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# Triple burden of malnutrition and its key demographic and socioeconomic determinants among Vietnamese children: insights from the General Nutrition Survey 2020

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The triple burden of malnutrition (TBM) is a growing public health issue worldwide. This study examined the prevalence and association between undernutrition, overnutrition and micronutrient deficiencies (MNDs), and the key demographic and socioeconomic determinants, among Vietnamese children, using the nationally representative General Nutrition Survey (GNS) 2020[(1)].

The GNS 2020 was reviewed and approved by the Ethical Committee of the National Institute of Nutrition, Vietnam. Written informed consent was obtained from each participant and/or their parents prior to data collection. Data on anthropometric parameters, micronutrients biomarkers, demographic and socioeconomic indicators for 7,289 children aged 6 months to 9 years old were analysed[(1)]. All analyses were weighted and accounted for complex survey design using svyset commands in STATA. Age-specific and region-specific prevalence of malnutrition were examined. Determinants of malnutrition were assessed using bivariate and multivariate logistic regressions, crude or adjusted odds ratio (OR/AOR) and respective 95% confidence intervals (CI) were reported.

Overall, the prevalence of stunting, underweight and wasting/thinness of children was 12.7%, 10.5%, and 4.7%, respectively, in 2020. This finding underscores that child stunting reduction in Vietnam is on track towards the target of 40% reduction by 2025 set by the Global Nutrition Targets[(2)] (<20%). Meanwhile overweight and obesity among school aged children is off track the target[(2)], with the prevalence in urban areas increasing from 8.5% in 2010 to 31% in 2020. Low serum zinc, anaemia and iron deficiency (ID) were the common MNDs observed, affecting 53.1%, 15.2%, and 13.9% of children. Prevalence of low serum retinol was relatively low (<7%). In the bivariate regressions, older child (2-4 years old) [OR (95% CI): 1.43 (1.20, 1.72)], ethnic minorities [5.94 (3.78, 9.36)], and living in mountainous areas [5.06 (1.18, 14.42)] had increased odds of stunting, whereas reduced odds were found in children from the richest quintile [0.13 (0.05, 0.32)]. Similar determinants were found to be associated with underweight and MNDs. Males [1.43 (1.16, 1.76)], older children (5-9 years old) [10.02 (6.71, 14.97), and children from the richest quintile [2.91 (1.20, 7.05)] had increased odds of overweight. After adjusting for covariates including age, sex, region, wealth index and inflammation, children with anaemia, low serum retinol and low serum zinc had increased odds of stunting and underweight than non-micronutrient deficient children (AOR = 1.43-1.71). Compared to children without MNDs, those with ≥3 MNDs had almost double the odds of stunting and underweight, whereas those with ≤3 MNDs had reduced odds of overweight (AOR = 0.38−0.60).

TBM is becoming a major public health concern for Vietnamese children, and significant demographic variation and socioeconomic inequalities in malnutrition were observed. These findings suggest that national policies and programmes in Vietnam should address age-specific, sex-specific, geographical and socioeconomic disparities to accelerate progress in reducing child malnutrition.

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## References

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