



Contents lists available at ScienceDirect

Public Health

journal homepage: www.elsevier.com/locate/puhe

Short Communication

Socio-economic inequalities and COVID-19 incidence and mortality in Brazilian children: a nationwide register-based study



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ARTICLE INFO

Article history:

Received 9 September 2020

Received in revised form

15 October 2020

Accepted 4 November 2020

Available online 11 December 2020

Keywords:

COVID-19

SARS-CoV-2

Pediatrics

Socio-economic factors

Public health

ABSTRACT

Objectives: This study aimed to estimate the incidence and mortality rates of coronavirus disease 2019 (COVID-19) in Brazilian children and to analyze its relationship with socio-economic inequalities in a state-level analysis.

Study design: This is a nationwide register-based study.

Methods: To estimate the incidence and mortality rates of COVID-19 in Brazilian children aged 0–19 years, we extracted data of confirmed cases and deaths from the de-identified microdata catalog and official bulletins of the 27 Brazilian states' health department websites until September 3, 2020. Social and economic inequalities were evaluated using the Social Vulnerability Index and Gini coefficient, respectively. The relationship between COVID-19 rates in Brazilian children and socio-economic vulnerability at the state level was analyzed using Spearman's rank correlation.

Results: Of the 3,998,055 individuals with COVID-19 included in our database, 335,279 (8.4%) were children aged 0–19 years. Eight hundred deaths in children were registered, which accounts for about 0.7% of the deaths related to COVID-19 in the country. There were important differences in the incidence and mortality rates among Brazilian regions, and a correlation between mortality rates and social ($\rho = 0.519$; P -value = 0.007; effect magnitude: moderate) and economic ($\rho = 0.615$; P -value < 0.001; effect magnitude: strong) inequalities was found in a state-level analysis.

Conclusions: This population-based study showed important regional differences in COVID-19 estimates for children in Brazil and a relationship between mortality rates and socio-economic inequalities. The knowledge of sociogeographic differences in the estimates of COVID-19 is crucial to planning societal strategies and local decision-making to mitigate the effects of disease in the pediatric population.

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Introduction

Coronavirus disease 2019 (COVID-19) is affecting a diverse group of individuals with varying severity during the ongoing global pandemic.¹ Accumulating evidence has shown that the proportion of COVID-19–confirmed cases among children is

relatively small and deaths are uncommon,^{2,3} but the impact of disease in pediatric populations is likely to vary considerably between and within countries.

In a recent study, discussion was on the urgent need to understand comprehensive pediatric data from South America to implement proper preventive and treatment protocol in the region.⁴ As part of South America, Brazil has seen a devastating spread of COVID-19 across the country. As of September 2020, Brazil had registered more than 4.1 million cases and 126,000 deaths from COVID-19 in the general population. Moreover, it is of utmost importance to understand whether geographic and socio-

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