Comments on education-related health inequities in noncommunicable diseases

Comentários sobre desigualdades relacionadas à escolaridade nas doenças crônicas não transmissíveis

Comentarios sobre desigualdades de salud relacionadas con la educación en enfermedades no transmisibles

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In a detailed and very well-conducted analysis, Macinko & Mullachery [1] contribute to the scientific debate by discussing the weight of educational inequalities regarding noncommunicable diseases (NCDs) and comparing the two *Brazilian National Health Surveys* (PNS) carried out in 2013 and 2019.

Firstly, we must recognize the abundance of data and the technical quality of these two surveys, which is very clear based on the description presented in the authors' study. The 2013 PNS allowed us to draw a complete baseline to analyze the health status of the Brazilian population. NCDs were essential to assess the trend of many diseases and their risk factors. The six-year gap between surveys describes the trend of several chronic health conditions. Therefore, the authors sought to understand the complex dynamics that may be changing the morbidity profile of chronic problems in Brazil as a whole and some specific outcomes in each state and in the Federal District.

As mentioned in the introduction to the study by Macinko & Mullachery [1], the differences in knowledge about chronic disease prevalence were well analyzed by Beltrán-Sánchez & Andrade [2], who compared the national data of the first PNS with those of the *Brazilian National Household Sample Surveys* (PNAD) carried out in 1998, 2003, and 2008. In 2016, these authors showed that during the analyzed period, the prevalence of heart disease declined while that of diabetes and hypertension increased. They concluded that, despite the finding that educational inequalities regarding health were still significant in Brazil, their results indicated to some decrease of this inequality. However, their analysis included only three NCDs (diabetes, hypertension, and heart disease). It was based on the absolute and predicted changes in the prevalence of a disease among those with the lowest schooling level and those with the highest, based on the slope index of inequality (SII). Thus, they observed that the prevalence of hypertension and heart disease was lower among different schooling levels over time. However, a growing inequality was observed for diabetes, and its prevalence rate was twice as high for individuals with little schooling than for those with high education levels, especially among women.

Macinko & Mullachery [1] explored the same relationship between education and the prevalence of NCDs based on data from both the 2013 and the 2019 PNS, including a more extensive set of diseases (obesity, hypertension, arthritis, asthma, cancer, depression, diabetes, and heart disease), which were examined separately and as multimorbidity from three measures of inequality. They used the relative

index of inequality (RII), the population attributable fraction (PAF), and the slope index of inequality (SII), the same one used by Beltrán-Sánchez & Andrade [2]. They estimated the RII using the annual prevalence rates for diabetes and multimorbidity among the 26 Federative Units of Brazil and the Federal District. The authors' careful and competent analysis found that all NCDs increased between the two surveys, ranging from 8% for arthritis to 24% for obesity. They also found that the inequality measurements used for many of the conditions studied indicated significant educational inequality in 2013 and 2019.

By analyzing the data from these two studies, one would expect that, if the trend that started between 1998 and 2013 was maintained, the most recent study would have a better outcome, at least regarding some NCDs such as heart disease. A declining educational inequality would have also been observed, which did not happen. I believe this is the main aspect worth examining considering what has been discussed about the current health conditions of the Brazilian population and the causes that are leading to a significant setback.

Results of Macinko & Mullachery's study unexpectedly showed that inequalities in diabetes, high blood pressure, heart disease, and arthritis did not disappear but have expanded in Brazil, and low-schooling individuals are the most affected by it.

Interestingly, the opposite occurred for cancer and asthma patients. Patients with higher schooling levels were found to be the most affected after an analysis of age and income quintiles. Depression patterns varied over time and increased among groups with higher education in 2019. The dynamics of this relationship seem to be more complex regarding multimorbidity and the prevalence of diabetes, since the highest levels of inequality were observed in some of the wealthiest states.

The study results can enrich the discussion about changes in the profile of chronic diseases in Brazil and their meaning. Previous studies have indicated to the recent implications on health caused by disrupted public policies and austerity [3,4]. Projections indicate even more troubling settings [5]. In their discussion, the authors raise critical issues for reflection, for which they offer some answers that must be explored in future studies.

Three possible answers are presented to the first question, following the same line of reasoning: "Why have we not seen a major increase of inequalities for all conditions?": (i) the uncertainty about diagnostic health services; (ii) the predominant survival of those with a higher level of education; and (iii) the stable levels of inequality detected are caused by conditions that may affect the development of chronic diseases in the future.

I agree that the first two hypotheses must reflect the reality of health in Brazil, but I believe they are interdependent and complementary. Indeed, if the health service network does not ensure secondary and tertiary care, it affects the low capacity to diagnose diseases that depend on complementary tests. This situation would then underestimate the problem, especially among those with lower schooling. The Brazilian Unified National Health System has certainly expanded its access throughout the country in recent decades, but this expansion was not enough to reduce health inequalities [6]. This hypothesis would explain why wealthier people are mainly diagnosed with cancer: simply because they have access to early detection and, therefore, are more likely to have a favorable development. Thus, this condition is associated with the second hypothesis, which suggests a worse survival rate among those who are diagnosed with cancer at an advanced stage of the disease and therefore have a worse prognosis, even for tumors whose lethality has been modified by therapeutic advances.

A second issue is raised by the authors: the development of strategies to prevent and control NCDs and their inequalities in the future. According to the authors, the interference of legislative policies and regulatory and normative acts can, above all, reduce exposure to NCD risk factors. However, more policies are necessary to encourage and to assist people to adopt healthy lifestyles, which is an increasingly difficult challenge considering the austerity and the rising unemployment, making many people become food insecure and adopt a sedentary lifestyle.

Based on contracts identified between Brazilian states and the Federal District, the third issue would be how to face the growing inequality between states regarding access to health services, risk factors, and health outcomes. The authors question whether these differences are a simple observation of different stages of the epidemiological transition that results from the distinct population size and composition between states. The main issue here is that inequality increases health problems and influences sociodemographic characteristics, leading to a continuous cycle.

In this case, despite all the arguments that inequalities should focus on individuals and small areas, it is correct and ethically necessary to target control policies, but not enough anymore.

If the State does not implement intersectoral public policies to directly combat the main causes of poverty, inequality and its severe effects on the occurrence of chronic diseases will greatly affect the vulnerable classes of the Brazilian population. This issue in the central point of the debate, and we need to support it with studies like this one, with scientifically advance the understanding of this complex relationship.

Additional information

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