

## Malnutrition in all its forms and socioeconomic status in Bolivia: who are more affected?

### Background:

Malnutrition in all its forms is a complex public health problem in Bolivia. As in many low and middle income countries main public policies are mainly directed to reduce stunting and anemia, however the prevalence of overweight and obesity is silently increasing. In a country with substantial socioeconomic inequalities the current burden of malnutrition denotes a difficult challenge.

### Objective:

The aim of this study was to describe the characteristics of all forms of malnutrition in Bolivia comparing and its association with socioeconomic status; and present the evolution of undernutrition, anemia and overweight/obesity in Bolivia between 2008 -2016 in order to recommend effective public health and nutrition policies to appropriately address this burden.

### Design:

We estimated malnutrition's prevalence by socioeconomic status using the 2008 nationally representative Bolivian DHS, the study comprised 8,432 children <5y, 3,258 women adolescents (15–19 y), and 12,297 women (20–49 y) with available information on anthropometric measurements. The socioeconomic status was calculated based on the DHS wealth index and nutritional status by using WHO 2006 and 2007 standards. Additionally, we use the new DHS study (EDSA 2016) to present the evolution of undernutrition, anemia and overweight/obesity.

Results: Main prevalent problems found in this study were: underfive stunting 23% (95% CI: 22,14-24,29) and anemia 63.11% (95% CI: 60,82-65,40); overweight/obesity in women of 20-49 years old 56,88% (95% CI: 56,01; 57,76). Considering socioeconomic status lower terciles showed the higher prevalence of stunting (>30%) and anemia (>40%) in all ages. Prevalence of overweight/obesity had an upward trend from 10.81% (95% CI:10.02;11.60) in childhood to 29.46% (95% CI: 27,90;31,03) in adolescents women and 56.88% (95% CI: 56,01; 57,76) in women 20 to 49 years; with significant differences ( $p<0.05$ ) across lower and high terciles (27.69% compared with 32,56%) in adolescent and low and medium terciles ( $p<0.05$ ) in women (50,92 % compared with 63,08%, respectively). The last national demographic survey shows for children under five years of age a reduction of stunting to 16%, anemia to 53.7% and overweight/obesity 10.1%. For all women in reproductive age anemia decreased to 29.9% and overweight increased to 57.7%.

Conclusions: The results reaffirms the existing double burden of malnutrition in Bolivia with high prevalence of overweight and obesity increasing throughout the course of life. Lower socioeconomic terciles have the worst situation of malnutrition. This study calls for public specific policies which need to keep in mind the differential characteristics of malnutrition across the levels of socioeconomic status.

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