Food insecurity and child mortality due to inadequate access to water and sanitation in Brazil

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Overcoming water insecurity must go hand in hand with overcoming food insecurity

BACKGROUND

Food insecurity is related to poor nutrition and child undernutrition and can be understood as an exogenous factor of child mortality. When there is compromised access to adequate and healthy water and food in households with children, the situation of food insecurity tends to be even more dramatic, with evidence of hunger and risk of diseases transmitted by unsafe water and sanitation sources. Therefore, this study examines the relationship between child mortality due to inadequate access to water and sanitation (MIAWS) and food insecurity in Brazil from 2004 to 2022.

METHODS

A longitudinal quantile regression model was employed. The model parameters were estimated for the percentiles (0.1, 0.25, 0.5, 0.75, 0.9) of the conditional distribution of the MIAWS, with $p \leq 0.05$. Food insecurity prevalence data were standardized and obtained from three surveys with representative samples of the Brazilian population (PNAD 2004 – 2013; POF 2017/2018; VIGISAN 2022), and MIAWS were derived from the Brazilian Institute of Geography and Statistics (IBGE). The indicator considers children from 0 to 4 years of age and includes deaths from the following causes (according to ICD-10): Mild and moderate protein-calorie malnutrition - E44; Other bacterial intestinal infections - A04; Severe and unspecified protein-calorie malnutrition - E43; Unspecified protein-calorie malnutrition - E46; Diarrhea and gastroenteritis of infectious origin - A09.

RESULTS

The medians of food insecurity and MIAWS among Brazilian states, respectively, were 34.5 and 29.5 in 2004, 37.8 and 14 in 2009, 27.9 and 9.3 in 2013, 49.9 and 4.7 in 2018, and 63 and 5.2 in 2022. Both the year and food insecurity demonstrated significant effects on MIAWS in all percentiles and the association coefficients for the year (-0.10, $p < 0.001$) and for food insecurity (0.38, $p < 0.001$) remained constant across all percentiles over time, suggesting that these variables have an effect on MIAWS, both in states with high rates and those with lower rates.

CONCLUSIONS

Understanding the interactions between food insecurity and mortality is crucial to inform public policies and interventions aimed at improving health and nutrition conditions, particularly for Brazilian children. Beyond ensuring adequate food access, public policies must also address the provision of adequate water and sanitation access, ensuring quality and uninterrupted services for the population.

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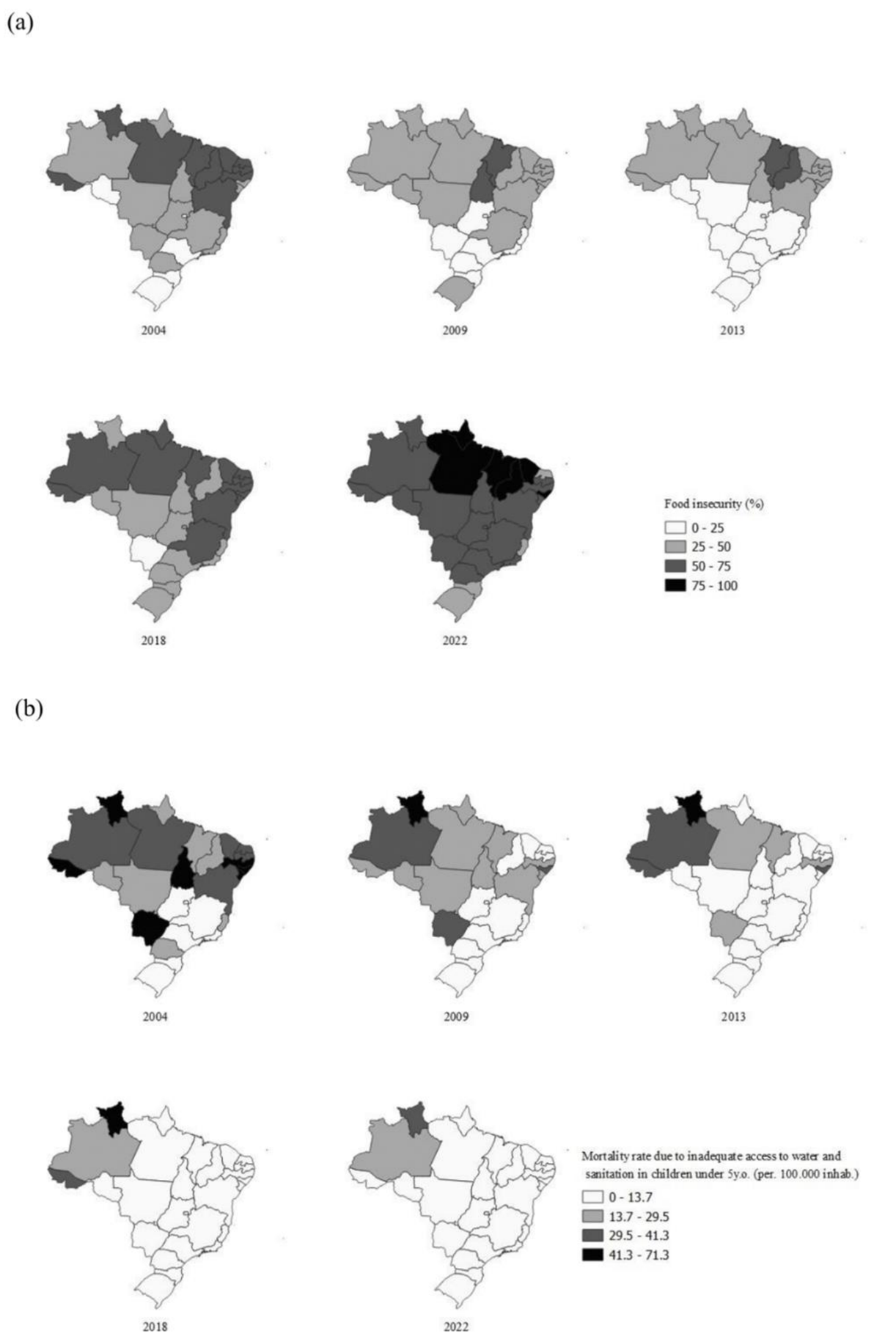
Fig. 1. Spatial distribution of food insecurity (a) and the mortality rate due to inadequate access to water and sanitation in children under 5 years of age (b), Brazilian Federative Units, 2004 - 2022



Data source: PNAD - National Household Sample Survey (2004; 2013); POF - Family Budget Survey (2017/2018); VIGISAN - II National Survey on Food Insecurity (2022); IBGE - Brazilian Institute of Geography and Statistics (2004 - 2022).

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