

Multimorbidity and the Challenge to Deliver Personalised and Meaningful Health Care

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A multimorbilidade e o desafio de um atendimento médico significativo e personalizado

In this issue of the *Portuguese Journal of Public Health*, Broeiro et al. [1] described the prevalence of multimorbidity in Portuguese inpatients, using multiple cut-offs for disease counts and for a widely used weighted index (the Charlson Comorbidity Index). This paper supplements earlier work documenting the magnitude of multimorbidity in Portuguese primary care [2] and in home-based hospice care [3]. In this paper, Broeiro et al. [1] describe that multimorbidity is common among inpatients and that it becomes more severe and complex when participants age. Interestingly, their results seem more complex than the traditionally reported S-shaped curve of multimorbidity prevalence by age [4]. It is not very common to find studies reporting data for the very old patients (85+ years of age), and in their study there is a decrease in multimorbidity prevalence in this age group. One likely explanation is that people with multimorbidity may die before reaching 85 years.

Broeiro et al. [1], once more, bring to our attention the magnitude of multimorbidity in Western countries. Multimorbidity becomes common in early midlife [4], it increases mortality [5], it reduces health-related quality of life [6, 7], it is a reflex of social inequity [8], and it is as-

sociated with increased societal costs (due to increased health care spending, early retirement, and loss of productivity for people who are caring for an ill family member) [9, 10]. Because of this, health systems need to adapt to multimorbidity being the norm, rather than the exception.

There is now a widespread awareness that interventions developed to improve the care of people with single chronic conditions are inadequate for people with multimorbidity. Not only do patients and their carers face increased symptom load and disability, but all the disease self-management tasks assigned to them (medication, investigations, clinical appointments, etc.) may be well above their capacity [11]. From the clinician perspective, common criticisms include that single-illness guidelines give rise to conflicting recommendations in patients with multimorbidity, and patients with multimorbidity are often excluded from clinical trials, adding to the uncertainty about how to best manage people with multimorbidity [12, 13].

More recently, guidelines specifically developed on how to address multimorbidity have been published [14]. While they are definitely a step in the right direction, so far they more often provide general principles (e.g., “Discuss with the person the purpose of the approach to care”; “Be aware that the management of risk factors for future

disease can be a major treatment burden”) or seem difficult to implement with currently available resources (e.g., “Ensure patients with multimorbidity are adequately informed about the expected benefits and harms”; “Review the self-management plan to ensure the person does not have problems using it”). However, these guidelines must go beyond coordinating single-illness clinical practice recommendations. They should provide legitimacy to multimorbidity management approaches as well as guarantee personalised and meaningful health care.

In many ways, it seems that the research that is available to clinical guideline panels is still in its infancy. Researchers are trying to refine definitions and to find which definitions have better predictive value for mortality or health care use [15, 16]. A lot of work is being done to understand the causal relationships between social, environmental, behavioural, and biological factors and multimorbidity, or in trying to find different phenotypes of multimorbidity that may predict response to specific interventions. This may well explain why many of the interventions which have been assessed in randomised trials showed either conflicting results or modest effects [17, 18].

As we learn more about the fundamental research concerning multimorbidity, we are starting to identify which interventions and which intervention components seem effective in most contexts [19]. There is at least moderate quality evidence that primary care interventions such as stepped care can improve mental health outcomes in people with multimorbidity which includes depression [17, 18]. Successful organisational interventions seem to include team-based approaches, systematised approach to disease management, and case managers. Successful interventions addressing the clinician-patient relationship include identifying which symptoms bother the patient most and exploring options for symptom control that are acceptable for patients and clinicians. Successful self-management intervention recognises that not all patients

are capable of self-care and focuses on establishing with the patient what they need to enable self-care [19].

It is not surprising that the evidence is less clear for the impact of interventions in mortality, health-related quality of life, or health care service utilisation [17, 18]. First, research in multimorbidity is still exploring many different types of interventions. Second, the sample size and follow-up duration in most trials is not large enough to find differences in mortality, and the heterogeneity of multimorbidity seems to preclude the use of condition-specific health-related quality of life instruments which are more sensitive to change than generic instruments such as the SF family or the EQ-5D family. Establishing modest but clinically significant effects of multimorbidity interventions will require large, pragmatic, randomised controlled trials or alternative designs such as interrupted time series assessing real-world implementation of multimorbidity interventions. Understanding what works in which context will require a wide range of qualitative studies and subsequent quantitative assessment. Adaptation of health systems to multimorbidity seems to require strong research to support effective innovation.

Back to the paper by Broeiro et al. [1] published in this issue, its results show that the average patient admitted to hospital will have multimorbidity, and the average inpatients aged 65 years or older will have complex multimorbidity. This will be directly challenging to all clinicians working in hospital wards, surgery theatres, diagnostic testing services, liaison services, and outpatient clinics. The increase in multimorbidity will trickle to hospice care, to social services, and to primary care. A few successful interventions for people with multimorbidity have been found, leading to modest improvement in important patient outcomes at the cost of increased resource use. As such, health systems need to adapt, to support research efforts, and to innovate if we are to deliver personalised and meaningful health care.

References

- 1 Broeiro-Gonçalves P, Nogueira P, Aguiar P. Multimorbidity and disease severity by age groups, in inpatients: cross-sectional study. *Port J Public Health*. 2019 Jun;37(1):1–9.
- 2 Prazeres F, Santiago L. Prevalence of multimorbidity in the adult population attending primary care in Portugal: a cross-sectional study. *BMJ Open*. 2015 Sep;5(9):e009287.
- 3 Broeiro-Gonçalves P. [Morbidity in the Dependent Elderly Cared by Home-Teams of the National Network of Continued Integrated Care in the Lisbon and Tagus Valley: Cross-Sectional Study]. *Acta Med Port*. 2017 Aug;30(7-8):546–54. Portuguese.
- 4 Fortin M, Stewart M, Poitras ME, Almirall J, Maddocks H. A systematic review of prevalence studies on multimorbidity: toward a more uniform methodology. *Ann Fam Med*. 2012 Mar-Apr;10(2):142–51.
- 5 Willadsen TG, Siersma V, Nicolaisdóttir DR, Køster-Rasmussen R, Jarbøl DE, Reventlow S, et al. Multimorbidity and mortality: A 15-year longitudinal registry-based nationwide Danish population study. *J Comorb*. 2018 Oct; 8(1):2235042X18804063.

- 6 Fortin M, Lapointe L, Hudon C, Vanasse A, Ntetu AL, Maltais D. Multimorbidity and quality of life in primary care: a systematic review. *Health Qual Life Outcomes*. 2004 Sep; 2(1):51.
- 7 Makovski TT, Schmitz S, Zeegers MP, Stranges S, van den Akker M. Multimorbidity and quality of life: systematic literature review and meta-analysis. *Ageing Res Rev*. 2019 Apr;53: 100903.
- 8 Xu X, Mishra GD, Jones M. Evidence on multimorbidity from definition to intervention: an overview of systematic reviews. *Ageing Res Rev*. 2017 Aug;37:53–68.
- 9 Wang L, Si L, Cocker F, Palmer AJ, Sanderson K. A Systematic Review of Cost-of-Illness Studies of Multimorbidity. *Appl Health Econ Health Policy*. 2018 Feb;16(1):15–29.
- 10 Amer Nordin A, Mohd Hairi F, Choo WY, Hairi NN. Care Recipient Multimorbidity and Health Impacts on Informal Caregivers: A Systematic Review. *Gerontologist*. 2018 Jul.
- 11 Boehmer KR, Abu Dabrh AM, Gionfriddo MR, Erwin P, Montori VM. Does the chronic care model meet the emerging needs of people living with multimorbidity? A systematic review and thematic synthesis. *PLoS One*. 2018 Feb 8;13(2):e0190852.
- 12 Boyd C, Smith CD, Masoudi FA, Blaum CS, Dodson JA, Green AR, et al. Decision Making for Older Adults With Multiple Chronic Conditions: Executive Summary for the American Geriatrics Society Guiding Principles on the Care of Older Adults With Multimorbidity. *J Am Geriatr Soc*. 2019 Apr;67(4): 665–73.
- 13 Wallace E, Salisbury C, Guthrie B, Lewis C, Fahey T, Smith SM. Managing patients with multimorbidity in primary care. *BMJ*. 2015 Jan;350:h176.
- 14 Muth C, Blom JW, Smith SM, Johnell K, Gonzalez-Gonzalez AI, Nguyen TS, et al. Evidence supporting the best clinical management of patients with multimorbidity and polypharmacy: a systematic guideline review and expert consensus. *J Intern Med*. 2019 Mar; 285(3):272–88.
- 15 Willadsen TG, Bebe A, Køster-Rasmussen R, Jarbøl DE, Guassora AD, Waldorff FB, et al. The role of diseases, risk factors and symptoms in the definition of multimorbidity - a systematic review. *Scand J Prim Health Care*. 2016 Jun;34(2):112–21.
- 16 Johnston MC, Crilly M, Black C, Prescott GJ, Mercer SW. Defining and measuring multimorbidity: a systematic review of systematic reviews. *Eur J Public Health*. 2019 Feb;29(1): 182–9.
- 17 Smith SM, Wallace E, O'Dowd T, Fortin M. Interventions for improving outcomes in patients with multimorbidity in primary care and community settings. *Cochrane Database Syst Rev*. 2016 Mar;3:CD006560.
- 18 Kastner M, Cardoso R, Lai Y, Treister V, Hamid JS, Hayden L, et al. Effectiveness of interventions for managing multiple high-burden chronic diseases in older adults: a systematic review and meta-analysis. *CMAJ*. 2018 Aug; 190(34):E1004–12.
- 19 Kastner M, Hayden L, Wong G, Lai Y, Makarski J, Treister V, et al. Underlying mechanisms of complex interventions addressing the care of older adults with multimorbidity: a realist review. *BMJ Open*. 2019 Apr; 9(4):e025009.