Overlap and predominance of cancer over cardiovascular deaths: insights about the epidemiological transition in Brazil

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The Lancet Regional Health - Americas 2024;40: 100947

Published Online xxx https://doi.org/10.1016/j.lana.2024.100947

In the article 'Transition towards cancer mortality predominance over cardiovascular disease mortality in Brazil, 2000–2019: a population-based study', Rache et al.[1] addressed an essential aspect of the debate on the epidemiological transition in Brazil. The work offers important insights into the overcoming—and in some cases, the overlap—of cancer over cardiovascular diseases as the leading cause of death at different geographic scales. Some of the discussed points, however, deserve additional critical analysis, contributing to a constructive debate.

Brazil presents a type of prolonged and heterogeneous epidemiological transition. This phenomenon occurs due to the country's socioeconomic and regional diversity. This prolonged transition is also marked by inequalities in access to health services, which influences regional differences in mortality and morbidity patterns.[2] Caselli, Meslé & Vallin[3] discuss exceptions to the classical epidemiological transition theory, including the prolonged transition model. In this model, the process of reducing mortality and changing the profile of causes of death extends over a longer period without a complete transition to a profile of chronic diseases as the leading cause of death, a characteristic of developed countries, generally due to socioeconomic inequalities and unequal access to health services.

In addition, the theories of demographic and epidemiological transition suggest that, in the long term, regions of a country with disparities at the sub-national level would converge to the same profile of causes of death. However, the analyses by Borges[4] indicate that this convergence may not apply to the Brazilian case. On the contrary, the Brazilian epidemiological transition process is marked by a succession of cycles of convergence and divergence resulting from a marked epidemiological polarization between regions.[5,6] In this sense, there is still a debate about the burden of disease beyond mortality isolated. It means that the reduction in mortality, associated with gains in life expectancy, does not mean gains in reducing—or even maintaining—the burden of disease, but rather an increase in the number of years lived with disabilities.[2]

A central point in the analysis by Rache et al.[1] is the analysis of the transition from the predominance of mortality due to cardiovascular diseases (CVD) to cancer in Brazil. From 2000 to 2019, mortality rates due to CVD decreased in 25 of the 27 Brazilian states, while cancer rates increased in 15 states, evidencing the transition to the predominance of cancer as a cause of death. However, the analysis of mortality rates between CVD and cancer (MRR) showed that, although there was a transition towards cancer predominance, no state completed this transition by 2019 (MRR <1). In this regard, Calazans, Guimarães & Nepomuceno[7] analyse life expectancy and the dispersion of age at death in the Brazilian population, a complementary metric to understand these inequalities. The authors highlight an increase in regional differences in life expectancy throughout the decade analysed. However, regional differences in age dispersion at death remained practically constant.

The fact that Brazil is a country in a straightforward process of absolute aging is another critical aspect. Studies that perform analyses with multiple decrements in life tables demonstrate that, with advancing age, an increasingly more significant proportion of mortality gains due to CVD determine the prospects for prolonging average life. On the contrary, the contribution of cancer to life expectancy is less emphatic but is more concentrated in younger age groups.[8]

Another critical point in the analysis by Rache et al.[1] is that the historical series covers the period before the Covid-19 pandemic. During the first year of the pandemic, Brazil presented an excess mortality of 25% compared to the previous five-year period (SMR = 1.25, 95% CI 1.23–1.28). Excess mortality from cardiovascular disease was more significant for the same period than that from neoplasms (SMR_{CVD} = 1.16, 95% CI 1.15–1.17 vs. SMR_{NEO} = 1.03, 95% CI 1.03–1.04).[9] The result suggests that even with the trend of reduction in mortality from cardiovascular diseases and increase in mortality from neoplasms, the reduction may not remain consistent when there is disruption in the epidemiological scenario. Regarding this difference by group, it is essential to recognize that both groups—cardiovascular diseases and cancer—bring together quite heterogeneous diseases, which have an intrinsic relationship with the development process. Examples of this are the relationship between cerebrovascular

DOI of original article: https://doi.org/10.1016/j.lana.2024.100904
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diseases, ischemic heart disease and peripheral arterial diseases in the cardiovascular group, and cancers associated with infections and related to Western lifestyles in the neoplasms group.

Finally, there is recent evidence establishing a mutual and bidirectional relationship in which cancer and CVD distinctly influence each other's outcomes.[10] This convergence of causes of death presents significant challenges for health systems, especially where there is a double burden of cancer and cardiovascular disease. There is no doubt, therefore, that the debate is promising and necessary.

Contributors

RMG and CDM contributed equally on critical review, writing and final version of manuscript.

Declaration of interests

None.

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