

## Multimorbidity publications September-December 2021

1. Zhou X, Zhang D. Multimorbidity in the Elderly: A Systematic Bibliometric Analysis of Research Output. *Int J Environ Res Public Health* 2021;19(1) doi: 10.3390/ijerph19010353
2. Brijoux T, Woopen C, Zank S. Multimorbidity in old age and its impact on life results. *Z Gerontol Geriatr* 2021;54(Suppl 2):108-13. doi: 10.1007/s00391-021-01920-9
3. Matthias AT, Fernando G, Somathilake B, et al. Predictors and patterns of polypharmacy in chronic diseases in a middle-income country. *Int J Physiol Pathophysiol Pharmacol* 2021;13(6):158-65.
4. Viljanen A, Salminen M, Irjala K, et al. Chronic conditions and multimorbidity associated with institutionalization among Finnish community-dwelling older people: an 18-year population-based follow-up study. *Eur Geriatr Med* 2021;12(6):1275-84. doi: 10.1007/s41999-021-00535-y
5. Jurisson M, Pisarev H, Uuskula A, et al. Prevalence of chronic conditions and multimorbidity in Estonia: a population-based cross-sectional study. *BMJ Open* 2021;11(10):e049045. doi: 10.1136/bmjopen-2021-049045
6. Samal L, Fu HN, Camara DS, et al. Health information technology to improve care for people with multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:1006-36. doi: 10.1111/1475-6773.13860
7. Spiers G, Boulton E, Corner L, et al. What matters to people with multiple long-term conditions and their carers? *Postgrad Med J* 2021 doi: 10.1136/postgradmedj-2021-140825
8. Shi X, Lima S, Mota CMM, et al. Prevalence of Multimorbidity of Chronic Noncommunicable Diseases in Brazil: Population-Based Study. *JMIR Public Health Surveill* 2021;7(11):e29693. doi: 10.2196/29693
9. McQueenie R, Jani BD, Siebert S, et al. Prevalence of chronic pain in LTCs and multimorbidity: A cross-sectional study using UK Biobank. *J Comorb* 2021;11:26335565211005870. doi: 10.1177/26335565211005870
10. Gonzalez-Gonzalez AI, Brunn R, Nothacker J, et al. Everyday Lives of Middle-Aged Persons with Multimorbidity: A Mixed Methods Systematic Review. *Int J Environ Res Public Health* 2021;19(1) doi: 10.3390/ijerph19010006
11. Kato D, Kawachi I, Saito J, et al. Complex Multimorbidity and Incidence of Long-Term Care Needs in Japan: A Prospective Cohort Study. *Int J Environ Res Public Health* 2021;18(19) doi: 10.3390/ijerph181910523
12. Dambha-Miller H, Simpson G, Hobson L, et al. Integrated primary care and social services for older adults with multimorbidity in England: a scoping review. *BMC Geriatr* 2021;21(1):674. doi: 10.1186/s12877-021-02618-8

13. McPeake J, Quasim T, Henderson P, et al. Multimorbidity and Its Relationship With Long-Term Outcomes After Critical Care Discharge: A Prospective Cohort Study. *Chest* 2021;160(5):1681-92. doi: 10.1016/j.chest.2021.05.069
14. Hayanga B, Stafford M, Becares L. Ethnic Inequalities in Healthcare Use and Care Quality among People with Multiple Long-Term Health Conditions Living in the United Kingdom: A Systematic Review and Narrative Synthesis. *Int J Environ Res Public Health* 2021;18(23) doi: 10.3390/ijerph182312599
15. Romano E, Ma R, Vancampfort D, et al. Multimorbidity and obesity in older adults from six low- and middle-income countries. *Prev Med* 2021;153:106816. doi: 10.1016/j.ypmed.2021.106816
16. Savitz LA, Bayliss EA. Emerging models of care for individuals with multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:980-89. doi: 10.1111/1475-6773.13774
17. Marza-Florensa A, Boateng D, Agyemang C, et al. Multimorbidity Among Migrant and Non-Migrant Ghanaians: The RODAM Study. *Int J Public Health* 2021;66:1604056. doi: 10.3389/ijph.2021.1604056
18. Peng S, Wang S, Feng XL. Multimorbidity, depressive symptoms and disability in activities of daily living amongst middle-aged and older Chinese: Evidence from the China Health and Retirement Longitudinal Study. *J Affect Disord* 2021;295:703-10. doi: 10.1016/j.jad.2021.08.072
19. Eyowas FA, Schneider M, Alemu S, et al. Multimorbidity of chronic non-communicable diseases: burden, care provision and outcomes over time among patients attending chronic outpatient medical care in Bahir Dar, Ethiopia-a mixed methods study protocol. *BMJ Open* 2021;11(9):e051107. doi: 10.1136/bmjopen-2021-051107
20. Whitehead L, Palamara P, Allen J, et al. Nurses' perceptions and beliefs related to the care of adults living with multimorbidity: A systematic qualitative review. *J Clin Nurs* 2021 doi: 10.1111/jocn.16146
21. Puri P, Singh SK, Pati S. Temporal dynamics, patterns and correlates of single and multimorbidity in India, 1994-2018. *J Comorb* 2021;11:26335565211062756. doi: 10.1177/26335565211062756
22. De Maria M, Ferro F, Vellone E, et al. Self-care of patients with multiple chronic conditions and their caregivers during the COVID-19 pandemic: A qualitative descriptive study. *J Adv Nurs* 2021 doi: 10.1111/jan.15115
23. Kanat M, Schaefer J, Kivelitz L, et al. Patient-centeredness in the multimorbid elderly: a focus group study. *BMC Geriatr* 2021;21(1):567. doi: 10.1186/s12877-021-02448-8
24. Bare M, Herranz S, Roso-Llorach A, et al. Multimorbidity patterns of chronic conditions and geriatric syndromes in older patients from the MoPIM multicentre cohort study. *BMJ Open* 2021;11(11):e049334. doi: 10.1136/bmjopen-2021-049334

25. Simard M, Rahme E, Calfat AC, et al. Multimorbidity measures from health administrative data using ICD system codes: A systematic review. *Pharmacoepidemiol Drug Saf* 2022;31(1):1-12. doi: 10.1002/pds.5368
26. Feng X, Kelly M, Sarma H. The association between educational level and multimorbidity among adults in Southeast Asia: A systematic review. *PLoS One* 2021;16(12):e0261584. doi: 10.1371/journal.pone.0261584
27. Rivers PH, Langford N, Whitehead A, et al. What influences prescribing decisions in a multimorbidity and polypharmacy context on the acute medical unit? An interprofessional, qualitative study. *J Eval Clin Pract* 2021;27(5):1076-84. doi: 10.1111/jep.13519
28. O'Connor R, Eifler M, Russell AM, et al. Caregiver involvement in managing medications among older adults with multiple chronic conditions. *J Am Geriatr Soc* 2021;69(10):2916-22. doi: 10.1111/jgs.17337
29. Ferro MA, Qureshi SA, Shanahan L, et al. Health-related quality of life in children with and without physical-mental multimorbidity. *Qual Life Res* 2021;30(12):3449-61. doi: 10.1007/s11136-021-02963-6
30. Ahn S, Bartmess M, Lindley LC. Multimorbidity and healthcare utilization among Black Americans: A cross-sectional study. *Nurs Open* 2021 doi: 10.1002/nop2.1095
31. Tong L, Pu L, Guo X, et al. Multimorbidity study with different levels of depression status. *J Affect Disord* 2021;292:30-35. doi: 10.1016/j.jad.2021.05.039
32. Marengoni A, Tazzeo C, Calderon-Larranaga A, et al. Multimorbidity Patterns and 6-Year Risk of Institutionalization in Older Persons: The Role of Social Formal and Informal Care. *J Am Med Dir Assoc* 2021;22(10):2184-89 e1. doi: 10.1016/j.jamda.2020.12.040
33. Delpino FM, Wendt A, Crespo PA, et al. Occurrence and inequalities by education in multimorbidity in Brazilian adults between 2013 and 2019: evidence from the National Health Survey. *Rev Bras Epidemiol* 2021;24(suppl 2):e210016. doi: 10.1590/1980-549720210016.supl.2
34. Piotrowicz K, Pac A, Skalska A, et al. Patterns of multimorbidity in 4588 older adults: implications for a nongeriatrician specialist. *Pol Arch Intern Med* 2021;131(12) doi: 10.20452/pamw.16128
35. Azad A, Svard V. Patients' with Multimorbidity and Psychosocial Difficulties and Their Views on Important Professional Competence for Rehabilitation Coordinators in the Return-to-Work Process. *Int J Environ Res Public Health* 2021;18(19) doi: 10.3390/ijerph181910280
36. Ledwaba-Chapman L, Bisquera A, Gulliford M, et al. Applying resolved and remission codes reduced prevalence of multimorbidity in an urban multi-ethnic population. *J Clin Epidemiol* 2021;140:135-48. doi: 10.1016/j.jclinepi.2021.09.005

37. Dambha-Miller H, Simpson G, Hobson L, et al. Integrating primary care and social services for older adults with multimorbidity: a qualitative study. *Br J Gen Pract* 2021;71(711):e753-e61. doi: 10.3399/BJGP.2020.1100
38. Calderon-Larranaga A, Hu X, Guo J, et al. Body mass trajectories and multimorbidity in old age: 12-year results from a population-based study. *Clin Nutr* 2021;40(12):5764-70. doi: 10.1016/j.clnu.2021.10.012
39. Vela E, Cleries M, Monterde D, et al. Performance of quantitative measures of multimorbidity: a population-based retrospective analysis. *BMC Public Health* 2021;21(1):1881. doi: 10.1186/s12889-021-11922-2
40. De Maria M, Ferro F, Ausili D, et al. Characteristics of dyadic care types among patients living with multiple chronic conditions and their informal caregivers. *J Adv Nurs* 2021;77(12):4768-81. doi: 10.1111/jan.15033
41. Francisco P, Assumpcao D, Bacurau AGM, et al. Multimorbidity and use of health services in the oldest old in Brazil. *Rev Bras Epidemiol* 2021;24(suppl 2):e210014. doi: 10.1590/1980-549720210014.supl.2
42. Hurst C, Murray JC, Granic A, et al. Long-term conditions, multimorbidity, lifestyle factors and change in grip strength over 9 years of follow-up: Findings from 44,315 UK biobank participants. *Age Ageing* 2021;50(6):2222-29. doi: 10.1093/ageing/afab195
43. Diderichsen F, Bender AM, Lyth AC, et al. Mediating role of multimorbidity in inequality in mortality: a register study on the Danish population. *J Epidemiol Community Health* 2021 doi: 10.1136/jech-2021-218211
44. Sturmberg JP, Getz LO, Stange KC, et al. Beyond multimorbidity: What can we learn from complexity science? *J Eval Clin Pract* 2021;27(5):1187-93. doi: 10.1111/jep.13521
45. Tan SY, Lew KJ, Xie Y, et al. Healthcare cost of patients with multiple chronic diseases in Singapore public primary care setting. *Ann Acad Med Singap* 2021;50(11):809-17. doi: 10.47102/annals-acadmedsg.2021246
46. Figueroa JF, Papanicolas I, Riley K, et al. International comparison of health spending and utilization among people with complex multimorbidity. *Health Serv Res* 2021;56 Suppl 3:1317-34. doi: 10.1111/1475-6773.13708
47. Alkhatib A, Nnyanzi LA, Mujuni B, et al. Preventing Multimorbidity with Lifestyle Interventions in Sub-Saharan Africa: A New Challenge for Public Health in Low and Middle-Income Countries. *Int J Environ Res Public Health* 2021;18(23) doi: 10.3390/ijerph182312449
48. Kurczewska-Michalak M, Lewek P, Jankowska-Polanska B, et al. Polypharmacy Management in the Older Adults: A Scoping Review of Available Interventions. *Front Pharmacol* 2021;12:734045. doi: 10.3389/fphar.2021.734045
49. Sigurdardottir ST, Jonasson K, Clausen M, et al. Prevalence and early-life risk factors of school-age allergic multimorbidity: The EuroPrevall-iFAAM birth cohort. *Allergy* 2021;76(9):2855-65. doi: 10.1111/all.14857

50. Chen J, Mittendorfer-Rutz E, Berg L, et al. Associations between Multimorbidity Patterns and Subsequent Labor Market Marginalization among Refugees and Swedish-Born Young Adults-A Nationwide Registered-Based Cohort Study. *J Pers Med* 2021;11(12) doi: 10.3390/jpm11121305
51. Shariff Ghazali S, Seman Z, Zainuddin NH, et al. Prevalence and factors associated with multimorbidity among older adults in Malaysia: a population-based cross-sectional study. *BMJ Open* 2021;11(10):e052126. doi: 10.1136/bmjopen-2021-052126
52. Kyprianidou M, Panagiotakos D, Faka A, et al. Adherence to the Mediterranean diet in Cyprus and its relationship to multi-morbidity: an epidemiological study. *Public Health Nutr* 2021;24(14):4546-55. doi: 10.1017/S1368980020004267
53. Peterson MD, Casten K, Collins S, et al. Muscle weakness is a prognostic indicator of disability and chronic disease multimorbidity. *Exp Gerontol* 2021;152:111462. doi: 10.1016/j.exger.2021.111462
54. Monacelli F, Signori A, Marengoni A, et al. Delirium and Clusters of Older Patients Affected by Multimorbidity in Acute Hospitals. *J Am Med Dir Assoc* 2021 doi: 10.1016/j.jamda.2021.10.004
55. Vick JB, Wolff JL. A scoping review of person and family engagement in the context of multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:990-1005. doi: 10.1111/1475-6773.13857
56. Kivelitz L, Schafer J, Kanat M, et al. Patient-Centeredness in Older Adults With Multimorbidity: Results of an Online Expert Delphi Study. *Gerontologist* 2021;61(7):1008-18. doi: 10.1093/geront/gnaa223
57. Yang C, Zhu S, Lee DTF, et al. Interventions for improving medication adherence in community-dwelling older people with multimorbidity: A systematic review and meta-analysis. *Int J Nurs Stud* 2022;126:104154. doi: 10.1016/j.ijnurstu.2021.104154
58. Cheng C, Inder K, Chan SW. The relationship between coping strategies and psychological distress in Chinese older adults with multiple chronic conditions. *Australas J Ageing* 2021;40(4):397-405. doi: 10.1111/ajag.12946
59. Roomaney RA, van Wyk B, Turawa EB, et al. Multimorbidity in South Africa: a systematic review of prevalence studies. *BMJ Open* 2021;11(10):e048676. doi: 10.1136/bmjopen-2021-048676
60. Santauegenia SJ, Contel JC, Vela E, et al. Characteristics and Service Utilization by Complex Chronic and Advanced Chronic Patients in Catalonia: A Retrospective Seven-Year Cohort-Based Study of an Implemented Chronic Care Program. *Int J Environ Res Public Health* 2021;18(18) doi: 10.3390/ijerph18189473
61. Pedersen SE, Aaby A, Friis K, et al. Multimorbidity and health literacy: A population-based survey among 28,627 Danish adults. *Scand J Public Health* 2021;14034948211045921. doi: 10.1177/14034948211045921

62. Kang E, Kim S, Rhee YE, et al. Self-management strategies and comorbidities in chronic disease patients: associations with quality of life and depression. *Psychol Health Med* 2021;26(8):1031-43. doi: 10.1080/13548506.2020.1838585
63. Puthuchearry ZA, Osman M, Harvey DJR, et al. Talking to multi-morbid patients about critical illness: an evolving conversation. *Age Ageing* 2021;50(5):1512-15. doi: 10.1093/ageing/afab107
64. Heikkila K, Pulakka A, Metsala J, et al. Preterm birth and the risk of chronic disease multimorbidity in adolescence and early adulthood: A population-based cohort study. *PLoS One* 2021;16(12):e0261952. doi: 10.1371/journal.pone.0261952
65. Ghazalbash S, Zargoush M, Mowbray F, et al. Examining the predictability and prognostication of multimorbidity among older Delayed-Discharge Patients: A Machine learning analytics. *Int J Med Inform* 2021;156:104597. doi: 10.1016/j.ijmedinf.2021.104597
66. Canoy D, Tran J, Zottoli M, et al. Association between cardiometabolic disease multimorbidity and all-cause mortality in 2 million women and men registered in UK general practices. *BMC Med* 2021;19(1):258. doi: 10.1186/s12916-021-02126-x
67. Ritz C, Sader J, Cairo Notari S, et al. Multimorbidity and clinical reasoning through the eyes of GPs: a qualitative study. *Fam Med Community Health* 2021;9(4) doi: 10.1136/fmch-2020-000798
68. Axon DR, Arku D. Associations of multiple ( $\geq 5$ ) chronic conditions among a nationally representative sample of older United States adults with self-reported pain. *Scand J Pain* 2021;21(4):814-22. doi: 10.1515/sjpain-2021-0094
69. Tazzeo C, Rizzuto D, Calderon-Larranaga A, et al. Multimorbidity patterns and risk of frailty in older community-dwelling adults: a population-based cohort study. *Age Ageing* 2021;50(6):2183-91. doi: 10.1093/ageing/afab138
70. Chudasama YV, Zaccardi F, Gillies CL, et al. Patterns of multimorbidity and risk of severe SARS-CoV-2 infection: an observational study in the U.K. *BMC Infect Dis* 2021;21(1):908. doi: 10.1186/s12879-021-06600-y
71. Ballesteros SM, Moreno-Montoya J, Grooten WJA, et al. Socioeconomic variation of multimorbidity in Colombian older adults. *Sci Rep* 2021;11(1):22738. doi: 10.1038/s41598-021-02219-w
72. Erving CL, Frazier C. The Association between Multiple Chronic Conditions and Depressive Symptoms: Intersectional Distinctions by Race, Nativity, and Gender. *J Health Soc Behav* 2021;62(4):599-617. doi: 10.1177/00221465211040174
73. Stafford G, Villen N, Roso-Llorach A, et al. Combined Multimorbidity and Polypharmacy Patterns in the Elderly: A Cross-Sectional Study in Primary Health Care. *Int J Environ Res Public Health* 2021;18(17) doi: 10.3390/ijerph18179216

74. Paukkonen L, Oikarinen A, Kahkonen O, et al. Patient participation during primary health-care encounters among adult patients with multimorbidity: A cross-sectional study. *Health Expect* 2021;24(5):1660-76. doi: 10.1111/hex.13306
75. Khanolkar AR, Chaturvedi N, Kuan V, et al. Socioeconomic inequalities in prevalence and development of multimorbidity across adulthood: A longitudinal analysis of the MRC 1946 National Survey of Health and Development in the UK. *PLoS Med* 2021;18(9):e1003775. doi: 10.1371/journal.pmed.1003775
76. Balogun SA, Aitken D, Wu F, et al. Linear and Nonlinear Associations Between Physical Activity, Body Composition, and Multimorbidity Over 10 Years Among Community-Dwelling Older Adults. *J Gerontol A Biol Sci Med Sci* 2021;76(11):2015-20. doi: 10.1093/gerona/qlab086
77. Lun P, Law F, Ho E, et al. Optimising prescribing practices in older adults with multimorbidity: a scoping review of guidelines. *BMJ Open* 2021;11(12):e049072. doi: 10.1136/bmjopen-2021-049072
78. Kyprianidou M, Panagiotakos D, Kambanaros M, et al. Quality of Sleep in the Cypriot Population and Its Association With Multimorbidity: A Cross-Sectional Study. *Front Public Health* 2021;9:693332. doi: 10.3389/fpubh.2021.693332
79. Meher T, Muhammad T, Gharge S. The association between single and multiple chronic conditions and depression among older population in India: A comparative study between men and women. *Int J Geriatr Psychiatry* 2022;37(1) doi: 10.1002/gps.5639
80. Foley L, Larkin J, Lombard-Vance R, et al. Prevalence and predictors of medication non-adherence among people living with multimorbidity: a systematic review and meta-analysis. *BMJ Open* 2021;11(9):e044987. doi: 10.1136/bmjopen-2020-044987
81. Yu J, Li Y, Zheng Z, et al. Analysis of multimorbidity networks associated with different factors in Northeast China: a cross-sectional analysis. *BMJ Open* 2021;11(11):e051050. doi: 10.1136/bmjopen-2021-051050
82. Wilk P, Stranges S, Belloc R, et al. Multimorbidity in large Canadian urban centres: A multilevel analysis of pooled 2015-2018 cross-sectional cycles of the Canadian Community Health Survey. *J Comorb* 2021;11:26335565211058037. doi: 10.1177/26335565211058037
83. Kabashi S, Gamboa D, Vindenes V, et al. Multimorbidity, psychoactive substance use and psychological distress among acute medically ill patients: a cross-sectional study. *BMJ Open* 2021;11(11):e052428. doi: 10.1136/bmjopen-2021-052428
84. Ali SM, Selby DA, Khalid K, et al. Engagement with consumer smartwatches for tracking symptoms of individuals living with multiple long-term conditions (multimorbidity): A longitudinal observational study. *J Comorb* 2021;11:26335565211062791. doi: 10.1177/26335565211062791
85. Lau JH, Lee ES, Zhang Y, et al. Association Between Self-Reported Sedentary Behavior and Health-Related Quality of Life Among Multimorbidity Patients in Singapore. *Am J Health Promot* 2021;35(7):929-38. doi: 10.1177/08901171211001274

86. Gonzalez-Gonzalez AI, Brunn R, Nothacker J, et al. Everyday lives of middle-aged persons living with multimorbidity: protocol of a mixed-methods systematic review. *BMJ Open* 2021;11(12):e050990. doi: 10.1136/bmjopen-2021-050990
87. Zou C, Sun H, Lu C, et al. Nighttime sleep duration, restlessness and risk of multimorbidity - A longitudinal study among middle-aged and older adults in China. *Arch Gerontol Geriatr* 2022;99:104580. doi: 10.1016/j.archger.2021.104580
88. Cezard G, McHale CT, Sullivan F, et al. Studying trajectories of multimorbidity: a systematic scoping review of longitudinal approaches and evidence. *BMJ Open* 2021;11(11):e048485. doi: 10.1136/bmjopen-2020-048485
89. Sultan N, Swinglehurst D. Self-Management in Older Pakistanis Living With Multimorbidity in East London. *Qual Health Res* 2021;31(11):2111-22. doi: 10.1177/10497323211019355
90. Doyle J, Murphy E, Gavin S, et al. A Digital Platform to Support Self-management of Multiple Chronic Conditions (ProACT): Findings in Relation to Engagement During a One-Year Proof-of-Concept Trial. *J Med Internet Res* 2021;23(12):e22672. doi: 10.2196/22672
91. Breckner A, Roth C, Glassen K, et al. Self-management perspectives of elderly patients with multimorbidity and practitioners - status, challenges and further support needed? *BMC Fam Pract* 2021;22(1):238. doi: 10.1186/s12875-021-01584-9
92. Bieri M, del Rio Carral M, Santiago-Delefosse M, et al. Beliefs about Polypharmacy among Home-Dwelling Older Adults Living with Multiple Chronic Conditions, Informal Caregivers and Healthcare Professionals: A Qualitative Study. *Healthcare (Basel)* 2021;9(9) doi: 10.3390/healthcare9091204
93. Lang C, Roessler M, Schmitt J, et al. Health-related quality of life in elderly, multimorbid individuals with and without depression and/or mild cognitive impairment using a telemonitoring application. *Qual Life Res* 2021;30(10):2829-41. doi: 10.1007/s11136-021-02848-8
94. Jennings ELM, O'Mahony D, Gallagher PF. Medication-related quality of life (MRQoL) in ambulatory older adults with multi-morbidity and polypharmacy. *Eur Geriatr Med* 2021 doi: 10.1007/s41999-021-00573-6
95. O'Regan A, Hannigan A, Glynn L, et al. A cluster analysis of device-measured physical activity behaviours and the association with chronic conditions, multi-morbidity and healthcare utilisation in adults aged 45 years and older. *Prev Med Rep* 2021;24:101641. doi: 10.1016/j.pmedr.2021.101641
96. Bennett HQ, Kingston A, Lourida I, et al. The contribution of multiple long-term conditions to widening inequalities in disability-free life expectancy over two decades: Longitudinal analysis of two cohorts using the Cognitive Function and Ageing Studies. *EClinicalMedicine* 2021;39:101041. doi: 10.1016/j.eclinm.2021.101041

97. Veronese N, Smith L, Cereda E, et al. Multimorbidity increases the risk for sarcopenia onset: Longitudinal analyses from the English Longitudinal Study of Ageing. *Exp Gerontol* 2021;156:111624. doi: 10.1016/j.exger.2021.111624
98. Larsson SC, Burgess S. Causal role of high body mass index in multiple chronic diseases: a systematic review and meta-analysis of Mendelian randomization studies. *BMC Med* 2021;19(1):320. doi: 10.1186/s12916-021-02188-x
99. Ganguli I, McGlave C, Rosenthal MB. National Trends and Outcomes Associated With Presence and Type of Usual Clinician Among Older Adults With Multimorbidity. *JAMA Netw Open* 2021;4(11):e2134798. doi: 10.1001/jamanetworkopen.2021.34798
100. Li C, Peng W, Li M, et al. Exploring the relationship between depression and different multimorbidity patterns among older people covered by long-term care insurance in Shanghai, China. *Psychogeriatrics* 2022;22(1):99-107. doi: 10.1111/psyg.12783
101. Ecks S. Depression, Deprivation, and Dysbiosis: Polyiatrogenesis in Multiple Chronic Illnesses. *Cult Med Psychiatry* 2021;45(4):507-24. doi: 10.1007/s11013-020-09699-x
102. Dinsmore J, Hannigan C, Smith S, et al. A Digital Health Platform for Integrated and Proactive Patient-Centered Multimorbidity Self-management and Care (ProACT): Protocol for an Action Research Proof-of-Concept Trial. *JMIR research protocols* 2021;10(12):e22125. doi: 10.2196/22125
103. Wister AV, Li L, Mitchell BA. A Study of Social Isolation, Multimorbidity and Multiple Role Demands Among Middle-Age Adults Based on the Canadian Longitudinal Study on Aging. *Int J Aging Hum Dev* 2021;914150211040451. doi: 10.1177/00914150211040451
104. Lin H, Xiao S, Shi L, et al. Impact of Multimorbidity on Symptoms of Depression, Anxiety, and Stress in Older Adults: Is There a Sex Difference? *Front Psychol* 2021;12:762310. doi: 10.3389/fpsyg.2021.762310
105. Magnan E, Gosdin M, Tancredi D, et al. Pilot randomized controlled trial Protocol: Life context-informed pre-visit planning to improve care plans for primary care patients with multiple chronic conditions including diabetes. *J Comorb* 2021;11:26335565211062387. doi: 10.1177/26335565211062387
106. Fudge N, Swinglehurst D. Keeping in balance on the multimorbidity tightrope: A narrative analysis of older patients' experiences of living with and managing multimorbidity. *Soc Sci Med* 2022;292:114532. doi: 10.1016/j.socscimed.2021.114532
107. Bernardes GM, Saulo H, Santos JLF, et al. Effect of education and multimorbidity on mortality among older adults: findings from the health, well-being and ageing cohort study (SABE). *Public Health* 2021;201:69-74. doi: 10.1016/j.puhe.2021.10.001
108. Coughlin SS, Datta B, Berman A, et al. A cross-sectional study of financial distress in persons with multimorbidity. *Prev Med Rep* 2021;23:101464. doi: 10.1016/j.pmedr.2021.101464

109. Bishop NJ, Ullevig SL, Wang K, et al. Dietary quality modifies the association between multimorbidity and change in mobility limitations among older Americans. *Prev Med* 2021;153:106721. doi: 10.1016/j.ypmed.2021.106721
110. Hernandez B, Voll S, Lewis NA, et al. Comparisons of disease cluster patterns, prevalence and health factors in the USA, Canada, England and Ireland. *BMC Public Health* 2021;21(1):1674. doi: 10.1186/s12889-021-11706-8
111. Soley-Bori M, Bisquera A, Ashworth M, et al. Identifying multimorbidity clusters with the highest primary care use: 15 years of evidence from a multi-ethnic metropolitan population. *Br J Gen Pract* 2021 doi: 10.3399/BJGP.2021.0325
112. Tan KB. Prevention and management of multimorbidity to ensure healthcare sustainability. *Ann Acad Med Singap* 2021;50(11):807-08. doi: 10.47102/annals-acadmedsg.2021416
113. Griffith LE, Gruneir A, Fisher KA, et al. The impact of multimorbidity level and functional limitations on the accuracy of using self-reported survey data compared to administrative data to measure general practitioner and specialist visits in community-living adults. *BMC Health Serv Res* 2021;21(1):1123. doi: 10.1186/s12913-021-07160-2
114. Zhou Z, Shi M, Liu M, et al. Multimorbidity in Hospitalized Patients Admitted to General Practice Departments and Its Implications for the General Practice Healthcare System: A Four-Year Longitudinal Study in China. *Front Public Health* 2021;9:760792. doi: 10.3389/fpubh.2021.760792
115. Lear SA, Norena M, Banner D, et al. Assessment of an Interactive Digital Health-Based Self-management Program to Reduce Hospitalizations Among Patients With Multiple Chronic Diseases: A Randomized Clinical Trial. *JAMA Netw Open* 2021;4(12):e2140591. doi: 10.1001/jamanetworkopen.2021.40591
116. Wang D, Li D, Mishra SR, et al. Association between marital relationship and multimorbidity in middle-aged adults: a longitudinal study across the US, UK, Europe, and China. *Maturitas* 2022;155:32-39. doi: 10.1016/j.maturitas.2021.09.011
117. Foley L, Hynes L, Murphy AW, et al. 'Just keep taking them, keep hoping they'll work': A qualitative study of adhering to medications for multimorbidity. *Br J Health Psychol* 2021 doi: 10.1111/bjhp.12568
118. Read JR, Sharpe L, Burton AL, et al. Preventing depression in older people with multimorbidity: 24-month follow-up of a trial of internet-delivered cognitive behaviour therapy. *Age Ageing* 2021;50(6):2254-58. doi: 10.1093/ageing/afab145
119. Ullmann S, Strauss B, Tiesler F, et al. Patient characteristics as predictors of sleep disturbances in multimorbid primary care patients - A secondary analysis. *J Psychosom Res* 2022;153:110705. doi: 10.1016/j.jpsychores.2021.110705
120. Paukkonen L, Oikarinen A, Kahkonen O, et al. Adherence to self-management in patients with multimorbidity and associated factors: A cross-sectional study in primary health care. *J Clin Nurs* 2021 doi: 10.1111/jocn.16099

121. Felix IB, Henriques A. Medication adherence and related determinants in older people with multimorbidity: A cross-sectional study. *Nurs Forum* 2021;56(4):834-43. doi: 10.1111/nuf.12619
122. Sogaard MB, Andresen K, Kristiansen M. Systematic review of patient-engagement interventions: potentials for enhancing person-centred care for older patients with multimorbidity. *BMJ Open* 2021;11(12):e048558. doi: 10.1136/bmjopen-2020-048558
123. Fishbook BN, Brinton CD, Siever J, et al. Cardiometabolic multimorbidity and activity limitation: a cross-sectional study of adults using the Canadian Longitudinal Study on Aging data. *Fam Pract* 2021 doi: 10.1093/fampra/cmab129
124. Kappelin C, Carlsson AC, Wachtler C. Specific content for collaborative care: a systematic review of collaborative care interventions for patients with multimorbidity involving depression and/or anxiety in primary care. *Fam Pract* 2021 doi: 10.1093/fampra/cmab079
125. Mas MA, Miralles R, Heras C, et al. Designing a Person-Centred Integrated Care Programme for People with Complex Chronic Conditions: A Case Study from Catalonia. *Int J Integr Care* 2021;21(4):22. doi: 10.5334/ijic.5653
126. Smith SM, Wallace E, Clyne B, et al. Interventions for improving outcomes in patients with multimorbidity in primary care and community setting: a systematic review. *Syst Rev* 2021;10(1):271. doi: 10.1186/s13643-021-01817-z
127. Khunti K, Highton PJ, Waheed G, et al. Promoting physical activity with self-management support for those with multimorbidity: a randomised controlled trial. *Br J Gen Pract* 2021;71(713):e921-e30. doi: 10.3399/BJGP.2021.0172
128. Liu H, Zhang X, Chen B, et al. The Differential Impact of Multimorbidity Patterns and Subsequent Accumulation on Longitudinal Trajectories of Physical Function Decline in a Population-based Cohort of Older People. *J Gerontol A Biol Sci Med Sci* 2021 doi: 10.1093/gerona/glab384
129. Ronaldson A, Arias de la Torre J, Prina M, et al. Associations between physical multimorbidity patterns and common mental health disorders in middle-aged adults: A prospective analysis using data from the UK Biobank. *Lancet Reg Health Eur* 2021;8:100149. doi: 10.1016/j.lanepe.2021.100149
130. Kruger C, Schafer I, van den Bussche H, et al. Non-random relations in drug use expressed as patterns comprising prescription and over-the-counter drugs in multimorbid elderly patients in primary care: Data of the exploratory analysis of the multicentre, observational cohort study MultiCare. *Eur J Gen Pract* 2021;27(1):119-29. doi: 10.1080/13814788.2021.1933425
131. Mishra VK, Srivastava S, T M, et al. Population attributable risk for multimorbidity among adult women in India: Do smoking tobacco, chewing tobacco and consuming alcohol make a difference? *PLoS One* 2021;16(11):e0259578. doi: 10.1371/journal.pone.0259578

132. Ye B, Xie R, Mishra SR, et al. Bidirectional association between physical multimorbidity and subclinical depression in Chinese older adults: Findings from a prospective cohort study. *J Affect Disord* 2022;296:169-74. doi: 10.1016/j.jad.2021.09.067
133. Hounkpatin HO, Roderick P, Morris JE, et al. Change in treatment burden among people with multimorbidity: Protocol of a follow up survey and development of efficient measurement tools for primary care. *PLoS One* 2021;16(11):e0260228. doi: 10.1371/journal.pone.0260228
134. Gontijo Guerra S, Berbiche D, Vasiliadis HM. Changes in instrumental activities of daily living functioning associated with concurrent common mental disorders and physical multimorbidity in older adults. *Disabil Rehabil* 2021;43(25):3663-71. doi: 10.1080/09638288.2020.1745303
135. Stambler I, Moskalev A. Editorial: Clinical Evaluation Criteria for Aging and Aging-Related Multimorbidity. *Front Genet* 2021;12:764874. doi: 10.3389/fgene.2021.764874
136. Pineiro-Fernandez JC, Fernandez-Rial A, Suarez-Gil R, et al. Evaluation of a patient-centered integrated care program for individuals with frequent hospital readmissions and multimorbidity. *Intern Emerg Med* 2021 doi: 10.1007/s11739-021-02876-9
137. Sasseville M, Chouinard MC, Fortin M. Evaluating the content of a patient-reported outcome measure for people with multimorbidity: a Delphi consensus. *Qual Life Res* 2021;30(10):2951-60. doi: 10.1007/s11136-021-02888-0
138. Aagaard G. Living with multiple chronic conditions: how exercise helps me self-manage my conditions. *Br J Sports Med* 2021 doi: 10.1136/bjsports-2021-104382
139. Fortin M, Stewart M, Almirall J, et al. One year follow-up and exploratory analysis of a patient-centered interdisciplinary care intervention for multimorbidity. *J Comorb* 2021;11:26335565211039780. doi: 10.1177/26335565211039780
140. Adjognon OL, Shin MH, Steffen MJA, et al. Factors affecting primary care implementation for older veterans with multimorbidity in Veterans Health Administration (VA). *Health Serv Res* 2021;56 Suppl 1:1057-68. doi: 10.1111/1475-6773.13859
141. Tian F, Liao S, Chen Z, et al. The prevalence and risk factors of potentially inappropriate medication use in older Chinese inpatients with multimorbidity and polypharmacy: a cross-sectional study. *Ann Transl Med* 2021;9(18):1483. doi: 10.21037/atm-21-4238
142. Chan MLT, Yu DSF. The effects of low-impact moderate-intensity stepping exercise on fatigue and other functional outcomes in older adults with multimorbidity: A randomized controlled trial. *Arch Gerontol Geriatr* 2022;98:104577. doi: 10.1016/j.archger.2021.104577
143. Gonzalez-Bueno J, Espauella-Panicot J. Tailored care in frail patients with multimorbidity: future prospects. *Fam Hosp* 2021;45(5):221-22.

144. Ngangue P, Brown JB, Forgues C, et al. Evaluating the implementation of interdisciplinary patient-centred care intervention for people with multimorbidity in primary care: a qualitative study. *BMJ Open* 2021;11(9):e046914. doi: 10.1136/bmjopen-2020-046914
145. Hussain MH, Jilane DA, Aziz S, et al. Predictors of Quality of Life Among People Living With Multimorbidity in Karachi, Pakistan: A Cross-Sectional Study. *Cureus* 2021;13(10):e18803. doi: 10.7759/cureus.18803
146. Beil M, Flaatten H, Guidet B, et al. The management of multi-morbidity in elderly patients: Ready yet for precision medicine in intensive care? *Crit Care* 2021;25(1):330. doi: 10.1186/s13054-021-03750-y
147. Bisquera A, Turner EB, Ledwaba-Chapman L, et al. Inequalities in developing multimorbidity over time: A population-based cohort study from an urban, multi-ethnic borough in the United Kingdom. *Lancet Reg Health Eur* 2022;12:100247. doi: 10.1016/j.lanepe.2021.100247
148. Gonzalez-Bueno J, Sevilla-Sanchez D, Puigoriol-Juventeny E, et al. Factors Associated with Medication Non-Adherence among Patients with Multimorbidity and Polypharmacy Admitted to an Intermediate Care Center. *Int J Environ Res Public Health* 2021;18(18) doi: 10.3390/ijerph18189606
149. Canon-Esquivel A, Gonzalez-Velez AE, Forjaz MJ. Factors associated with self-rated health status of older people with multimorbidity in Colombia: A cross-sectional study. *Rev Esp Geriatr Gerontol* 2021;56(6):326-33. doi: 10.1016/j.regg.2021.07.005
150. Tang JY, Lun P, Teng PHJ, et al. Intervention elements and behavior change techniques to improve prescribing for older adults with multimorbidity in Singapore: a modified Delphi study. *Eur Geriatr Med* 2021 doi: 10.1007/s41999-021-00566-5
151. Bierman AS, Wang J, O'Malley PG, et al. Transforming care for people with multiple chronic conditions: Agency for Healthcare Research and Quality's research agenda. *Health Serv Res* 2021;56 Suppl 1:973-79. doi: 10.1111/1475-6773.13863
152. Yen KH, Hsu CC, Yu PC, et al. Determinants of improved quality of life among older adults with multimorbidity receiving integrated outpatient services: A hospital-based retrospective cohort study. *Arch Gerontol Geriatr* 2021;97:104475. doi: 10.1016/j.archger.2021.104475
153. Chang K, Markle-Reid M, Valaitis R, et al. Optimizing the Meaningful Engagement of Older Adults With Multimorbidity and Their Caregivers as Research Partners: A Qualitative Study. *J Appl Gerontol* 2021;40(12):1807-17. doi: 10.1177/0733464820970811
154. Montori VM. Removing the blindfold: The centrality of care in caring for patients with multiple chronic conditions. *Health Serv Res* 2021;56 Suppl 1:969-72. doi: 10.1111/1475-6773.13865
155. Bricca A, Harris LK, Jager M, et al. Infographic. Benefits and harms of exercise therapy in people with multimorbidity. *Br J Sports Med* 2021;55(18):1059-60. doi: 10.1136/bjsports-2021-104367

156. Lun P, Tang JY, Lee JQ, et al. Barriers to appropriate prescribing in older adults with multimorbidity: A modified Delphi study. *Aging Med (Milton)* 2021;4(3):180-92. doi: 10.1002/agm2.12169
157. McCallum M, Gray CM, Hanlon P, et al. Exploring the utility of self-determination theory in complex interventions in multimorbidity: A qualitative analysis of patient experiences of the CARE Plus intervention. *Chronic Illn* 2021;17(4):433-50. doi: 10.1177/1742395319884106
158. Zhao D. Key roles of five lifestyle risk factors in the harmful transition from a healthy condition to multimorbidity in the Chinese population. *Eur Heart J* 2021;42(34):3385-87. doi: 10.1093/eurheartj/ehab516
159. Vetrano DL, Dekhtyar S, Triolo F. Mens sana in corpore sano: multimorbidity and mental health. *Lancet Reg Health Eur* 2021;8:100175. doi: 10.1016/j.lanepe.2021.100175
160. Davenport C, Ouellet J, Tinetti ME. Use of the Patient-Identified Top Health Priority in Care Decision-making for Older Adults With Multiple Chronic Conditions. *JAMA Netw Open* 2021;4(10):e2131496. doi: 10.1001/jamanetworkopen.2021.31496
161. Stompor M, Stompor T. In search for the right way in medical care of older adults: navigating between geriatrician and other specialties on the sea of multimorbidity. *Pol Arch Intern Med* 2021;131(12) doi: 10.20452/pamw.16167
162. Miller AC, O'Reilly D, Kee F, et al. Multimorbidity, activity limitation and self-reported health all predict mortality risk, but better measures were required. *J Clin Epidemiol* 2021;144:144-62. doi: 10.1016/j.jclinepi.2021.12.010
163. Longhini J, Canzan F, Mezzalana E, et al. Organisational models in primary health care to manage chronic conditions: A scoping review. *Health Soc Care Community* 2021 doi: 10.1111/hsc.13611