

## Methodological aspects of the *Brazilian National Survey on Child Nutrition (ENANI-2019)*

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We know that the prevalence of child malnutrition in Brazil decreased from 13.5% in 1996 to 6.8% in 2006/2007, based on the height-for-age indicator in children under five years of age <sup>1</sup>. We know that the prevalence of exclusive breastfeeding at six months showed an upward trend, from 4.7% in 1986 to 37.1% in 2006, having practically stabilized in 2013, when it reached 36.6% <sup>2</sup>. We are aware that the prevalence of anemia was 20.9% and of vitamin A deficiency was 17.4% in children 6 to 59 months of age in 2006 <sup>3</sup>. We have information that in 2013, 32.3% of Brazilian children under two years consumed sodas and that 60.8% ate cookies or candy <sup>4</sup>. Since then, we had no further nationwide estimates for these important indicators. This situation of knowledge gaps changed with the *Brazilian National Survey on Child Nutrition (ENANI-2019)*, which studied 14,558 children under five years of age from March 2019 to March 2020. This important study will soon provide us with up-to-date information on various indicators of Brazilian children's food and nutrition.

This edition of CSP features five articles that describe the methodological characteristics of the ENANI-2019 <sup>5,6,7,8,9</sup>. The survey investigated three components: breastfeeding and dietary intake, nutritional status based on anthropometry, and various micronutrient deficiencies – iron (hemoglobin and ferritin), zinc, selenium, folic acid, and vitamins A, B1, B6, B12, D, and E. The last nationwide Brazilian survey on child health and nutrition was held more than ten years ago, in 2006, and iron and vitamin A1 were the only micronutrient deficiencies it investigated. The ENANI-2019 survey covers a far wider range of such deficiencies.

The articles' readers will find detailed descriptions of the survey's methods, involving sampling and assessment of dietary intake, anthropometry, and micronutrients. The study applied the most modern sampling techniques and the analysis of complex sampling designs: stratification by major geographic region, clustering by census tract, inverse sampling, weighting, and calibration. Despite the survey's premature interruption due to the COVID-19 pandemic, when 83.5% of the intended sample had been reached, the large effective sample size will allow producing national and regional estimates with a small margin of error. The refusal rate in ENANI-2019 was 35.8%, within the expected range in currently conducted studies, in which refusal rates have been increasingly high. Sadly, various

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census tracts had to be replaced due to violence in areas controlled by the drug traffic as well as fake news spreading the lie that the study was intended to transmit infectious diseases and kidnap children for organ trafficking.

The study obtained venous blood samples from 70% of the eligible children six to 59 months of age and involved complex logistics for the sample collection, transportation, and standardized analysis of the laboratory tests. There was an interesting public-private partnership in the study, in which the Diagnósticos do Brasil laboratory network participated in the samples' collection and analysis, Science (Society for the Development of Scientific Research) collaborated in the sampling and data collection process, and In Media Comunicação assisted the interaction between the researchers and governments, health workers, and other communications media.

Dietary intake was investigated with a questionnaire and 24-hour food recall in practically all the children in the sample. The data collection on dietary intake was standardized via an app (24HR-App) and photographic manual both developed specially for ENANI-2019. One limitation was that there was no repetition of the 24-hour food recall to be able to correct the interpersonal variability with the study data.

The anthropometry component carefully used the most recommended standardized procedures for measuring children's weight and height. Portable scales and anthropometers were used. The children's weight was measured by two people and height by three people to ensure quality control.

The scientific community and policymakers are anxious to learn the results of ENANI-2019. It will be important to know the trends in the last 16 years in food and nutrition indicators in Brazilian children under five years of age. Various questions can be answered. Has the decline in the prevalence of under-five malnutrition continued? Was there an increase in the prevalence of obesity? Have the prevalence rates of breastfeeding increased or remained stable? Was there a reduction in the prevalence rates for anemia and vitamin A deficiency? What is the current prevalence of various childhood micronutrient deficiencies for which there were no previous nationwide estimates in Brazil? The study will also allow us to monitor the trends in regional and socioeconomic inequalities in all these indicators and to know whether the inequalities are decreasing, stable, or increasing. The knowledge generated by ENANI-2019 will be essential for reorienting public policies for children's food and nutrition in the coming years.

## Additional information

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