

Multimorbidity publications January-April 2022

1. 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
2. Dahal R, Bista S. Strategies To Reduce Polypharmacy in the Elderly. 2022. doi: NBK574550 [bookaccession]
3. 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]
4. 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
5. 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]
6. 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
7. 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]
8. 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
9. 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
10.1186/s12884-022-04442-3 [pii]
10. 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
11. 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
12. 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
13. 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.000000000000135200124784-900000000-99171 [pii]
14. 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]
15. 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
16. 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
17. 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
- 10.1186/s12905-022-01693-2 [pii]
18. 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
19. Strandberg TE, Kivimaki M. Frailty and multimorbidity are independent and additive prognostic factors. *J Am Geriatr Soc* 2022. doi: 10.1111/jgs.17753
20. 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]

21. 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/s11739-021-02899-2
10.1007/s11739-021-02899-2 [pii]
22. 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
23. 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/acer.13524
24. 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]
25. 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
26. 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]
27. 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]
28. 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
10.1186/s12889-022-13181-1 [pii]
29. 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]
30. 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

31. 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]
32. Fleitas Alfonso 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
33. 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
34. 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]
35. 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
36. 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
37. 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
38. Botosaneanu 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
39. 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]
40. 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

41. 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]
42. 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]
43. 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]
44. 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/fdaa204
45. 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
46. 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
47. 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
48. 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
49. 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]

50. 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
51. 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
52. 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
53. 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
54. 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
55. 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
56. 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
57. 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
58. 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
59. 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

60. 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
61. 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
62. 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
63. 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
64. 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
65. 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]
66. 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]
67. 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]
68. Jedrzejczyk M, Forys W, Czaplą 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
69. 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
70. 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.1003931
PMEDICINE-D-21-02504 [pii]
71. 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
72. 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]
73. 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
74. 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
75. 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
76. 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]
77. 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

78. 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
79. 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
80. 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]
81. 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
82. 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
83. 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]
84. 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
85. 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
86. 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]
87. 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

88. 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

89. 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

90. 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

91. 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

92. 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

93. 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-x

10.1057/s41271-021-00321-x [pii]

94. 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

95. 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

96. 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
97. 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
98. 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
99. 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
100. 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]
101. 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
102. 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
103. 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
104. 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]
105. Soley-Bori M, Bisquera A, Ashworth M, Wang Y, Durbaba S, Dodhia H, 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: BJGP.2021.0325 [pii]
- 10.3399/BJGP.2021.0325

106. 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/s12529-022-10092-8 [pii]
107. 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]
108. 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]
109. 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/cmac006
110. 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
111. 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
112. 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]
113. 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
114. 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]

115. 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]

116. 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/s41397-021-00260-6

10.1038/s41397-021-00260-6 [pii]

117. 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]

118. 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

119. 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]

120. Fortin M, Stewart M, Almirall J, Beaupre 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

121. 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

122. 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

123. 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

124. 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]

125. 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]

126. 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

127. 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]

128. 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

129. 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

130. 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

131. 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]

132. 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

133. 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
134. 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
135. 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
136. 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
137. 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
138. 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]