

## Health inequalities in ageing: towards a multidimensional lifecourse approach



Since the late 1990s, considerable research has focused on better understanding the determinants of healthy ageing. However, the complexity of the ageing process requires an innovative research approach that shifts from the traditional focus on single diseases and specific time-windows towards multidimensional and longitudinal health trajectories. Awareness is increasing of the need to assess older people's health in a multidimensional way that comprises measures of functional ability reflecting people's capacity to meet their basic needs.<sup>1</sup> If the major contributors to healthy ageing and wellbeing are related to physical and mental functioning, such measures should become an integral part of national data collection initiatives.

Efforts to harmonise longitudinal studies of ageing and establish a minimum subset of health measures to increase the robustness of cross-population comparisons are needed. The study by Yu-Tzu Wu and colleagues<sup>2</sup> in *The Lancet Public Health* traces the ageing trajectories of health across eight longitudinal cohorts using a common conceptual framework and approach to the measurement of health. The authors show that health differences in older age might be due to the disadvantage accumulated in early life among those with low education and wealth. However, after around the age of 70 years, the results suggest that this gap in the trajectories of healthy aging between socioeconomic groups does not get any wider.

The intrapersonal and interpersonal variability in health is in part due to the random effect of intrinsic ageing-related mechanisms, and in part the strong influences of socioeconomic, behavioural, and psychosocial factors and their interactions during the entire lifespan.<sup>3</sup> Even if the social determinants of health status or mortality are well known, their broader effect on longitudinal health changes has been poorly researched to date, let alone across different countries, cohorts, and population groups. Articles of this type will be the starting point to improve understanding of the great heterogeneity across ageing-related phenotypes of health and disease. Furthermore, looking at the entire lifecourse provides essential insight concerning when and how to intervene to reduce inequalities in later life.

Almost as important as what we measure is how we integrate such information into a single score of healthy ageing. In the study by Wu and colleagues,<sup>2</sup> data on 41 cognitive and physical functioning measures from 141 214 people, with a mean age of 62.9 years (SD 10.1), were harmonised to create a healthy ageing score. Indicators of disease and function are diverse in terms of the applied scale (ie, natural, such as grip strength vs normative-clinical, such as chronic condition count), potential floor and ceiling effects (eg, Mini Mental State Examination score), and skewness (eg, basic and instrumental activities of daily living). The authors applied item-response theory modelling, which is ideally suited to handle items with differing numbers of categories, with no a priori ordering of categories, and for which cut-off values with highest discriminatory power might vary among populations.<sup>4</sup>

The important contribution by Wu and colleagues<sup>2</sup> also comes with new questions for future research. Ever since the publication of the Black Report<sup>5</sup> in 1980 pinpointing the primary role of material conditions in determining health and premature death, recognition has been increasing that health inequalities result from the complex interplay between material conditions and culturally mediated behaviours and psychosocial factors. Thus, the effect of the social determinants of health should be understood and examined from a complementary rather than exclusionary perspective.<sup>6</sup> Indeed, social determinants have also been found to influence each other beyond their simultaneous effect on health.<sup>7</sup> For instance, social support and interaction can buffer or exacerbate the potentially harmful health effects of stressors derived from financial strain in old age.<sup>8</sup> Future studies will need to examine these interactions, since they could lead to effect modifications with important implications on public health action.

Another area of further work is related to better capturing of interpersonal differences in intrapersonal change over time when looking at ageing trajectories of health. Despite the widely acknowledged fact that older adults as a population show greater health heterogeneity than their younger peers,<sup>9</sup> most studies

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still look at average trajectories of change by means of linear mixed models. Although these models are flexible when studying time variation across different cohort studies, as argued by Wu and colleagues,<sup>2</sup> they do not allow the identification of distinctive developmental health trajectories and the calibration of the probability of individuals to follow such trajectories. A more nuanced approach to the study of health changes in later life would also allow for improved discernment between diverse health trajectories in terms of rate and pattern of change beyond the usual and successful ageing pathways described by Rowe and colleagues.<sup>10</sup>

Only by achieving a full understanding of the social determinants of ageing trajectories of health and considering the multiple and intertwined paths through which poverty and social disadvantage affect health and ageing will we be able to inform interventions aimed at boosting wellbeing in later life.

We declare no competing interests.

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