

## Multimorbidity: disease of society?



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Socioeconomic inequalities are major health determinants, but could be leveraged more efficiently to promote health and wellbeing on a large scale. 30 years ago, in the Whitehall study of British civil servants, Marmot and colleagues<sup>1</sup> showed a clear gradient in various conditions, such as angina and chronic bronchitis, as well as several health risk behaviours, across different employment grades. An alternative way to look at the detrimental effect of socioeconomic deprivation on health, rather than looking at single diseases, is to measure multimorbidity—the co-occurrence of multiple chronic diseases in the same individual. Such a focus is particularly relevant considering the current demographic transition, in which the number and proportion of older adults is growing. The prevalence of multimorbidity increases with increasing age but is not exclusive to older people. On the contrary, when considering absolute numbers, younger adults contribute most to the global burden of multimorbidity, and the socioeconomic gradient might have the largest effect on multimorbidity occurrence in this age group.<sup>2,3</sup>

In *The Lancet Healthy Longevity*, Anna Head and colleagues<sup>4</sup> characterise multimorbidity in adults in England from 2004–19 and explore how this varies by socioeconomic status using general practice records. Findings from this study can be summarised into two main points. First, a steady increase in multimorbidity prevalence was observed between 2004 and 2019, coupled with a substantial decrease in the median age of multimorbidity onset. Second, the association between socioeconomic inequalities and multimorbidity prevalence was amplified over the study period, particularly in middle-aged people (<65 years).

A criticism of any study on multimorbidity is the method chosen to operationalise it. In the present study, Head and colleagues<sup>4</sup> define multimorbidity as two or more diseases, from a list of 211. This quantitative evaluation of multimorbidity has the advantage of conceptual simplicity, especially when a high number of diseases is evaluated. Furthermore, the contribution of any disease, including rarer diseases, is considered. However, this approach fails to differentiate people displaying different levels of morbidity, and scores equally those with two conditions and those with a much higher number of co-occurring diseases, with

the consequence of an early saturation of the construct. Aware of this limitation, the authors also defined so-called complex multimorbidity, the presence of at least three diseases in three or more body systems. Still, this methodology fails to consider the potentially important relationships between diseases. Diseases tend to cluster together according to shared risk factors, treatments, and socioeconomic status.<sup>5</sup> Tracing the secular trends of multimorbidity—defined as disease clusters—might be reasonable in studies evaluating inequalities, which could prompt the aggregation of specific diseases due to unhealthy lifestyles or poor environment. This approach might also overcome the problem of contribution of single conditions that might have been tested for or screened differently over time, or that underwent changes in reimbursement systems in primary care, to the overall multimorbidity prevalence. Despite these methodological issues, Head and colleagues<sup>4</sup> findings are important as they show that the multimorbidity burden for the health-care system increased during the analysed time window. The reason for this could include a reduction in case fatality, driven by advancements in treatment and better secondary and tertiary prevention. A question arises about primary prevention, given that the median age of onset of multimorbidity is reducing over time, but the effect being driven by an increase in specific diagnoses cannot be ruled out.

More striking is the widening of absolute socioeconomic inequalities in both basic and complex multimorbidity prevalence over the study period, which is in line with reports on widening of inequalities in health expectancy by social deprivation in England.<sup>6</sup> An important question is whether increasing inequalities account for widening of multimorbidity or if the association between socioeconomic status and multimorbidity changes over time. Another query concerns the model that best explains inequalities in health: social causation, which considers that socioeconomic position determines health during the life course, or health selection, which considers that social mobility depends on health status.<sup>7</sup> Previous findings appear to endorse the social causation model. In the ATHLOS consortium, in which eight longitudinal cohorts from Australia, USA, Japan, South Korea, Mexico, and Europe were harmonised, the disadvantage due to low education and wealth caused deterioration in health

in early life stages, leading to persistent differences throughout older age,<sup>8</sup> suggesting that adopting a life-course approach to investigate mechanisms leading to health inequalities might be appropriate.<sup>9</sup>

To date, public policies addressing socioeconomic disparities have been insufficient. A clear demonstration of this is the differing effects of the COVID-19 pandemic across social strata of the population. It has been hypothesised that, in England, the growing inequality during recent years, along with an increasing prevalence of chronic conditions and multimorbidity increasing the case fatality ratio of COVID-19, could partly explain one of the worst infection and mortality rates in Europe.<sup>10</sup> Furthermore, inequalities in health will probably increase in the near future as a consequence of the pandemic (eg, students from poorer households have been less able to access online learning and unemployment will probably increase). Thus, substantial support in low-income regions and strata of society is needed to break the chain of inequality, and adopting a long-life multidimensional approach to population health is key.

We declare no competing interests.

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