Childhood BMI in Vietnamese Orphanages: A Comparison with U.S. Youth

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INTRODUCTION

Childhood malnutrition is a critical determinant of health, growth, and cognitive development. Malnutrition, from either undernutrition or overnutrition, remains a global health concern, with patterns varying by socioeconomic and environmental factors. Institutionalized children in low- and middle-income countries are at a particularly higher risk due to limited dietary diversity and inconsistent food access. This study assessed the body mass index (BMI) of children living in Vietnamese orphanages and compared their nutritional status with U.S. youth to better understand international disparities in childhood nutrition.

PURPOSE

The purpose of this study is to compare the distribution of BMI categories among Vietnamese and US children in two age groups and identify differences in underweight, normal weight and overweight/obesity status.

SIGNIFICANCE

This study highlights the contrasting nutritional challenges between populations, with undernutrition more common in Vietnamese children and obesity more prevalent in U.S. children. Understanding these differences supports the development of targeted public health interventions to improve childhood nutrition globally.

METHODS

During a Power of a Nickel mission trip in March 2025, we conducted a cross-sectional study of 91 children aged 6-17 years living in Vietnamese orphanages, with approval from the A.T. Still University Institutional Review Board (SB20250203-001). Body mass index (BMI), defined as weight in kilograms divided by height in meters squared (kg/m2), was categorized using WHO and CDC BMI-for-age standards. Children were grouped into two age ranges: 6-11 (n=43) and 12-17 (n=48), and compared with U.S. counterparts using data from the National Survey of Children's Health (NSCH). Chi-square tests of proportions were used to assess differences in BMI category distributions, with significance set at $p < 0.05$.

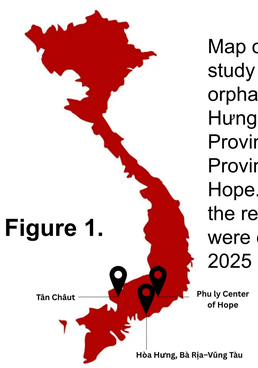


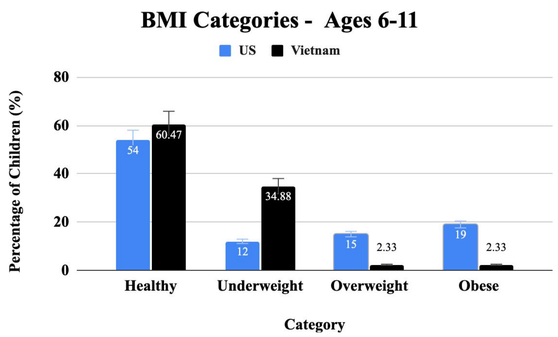
Figure 1.

Map of Vietnam showing various study sites, including orphanages located in Hòa Hưng (Bà Rịa–Vũng Tàu Province), Tân Châu (Tây Ninh Province), and Phu Ly Center of Hope. These locations represent the regions where BMI data were collected during the March 2025 mission trip.

Figure 2.

Power of a Nickel mission team member with children from a participating Vietnamese orphanage during data collection.
Photo taken with permission during the March 2025 mission trip.

RESULTS



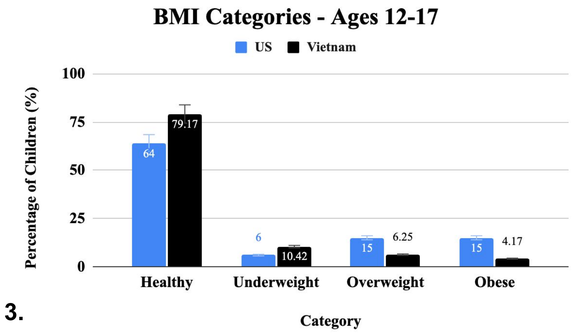


Figure 3.

Comparison of BMI category distributions between Vietnamese and U.S. children by age group (6-11 years and 12-17 years). Vietnamese children showed higher rates of underweight status and lower rates of overweight and obesity compared to their U.S. counterparts. Among children aged 6-11 years, 39.4% of Vietnamese were underweight, while 4.7% were overweight or obese versus 34% nationally. Among adolescents aged 12-17 years, 10.4% were underweight and 4.2% obese in Vietnam, compared to approximately 6% underweight and 15% obese in the U.S.

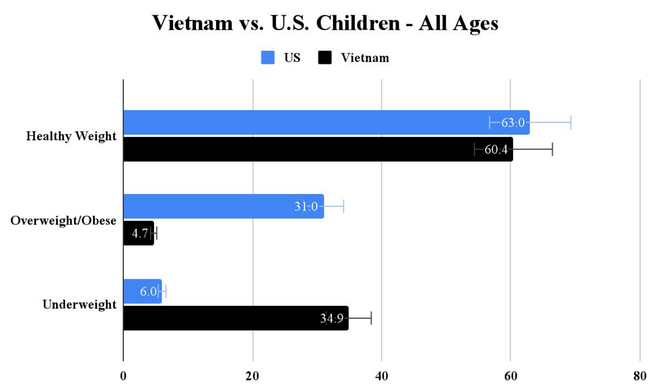


Figure 4.

Comparison of BMI categories between all Vietnamese and U.S. children. Vietnamese children showed a higher prevalence of underweight status (34.9% vs. 6.0% in the U.S.) and a lower prevalence of combined overweight and obesity (4.7% vs. 31.0% in the U.S.).

Chi-Squared Analysis of BMI Category Differences by Age Group		
BMI Category	**Ages 6-11**	**Ages 12-17**
Healthy	**Not significant** $p = 0.457$	**Significant** $p = 0.0372$
Underweight	**Significant** $p = <0.001$	**Not significant** $p = 0.3629$
Overweight	**Significant** $p = 0.0336$	**Not significant** $p = 0.1264$
Obese	**Significant** $p = 0.0084$	**Not significant** $p = 0.0591$

Table 1.

Chi-squared test results showing significant differences in BMI category distributions between Vietnamese and U.S. children. Significant results ($p < 0.05$) are indicated for specific age groups and categories.

CONCLUSIONS

- Vietnamese children had a higher prevalence of underweight status, while U.S. children showed higher rates of overweight and obesity
- These findings reflect differing nutritional and lifestyle environments between populations
- Targeted public health initiatives are needed to address both undernutrition and obesity in diverse settings
- Comparative research contributes to understanding global patterns in child nutrition and guides evidence-based interventions

LIMITATIONS

- Unequal sample sizes between Vietnam and US groups may limit direct comparisons
- Data were cross-sectional, limiting the ability to determine cause-and-effect relationships
- BMI alone may not fully capture differences in body composition or nutritional status
- Vietnam sample was region-specific and may not represent the entire country

FUTURE DIRECTIONS

- Expand BMI surveillance to additional orphanages across Southeast Asia
- Implement pilot nutritional intervention programs in rural Vietnamese institutions
- Explore micronutrient deficiencies and their impact on child development in similar settings
- Collaborate with local health ministries and NGOs to enhance institutional dietary standards

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