



Editorial

Multimorbidity or multiple long-term conditions: need for bridging the evidence & care gaps to address an emerging priority public health issue in India

With increased longevity and the rising burden of chronic non-communicable diseases (NCDs), multimorbidity or multiple long-term conditions is emerging as a high-priority public health concern globally, as well as in low- and middle-income countries (LMICs) such as India. Not surprisingly, it has recently been highlighted as a public health priority by various international organizations such as the Medical Research Council^{1,2}, the World Health Organization³ and the Global Alliance for Chronic Diseases⁴. People with multimorbidity are more prone to declines in physical and mental health, resulting in disability, decreased quality of life, mortality and higher healthcare utilization and costs, compared to those with single morbidity^{5,6}. Even though studies show that multimorbidity predominantly occurs among older adults across most countries, it has notably started affecting younger age groups in LMICs, with the prevalence in LMICs poised to gradually rise to that observed in high-income countries (HICs)⁷. Despite its growing burden, it has got minimal recognition from healthcare providers and policymakers with most health systems still focused on individual disease management rather than having an integrated care model. Even the treatment guidelines are based on particular conditions rather than comprehensive management of multiple conditions. Consequently, patients with multimorbidity need to visit multiple healthcare providers frequently, leading to high treatment costs, poor patient satisfaction and sub-optimal health outcomes⁸. In the current context of the ongoing COVID-19 pandemic in India, multimorbidity warrants even more urgent attention, given that those with comorbidities have a much higher risk of severe disease, hospitalization and death⁹.

Multiple long-term conditions or multimorbidity is defined as the coexistence of two or more chronic

conditions¹. It is usually intermixed with comorbidity, but these two terms are neither synonymous nor mutually exclusive. Comorbidity is the co-existence of additional conditions with an index condition (such as hypertension, diabetes and cancer). In contrast, multimorbidity is the coexistence of several conditions, where none are considered an index condition or holds a priority over others^{1,10}. Therefore, multimorbidity constitutes a broad patient-centred concept and recognizes the impact of socio-demographic and environmental factors on it¹. Hence, multimorbidity management demands more holistic care that integrates various NCDs and long-term infections, such as HIV, hepatitis C and other conditions.

The development of context-relevant, sustainable models of care to manage multimorbidity effectively, improve treatment outcomes, patient satisfaction and quality of life are further impeded by a dearth of adequate information related to the epidemiology, aetiology and associated risk factors for multimorbidity, as well as limited data on the efficacy of different interventions to manage it.

Most studies investigating the prevalence and determinants of multimorbidity are from HICs and undertaken mainly among those aged ≥ 60 years. The data are insufficient in many parts of the world, while incidence data are virtually absent in most regions. Moreover, due to the use of inconsistent definitions and classifications in available studies, determining the actual burden of multimorbidity is challenging. For instance, studies that included more chronic diseases to define multimorbidity are likely to report higher prevalence. Data on common multimorbidity clusters and their impacts on patients' lives *vis-a-vis* quality of life, disability-adjusted life years (DALYs) lost, years of life lost, economic and treatment burden are also limited¹. In summary, it can be reasonably inferred

that there are not enough robust data on the actual burden, severity, health and economic impacts. In addition, the healthcare system is still oriented towards the management of single conditions and provision of acute care and has not yet been reconfigured to also address chronic care needs that multimorbidity entails. Therefore, inadequately prepared health systems result in the delivery of suboptimal services to patients with multimorbidity.

Suggested pathways for addressing the evidence and care gaps in multimorbidity

Epidemiological research to build the evidence base: Given the rise of NCDs in India¹¹, there is an urgent need to build the national evidence base on the actual burden of multimorbidity. This can potentially be accomplished by obtaining data through existing national surveys like the National Family Health Survey and District Level Health Survey or establishing new or leveraging existing cohorts to obtain reliable and robust data on multiple dimensions of multimorbidity, using a standardized framework, which can help fill the critical existing evidence gap regarding the prevalence, incidence, common multimorbidity clusters, associated risk factors, health (DALY) and economic impacts (healthcare costs). Using a standard reporting framework will provide consistent data, which will lend itself to integrating rigorously collected data from multiple settings/countries in the future for comparative analysis and determining the trajectories and time trends. This can also generate a large dataset on the burden and determinants of multimorbidity for facilitating national/regional/global analysis to inform and advance public health actions to address multimorbidity more effectively. Longitudinal data will help identify the causality and the potential role of various behavioural, socio-demographic and biological risk factors on different clusters of conditions. Knowledge of the common multimorbidity clusters will help initiate early screening for diseases in the common clusters, leading to timely diagnosis and appropriate management. Identifying modifiable risk factors for the different clusters of conditions and knowledge regarding the common causal factors/pathways for the diseases can be used to develop preventive and treatment strategies that can simultaneously address the diseases in an integrated manner within the health system. There is also a need for data integration at the hospital level along with community data to understand how different clusters of conditions are managed over time.

Research to address the care gaps: To address the complex needs of patients with multimorbidity, we must shift the current paradigm of care from vertical single disease management to horizontally integrated models of care. Major scientific reviews^{12,13} in this area suggest that although none of the models of care have improved the clinical outcomes, these have importantly improved patient satisfaction and quality of life to some extent, which are the most important outcomes recommended by most widely accepted and recognized experts and consensus groups in the area of multimorbidity^{14,15}. Some of the potential challenges for implementing integrated care models in LMICs include under-resourced primary care systems, lack of adequately trained staff and the fragmented health management and information systems, which impact the provision of high-quality services with continuity of care¹⁶. Therefore, there is a need to develop, implement and evaluate new simple, cost-effective, scalable and sustainable context-relevant interventions for the prevention, diagnosis and treatment of multimorbidity^{1,2}. In LMICs like India, which are facing the double burden of infectious and chronic diseases, integration of care for delivering services for multimorbidity will require the capacity building of all cadres of the health workforce, development and implementation of contextually relevant care pathways, based not only on evidence but also on implementation feasibility and financial sustainability. The recent national initiatives of *Pradhan Mantri Jan Arogya Yojana* and health and wellness clinics, aimed at implementing primary care reform for health system transformation and strengthening, provide an opportune time to develop, implement and evaluate such care pathways within the health system¹⁷.

India cannot afford the resource-intensive model of integrated healthcare delivery prevalent in HICs, to address multimorbidity, as to implement HIC models of integrated care, we need a well functioning and resourced primary health system, well trained multi-disciplinary healthcare team and high level of co-ordination among different tiers of the health system. However, in India, even though the public primary health care has a three-tier structure, there is no such structure in the private sector, which provides most care. It is very heterogeneous and thus it will be more challenging to implement integrated care models in the private sector. Thus, there is a need to develop India-specific models of care to manage multimorbidity, especially by strengthening the public primary health

system and empowering as well as enabling patients for improved self management. Leveraging digital health solutions, telemedicine and extensive use of non-physician providers to support patient education and self-management could complement this effort to effectively address multimorbidity in India.

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References

1. The Academy of Medical Sciences. *Multimorbidity: A priority for global health research*; 2018. Available from: <https://acmedsci.ac.uk/file-download/82222577>, accessed on June 6, 2019.
2. The Academy of Medical Sciences. *Advancing research to tackle multimorbidity: The UK and LMIC perspectives*. Available from: <https://acmedsci.ac.uk/file-download/11182404>, accessed on June 6, 2019.
3. World Health Organization. *Multimorbidity: Technical series on safer primary care*; 2016. Available from: <http://apps.who.int/bookorders>, accessed on June 27, 2019.
4. Hurst JR, Dickhaus J, Maulik PK, Miranda JJ, Pastakia SD, Soriano JB, *et al*. Global Alliance for Chronic Disease researchers' statement on multimorbidity. *Lancet Glob Health* 2018; 6 : e1270-1.
5. Pati S, Mahapatra P, Samal M, Chandra K. Developing a contextualised care seeking pathway tool for psychiatric illness: Findings from the mixed method step. *Indian J Psychiatry* 2019; 61 : 495-6.
6. Sum G, Salisbury C, Koh GC, Atun R, Oldenburg B, Mcpake B, *et al*. Implications of multimorbidity patterns on health care utilisation and quality of life in middleincome countries: Cross-sectional analysis. *J Glob Health* 2019; 9 : 020413.
7. Garin N, Koyanagi A, Chatterji S, Tyrovolas S, Olaya B, Leonardi M, *et al*. Global multimorbidity patterns: A cross-sectional, population-based, multi-country study. *J Gerontol A Biol Sci Med Sci* 2016; 71 : 205-14.
8. Rosbach M, Andersen JS. Patient-experienced burden of treatment in patients with multimorbidity – A systematic review of qualitative data. *PLoS One* 2017; 12 : e0179916.
9. Mair FS, Foster HM, Nicholl BI. Multimorbidity and the COVID-19 pandemic – An urgent call to action. *J Comorb* 2020; 10 : 2235042X20961676.
10. Nicholson K, Makovski TT, Griffith LE, Raina P, Stranges S, van den Akker M. Multimorbidity and comorbidity revisited: Refining the concepts for international health research. *J Clin Epidemiol* 2019; 105 : 142-6.
11. India State-Level Disease Burden Initiative Collaborators. Nations within a nation: variations in epidemiological transition across the states of India, 1990-2016 in the Global Burden of Disease Study. *Lancet* 2017; 390 : 2437-60.
12. Struckmann V, Leijten FR, van Ginneken E, Kraus M, Reiss M, Spranger A, *et al*. Relevant models and elements of integrated care for multi-morbidity: Results of a scoping review. *Health Policy* 2018; 122 : 23-35.
13. 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* 2021; 1 : CD006560.
14. Smith SM, Wallace E, Salisbury C, Sasseville M, Bayliss E, Fortin M. A Core Outcome Set for Multimorbidity Research (COSmm). *Ann Fam Med* 2018; 16 : 132-8.
15. Hurst JR, Agarwal G, van Boven JFM, Daivadanam M, Gould GS, Wan-Chun Huang E, *et al*. Critical review of multimorbidity outcome measures suitable for low-income and middle-income country settings: Perspectives from the Global Alliance for Chronic Diseases (GACD) researchers. *BMJ Open* 2020; 10 : e037079.
16. Mounier-Jack S, Mayhew SH, Mays N. Integrated care: Learning between high-income, and low- and middle-income country health systems. *Health Policy Plan* 2017; 32 : iv6-12.
17. Ministry of Health and Family Welfare, Government of India. *Ayushman Bharat – Health and Wellness Centre*. Available from: <https://ab-hwc.nhp.gov.in/home/aboutus>, accessed on May 1, 2021.