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A need for better understanding old-age mortality dynamics

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The recent paper by Bergeron-Boucher et al. published in this journal reports an increasing diversity of cause-of-death mortality in low-mortality populations during the last 20 years [1]. Bergeron-Boucher et al. found that the preponderance of mortality from cardiovascular diseases in the countries under analysis has gradually declined in favour of a wide range of causes of death, including mental and behavioural disorders, nervous system or ill-defined causes. The increasing variability of causes of death is an important matter of potential concern because (a) fragmentation in cause of death might hinder further improvements in life expectancy, (b) preventive health policies have to cope with a more variegated set of causes, which imply more costly and less efficient health policies.

Despite their enormous interest, these findings should be interpreted with caution. As the authors themselves illustrate, most of the action takes place at advanced ages, that is: increases in the causes-of-death diversity indicators are driven by the changing distribution of causes among the elder, but *not* by what happens among children, youth or middle-aged adults. Remarkably, most of the deaths registered in the 15 low-mortality countries analysed in the paper increasingly occur among the elder (81% of the deaths occurs in the 65+ age group). As mortality shifts towards older ages, the surviving population becomes increasingly heterogeneous in its mortality risks [2] – a phenomenon that has led to worldwide increases in length-of-life inequality among those who survive above retirement age (e.g. around 65 years) [3]. This implies that an increasing share of population suffers comorbidities and is affected by the coexistence of well-known risk factors (e.g. diabetes) associated with several major diseases. In this context, there is mounting evidence suggesting that, as individuals age, it becomes increasingly difficult and controversial to attribute their deaths to a single underlying cause of death [4].

Taken together, the evidence suggests that it is now more complex than ever to predict the underlying causes of death [5]. Further studies examining old-age mortality could move towards different and complementary directions that attracted rather little attention so far. On the one hand, performing more post-mortem examinations comparing their results with the data reported in death certificates would contribute to validate and potentially correct some of the inaccuracies filling cause-of-death

documents. On the other hand, using all cause-of-death information in the death certificates would allow grasping on risk factors and main drivers contributing to cause-specific mortality. This is particularly relevant as the number of causes of death reported in the death certificate increases with age. Unfortunately, little research has explored these interrelations; and comparability research between post-mortem examinations and cause of death data are scarce.

Mortality at old age is increasingly becoming a relevant public health challenge, and therefore requires the resources and implication of professionals from different fields, including medical doctors, demographers and public health experts. Beyond the use of underlying causes of death, further efforts should be invested in exploring the role of comorbidities in the old-age mortality dynamics.

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