London borough. *Sociol Health Illn*. 2023. doi: 10.1111/1467-9566.13729.
26. van Blarikom E, Fudge N, Swinglehurst D. Multimorbidity: a problem in the body, or a problem of the system? *Br J Gen Pract*. 2023;73(735):443-4. doi: 10.3399/bjgp23X735045.
27. Varela T, Zamorano P, Muñoz P, Espinoza M, Tellez A, Irazoqui E, et al. Evaluation of a Transitional Care Strategy Implemented in Adults With High-Risk and Multimorbidity in Chile. *Value Health Reg Issues*. 2023;38:85-92. doi: 10.1016/j.vhri.2023.07.003.
28. Wang Y, Guan G, Xue Y, Zhang J, Cui Z, Han H. Could an optimally fitted categorization of difference between multi-disease score and multi-symptom score be a practical indicator aiding in improving the cost-effectiveness of healthcare delivery for older adults in developing countries? *Int J Equity Health*. 2023;22(1):213. doi: 10.1186/s12939-023-02024-z.
29. Witham MD, Cooper R, Missier P, Robinson SM, Sapey E, Sayer AA. Researching multimorbidity in hospital: can we deliver on the promise of health informatics? *Eur Geriatr Med*. 2023;14(4):765-8. doi: 10.1007/s41999-023-00753-6.
30. Wunderle C, Gomes F, Schuetz P, Stumpf F, Austin P, Ballesteros-Pomar MD, et al. ESPEN guideline on nutritional support for polymorbid medical inpatients. *Clin Nutr*. 2023;42(9):1545-68. doi: 10.1016/j.clnu.2023.06.023.
31. Zhang X, Vermeulen KM, Krabbe PFM. Health Status of US Patients With One or More Health Conditions: Using a Novel Electronic Patient-reported Outcome Measure Producing Single Metric Measures. *Med Care*. 2023;61(11):765-71. doi: 10.1097/mlr.0000000000001919.

5. Polypharmacy

1. Adam L, Baretella O, Feller M, Blum MR, Papazoglou DD, Boland B, et al. Statin therapy in multimorbid older patients with polypharmacy- a cross-sectional analysis of the Swiss OPERAM trial population. *Front Cardiovasc Med.* 2023;10:1236547. doi: 10.3389/fcvm.2023.1236547.
2. Amrouch C, Vauterin D, Amrouch S, Grymonprez M, Dai L, Damiano C, et al. Potentially inappropriate prescribing in multimorbid and polymedicated older adults with AF: A Systematic Review and Meta-Analysis. *Drugs Aging.* 2024;41(1):13-30. doi: 10.1007/s40266-023-01078-6.
3. Barrio-Cortes J, Benito-Sánchez B, Villimar-Rodriguez AI, Rujas M, Arroyo-Gallego P, Carlson J, et al. Differences in healthcare service utilization in patients with polypharmacy according to their risk level by adjusted morbidity groups: a population-based cross-sectional study. *J Pharm Policy Pract.* 2023;16(1):161. doi: 10.1186/s40545-023-00665-7.
4. Bužančić I, Ortner Hadžiabdić M. Deprescribing in a multimorbid older adult: A case vignette study among community pharmacists and primary care physicians. *Basic Clin Pharmacol Toxicol.* 2023;133(6):729-40. doi: 10.1111/bcpt.13899.
5. Jordan M, Mullan J, Stewart A, Chen TF. A pharmacist integrated into a general practice in Australia: an evolving model of care in medicines optimization. *Int J Pharm Pract.* 2023;31(6):608-16. doi: 10.1093/ijpp/riad061.
6. Kardas P, Mair A, Stewart D, Lewek P. Optimizing polypharmacy management in the elderly: a comprehensive European benchmarking survey and the development of an innovative online benchmarking application. *Front Pharmacol.* 2023;14:1254912. doi: 10.3389/fphar.2023.1254912.
7. Liquori G, Dionisi S, Giannetta N, Di Simone E, De Leo A, Panattoni N, et al. Elderly patients with multimorbidity in the home setting: umbrella review on therapeutic non-adherence causes. *Eur Rev Med Pharmacol Sci.* 2023;27(19):9234-47. doi: 10.26355/eurrev_202310_33951.
8. Mkhwanazi TW, Modjadji P, Mokgalaboni K, Madiba S, Roomaney RA. Multimorbidity, Treatment, and Determinants among Chronic Patients Attending Primary Health Facilities in Tshwane, South Africa. *Diseases.* 2023;11(4). doi: 10.3390/diseases11040129.

9. Selvakumar D, Sivanandy P, Ingle PV, Theivasigamani K. Relationship between Treatment Burden, Health Literacy, and Medication Adherence in Older Adults Coping with Multiple Chronic Conditions. *Medicina (Kaunas)*. 2023;59(8). doi: 10.3390/medicina59081401.
10. Thomsen MK, Løppenthin KB, Bidstrup PE, Andersen EW, Dalton S, Petersen LN, et al. Impact of multimorbidity and polypharmacy on mortality after cancer: a nationwide registry-based cohort study in Denmark 2005-2017. *Acta Oncol*. 2023;62(12):1653-60. doi: 10.1080/0284186x.2023.2270145.
11. van Poelgeest E, van der Velde N. A themed journal issue on (de)prescribing dilemmas in older, multimorbid adults with increased fall risk. *Eur Geriatr Med*. 2023;14(4):645-8. doi: 10.1007/s41999-023-00845-3.
12. Yang C, Lee DTF, Chair SY. Validation and adaption of an Information-Motivation-Behavioral Skills model of medication adherence in older patients with multimorbidity. *Patient Educ Couns*. 2023;113:107756. doi: 10.1016/j.pec.2023.107756.
13. Yang C, Zhu S, Hui Z, Mo Y. Psychosocial factors associated with medication burden among community-dwelling older people with multimorbidity. *BMC Geriatr*. 2023;23(1):741. doi: 10.1186/s12877-023-04444-6.
14. Zhao Y, Wang J, Zhu X, Zhang X, Zhang Y, Zhang W, et al. Multimorbidity and polypharmacy in hospitalized older patients: a cross-sectional study. *BMC Geriatr*. 2023;23(1):423. doi: 10.1186/s12877-023-04109-4.
15. Zidan A, Awaisu A. Inappropriate polypharmacy management versus deprescribing: A review on their relationship. *Basic Clin Pharmacol Toxicol*. 2024;134(1):6-14. doi: 10.1111/bcpt.13920.

6. Qualitative work – experience and perspectives

1. Bankole AO, Gill SL, McSharry J, White CL, Aniemeke C, Wallington SF, et al. Self-regulatory coping among community dwelling older adults with multiple chronic conditions. *J Multimorb Comorb*. 2023;13:26335565231207538. doi: 10.1177/26335565231207538.

2. Bissenbakker KH, Møller A, Jønsson ABR, Brodersen JB. Generating Items for Measuring Needs-Based Quality of Life and Self-Perceived Health Inequity in Patients with Multimorbidity: Development of the MultiMorbidity Questionnaire (MMQ). *Patient Relat Outcome Meas.* 2023;14:269-82. doi: 10.2147/prom.S427183.
3. Bissenbakker K, Siersma V, Jønsson ABR, Møller A, Christensen KB, Brodersen JB. Measuring needs-based quality of life and self-perceived health inequity in patients with multimorbidity: investigating psychometric measurement properties of the MultiMorbidity Questionnaire (MMQ) using primarily Rasch models. *J Patient Rep Outcomes.* 2023;7(1):94. doi: 10.1186/s41687-023-00633-4.
4. Boehmer KR, Álvarez-Villalobos NA, Barakat S, de Leon-Gutierrez H, Ruiz-Hernandez FG, Elizondo-Omaña GG, et al. The impact of health and wellness coaching on patient-important outcomes in chronic illness care: A systematic review and meta-analysis. *Patient Educ Couns.* 2023;117:107975. doi: 10.1016/j.pec.2023.107975.
5. Braut H, Storm M, Mikkelsen A. A Qualitative Study on Distributed Leadership in Integrated Care: Exploring the Experiences of Elderly Multimorbid Patients with GP Collaboration. *J Multidiscip Healthc.* 2023;16:3167-77. doi: 10.2147/jmdh.S412283.
6. Brown S, Manoharan D, Burford B, Rothwell C, Vance G. A qualitative study to explore multiple long-term conditions in the undergraduate medical school curriculum. *Future Healthc J.* 2023;10(Suppl 3):33. doi: 10.7861/fhj.10-3-s33.
7. Brown S, Manoharan D, Burford B, Rothwell C, Vance G. A qualitative study to explore multiple long-term conditions in the undergraduate medical school curriculum. *Future Healthc J.* 2023;10(Suppl 3):33. doi: 10.7861/fhj.10-3-s33.
8. Chauvin V, Villarino RTH, Bernard P, Yazbek H, Kern L, Hokayem M, et al. Impacts of social restrictions on mental health and health behaviours of individuals with multimorbidity during Covid-19 pandemic. *J Multimorb Comorb.* 2023;13:26335565231221609. doi: 10.1177/26335565231221609.
9. Coatsworth-Puspoky R, Dahlke S, Duggleby W, Hunter KF. Safeguarding survival: Older persons with multiple chronic conditions' unplanned readmission experiences: A mixed methods systematic review. *J Clin Nurs.* 2023;32(17-18):5793-815. doi: 10.1111/jocn.16705.

10. De Maria M, Lee CS, Matarese M, Vellone E, Lorini S, Ausili D. Dyadic Archetypes of Patient Self-Care and Caregiver Contribution to Self-Care in Dyads With Multiple Chronic Conditions: An Observational Study. *J Appl Gerontol.* 2023;42(8):1809-19. doi: 10.1177/07334648231159980.
11. De Maria M, Lee CS, Matarese M, Vellone E, Lorini S, Ausili D. Dyadic Archetypes of Patient Self-Care and Caregiver Contribution to Self-Care in Dyads With Multiple Chronic Conditions: An Observational Study. *J Appl Gerontol.* 2023;42(8):1809-19. doi: 10.1177/07334648231159980.
12. Dijkstra H, Weil LI, de Boer S, Merx H, Doornberg JN, van Munster BC. Travel burden for patients with multimorbidity - Proof of concept study in a Dutch tertiary care center. *SSM Popul Health.* 2023;24:101488. doi: 10.1016/j.ssmph.2023.101488.
13. Dinh TS, Brünn R, Schwarz C, Brueckle MS, Dieckelmann M, González González AI, et al. How do middle-aged patients and their healthcare providers manage multimorbidity? Results of a qualitative study. *PLoS One.* 2023;18(8):e0291065. doi: 10.1371/journal.pone.0291065.
14. Engels LWS, van Merode T, Heijmans M, Menting J, Duncan P, Rademakers J. Measurement of treatment burden in patients with multimorbidity in the Netherlands: translation and validation of the Multimorbidity Treatment Burden Questionnaire (NL-MTBQ). *Fam Pract.* 2023. doi: 10.1093/fampra/cmadv100.
15. Ferro MA, Dol M, Patte KA, Leatherdale ST, Shanahan L. Self-concept in Adolescents with Physical-Mental Comorbidity. *J Multimorb Comorb.* 2023;13:26335565231211475. doi: 10.1177/26335565231211475.
16. Gebreyohannes EA, Gebresillassie BM, Mulugeta F, Dessu E, Abebe TB. Treatment burden and health-related quality of life of patients with multimorbidity: a cross-sectional study. *Qual Life Res.* 2023;32(11):3269-77. doi: 10.1007/s11136-023-03473-3.
17. Halstead S, Siskind D, Warren N. Making meaning of multimorbidity and severe mental illness: A viewpoint. *Aust N Z J Psychiatry.* 2024;58(1):12-20. doi: 10.1177/00048674231195560.
18. Hernández-Padilla JM, Dobarrio-Sanz I, Fernández-Sola C, Del Mar Jiménez-Lasserrotte M, Correa-Casado M, Ruiz-Fernández MD. Spanish version of the Self-Care of Chronic

Illness Inventory: A validation study amongst community-dwelling older adults with chronic multimorbidity. *J Adv Nurs*. 2024;80(2):807-20. doi: 10.1111/jan.15868.

19. Horn AB, Zimmerli L, Maercker A, Holzer BM. The worse we feel, the more intensively we need to stick together: a qualitative study of couples' emotional co-regulation of the challenge of multimorbidity. *Front Psychol*. 2023;14:1213927. doi: 10.3389/fpsyg.2023.1213927.

20. Hunsbedt Fjellså HM, Husebø AML, Braut H, Mikkelsen A, Storm M. Older Adults' Experiences With Participation and eHealth in Care Coordination: Qualitative Interview Study in a Primary Care Setting. *J Particip Med*. 2023;15:e47550. doi: 10.2196/47550.

21. Hurst C, Dismore L, Granic A, Tullo E, Noble JM, Hillman SJ, et al. Attitudes and barriers to resistance exercise training for older adults living with multiple long-term conditions, frailty, and a recent deterioration in health: qualitative findings from the Lifestyle in Later Life - Older People's Medicine (LiLL-OPM) study. *BMC Geriatr*. 2023;23(1):772. doi: 10.1186/s12877-023-04461-5.

22. Iloh G, Chukwuonye ME. PROFILES AND PREDICTORS OF SUBJECTIVE WELL-BEING AND HEALTH-SEEKING BEHAVIOUR AMONG OLDER PERSONS WITH MULTIMORBIDITY IN A RURAL PRIMARY CARE ENVIRONMENT IN SOUTH-EASTERN NIGERIA. *West Afr J Med*. 2023;40(12 Suppl 1):S26.

23. Jin Y, Bowers BJ, Cotton QD, Ersig AL. Self-identified culturally related stressors that influence self-care in older adults with multiple chronic conditions: A qualitative study. *J Clin Nurs*. 2024;33(4):1550-61. doi: 10.1111/jocn.16979.

24. Johnson R, Kovalenko AG, Blakeman T, Panagioti M, Lawton M, Dawson S, et al. Treatment burden in multiple long-term conditions: a mixed-methods study protocol. *BJGP Open*. 2023;7(4). doi: 10.3399/bjgpo.2023.0097.

25. Keramat SA, Perales F, Alam K, Rashid R, Haque R, Monasi N, et al. Multimorbidity and health-related quality of life amongst Indigenous Australians: A longitudinal analysis. *Qual Life Res*. 2024;33(1):195-206. doi: 10.1007/s11136-023-03500-3.

26. Kimura T, Shinmura K. Questionnaire survey of geriatricians and primary care physicians' approaches to treating older patients with multimorbidity. *Geriatr Gerontol Int*. 2023;23(8):628-38. doi: 10.1111/ggi.14638.

27. Lee E, Choi M. Factors associated with medication adherence among older adults with multimorbidity: A culture perspective. *Geriatr Nurs.* 2024;55:297-303. doi: 10.1016/j.gerinurse.2023.11.018.
28. Lee PSS, Chew EAL, Koh HL, Quak SXE, Ding YY, Subramaniam M, et al. How do older adults with multimorbidity navigate healthcare?: a qualitative study in Singapore. *BMC Prim Care.* 2023;24(1):239. doi: 10.1186/s12875-023-02195-2.
29. Lee SI, Hanley S, Vowles Z, Plachcinski R, Azcoaga-Lorenzo A, Taylor B, et al. Key outcomes for reporting in studies of pregnant women with multiple long-term conditions: a qualitative study. *BMC Pregnancy Childbirth.* 2023;23(1):551. doi: 10.1186/s12884-023-05773-5.
30. Liu X, Zhang J, Zhang S, Peng S, Pei M, Dai C, et al. Quality of life and associated factors among community-dwelling adults with multimorbidity in Shanghai, China: A cross-sectional study. *Nurs Open.* 2023;10(8):5328-37. doi: 10.1002/nop2.1770.
31. MacLean RR, Buta E, Higgins DM, Driscoll MA, Edmond SN, LaChappelle KM, et al. Using Daily Ratings to Examine Treatment Dose and Response in Cognitive Behavioral Therapy for Chronic Pain: A Secondary Analysis of the Co-Operative Pain Education and Self-Management Clinical Trial. *Pain Med.* 2023;24(7):846-54. doi: 10.1093/pm/pnac192.
32. MacRae C, Morales D, Mercer SW, Lone N, Lawson A, Jefferson E, et al. Impact of data source choice on multimorbidity measurement: a comparison study of 2.3 million individuals in the Welsh National Health Service. *BMC Med.* 2023;21(1):309. doi: 10.1186/s12916-023-02970-z.
33. Mbokazi N, van Pinxteren M, Murphy K, Mair FS, May CR, Levitt NS. Ubuntu as a mediator in coping with multimorbidity treatment burden in a disadvantaged rural and urban setting in South Africa. *Soc Sci Med.* 2023;334:116190. doi: 10.1016/j.socscimed.2023.116190.
34. Mindlis I, Revenson TA, Erbllich J, Fernández Sedano B. Multimorbidity and Depressive Symptoms in Older Adults: A Contextual Approach. *Gerontologist.* 2023;63(8):1365-75. doi: 10.1093/geront/gnac186.
35. Rosen CB, Roberts SE, Wirtalla CJ, Keele LJ, Kaufman EJ, Halpern S, et al. Emergency Surgery, Multimorbidity and Hospital-Free Days: A Retrospective Observational Study. *J Surg Res.* 2023;291:660-9. doi: 10.1016/j.jss.2023.06.049.

36. Rowe A, Bhardwaj M, McCauley M. Maternal multimorbidity - experiences of women seeking asylum during pregnancy and after childbirth: a qualitative study. *BMC Pregnancy Childbirth*. 2023;23(1):789. doi: 10.1186/s12884-023-06054-x.
37. Sapag JC, Martínez M, Zamorano P, Varela T, Téllez Á, Irazoqui E, et al. Evaluation of patients' perspective on a multimorbidity patient-centered care model piloted in the Chilean public health system. *BMC Public Health*. 2023;23(1):2264. doi: 10.1186/s12889-023-17220-3.
38. Souza ASS. Multimorbidity and the use of health services in the Brazilian population: National Health Survey 2019. *Epidemiol Serv Saude*. 2023;32(3):e2023045. doi: 10.1590/S2237-96222023000300007.en.
39. Tamminen A, Virtanen L, Clemens T, Nadav J, Saukkonen P, Kainiemi E, et al. Perceptions of Finns with chronic diseases about factors affecting their eHealth literacy: A qualitative interview study. *Digit Health*. 2023;9:20552076231216395. doi: 10.1177/20552076231216395.
40. Vasiliauskienė O, Vasiliauskas D, Duncan P, Kontrimiene A, Jaruseviciene L, Cesnuleviciene A, et al. Validation of the Lithuanian multimorbidity treatment burden questionnaire (MTBQ) and its association with primary care patient characteristics. *Eur J Gen Pract*. 2023;29(1):2284257. doi: 10.1080/13814788.2023.2284257.
41. Whitehead L, Palamara P, Babatunde-Sowole OO, Boak J, Franklin N, Quinn R, et al. Nurses' experience of managing adults living with multimorbidity: A qualitative study. *J Adv Nurs*. 2023;79(7):2514-24. doi: 10.1111/jan.15600.
42. Wu J, Xue E, Huang S, Fu Y, Chen D, Shao J, et al. Facilitators and Barriers of Integrated Care for Older Adults with Multimorbidity: A Descriptive Qualitative Study. *Clin Interv Aging*. 2023;18:1973-83. doi: 10.2147/cia.S436294.
43. Yang Z, Sun F, Zhao L, Hu T, Lin X, Guo Y. Self-efficacy and well-being in the association between caregiver burden and sleep quality among caregivers of elderly patients having multiple chronic conditions in rural China: a serial multiple mediation analysis. *BMC Nurs*. 2023;22(1):424. doi: 10.1186/s12912-023-01587-0.

44. Younas A, Inayat S. Alleviating suffering of individuals with multimorbidity and complex needs: A descriptive qualitative study. *Nurs Ethics*. 2023;9697330231191280. doi: 10.1177/09697330231191280.