

Assessment of the Dietary Intake Patterns of Adolescent Girls in Rural Marginalised Communities of Northwest Pakistan

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INTRODUCTION + OBJECTIVE

Malnutrition encompasses a spectrum of conditions related to deficiencies, excesses, or imbalances in an individual's consumption of energy and nutrients (World Health Organization, 2021). In 2020, there were an approximated 149 million undernourished children under 5 who were stunted (low height-for-age), and 45 million who were wasted (low weight-for-height) globally. In Pakistan, 4 out of 10 children under the age of 5 are stunted, and an estimated 18 out of 100 experience wasting (Ministry of National Health Services, Regulations and Coordination, Government of Pakistan, 2018).

Malnutrition may be hidden, as multiple micronutrient deficiencies can develop despite adequate energy intake from a calorie-rich yet nutrient-poor diet (Lowe, 2021). This study aims to assess the dietary intake patterns of adolescent girls in rural marginalised communities of Northwest Pakistan and observe the 'hidden hunger'.

METHODOLOGY

482 households were recruited for the double-blind, cluster-randomised controlled trial (BiZiFED2 RCT) from two catchment areas located approximately 30-40 km away from Peshawar. Household inclusion criteria are the presence of an adolescent girl, aged 10-16 years ($n=517$). In Phase 1 of the trial (November 2019 to September 2020), households received standard wheat flour (control) to establish a baseline. In Phase 2 (September 2020 to March 2021), households were given either zinc-biofortified flour or control flour.

Anthropometric measurements and 24-hour dietary recalls were conducted at the start, midpoint, and end of the trial. Professionals conducted in-person interviews with participants, who were requested to recall their 24-hour food and drink intake. Detailed information on portion sizes, cooking methods, and additional ingredients was encouraged. To aid portion size estimation, food models, photographs, and aids were utilised. Nutrient intake data, collected through 24-hour dietary recalls and analysed with WinDiets, were compared to established dietary reference values. The Mean Adequacy Ratio (MAR) was calculated by summing adequacy ratios for individual nutrients, indicating overall nutrient adequacy or potential deficiencies.

ANALYSIS + RESULTS

Daily energy consumption is 2288.5 ± 724.89 kcal, with 1613.65 ± 526.89 kcal derived exclusively from bread. Figure 1 displays the stark proportion of total energy attributed to bread.

Figure 2 aims to show that the proportion of overall nutrient intake significantly depends on the availability of nutrients in bread. Figure 3 highlights micronutrient malnourishment resulting from limited availability in bread.

Figure 4 demonstrates that despite the presence of multiple micronutrient deficiencies, majority of the adolescents from the subsample maintain a healthy weight and are neither underweight, overweight, nor obese.

CONCLUSION

The potential health consequences of long-term malnourishment might not be readily apparent, as malnourished individuals could mask deficiencies by consuming calorie-rich but nutritionally poor foods. This underscores the importance of easily accessible malnourishment measurements and nutritional education to identify and address unhealthy eating habits.

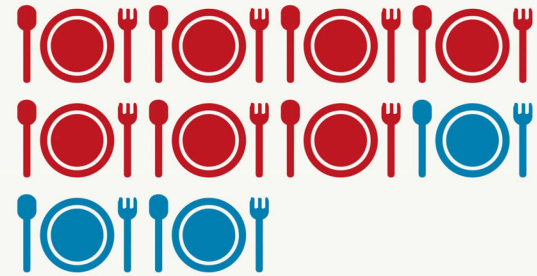


figure 1: 70.51% of all energy consumed are from bread solely.

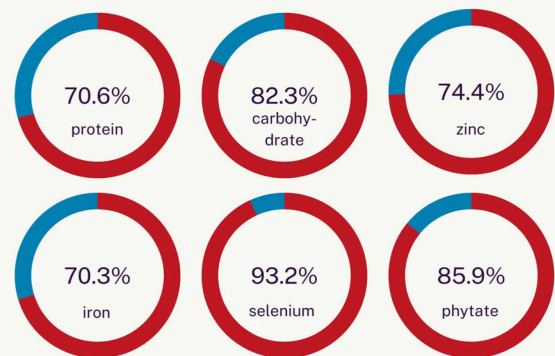


figure 2: proportion of nutrient intakes which are from bread solely.

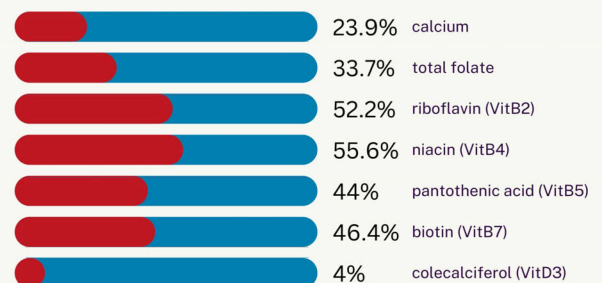


figure 3: proportion of nutrient intakes compared to the Reference Nutrient Intakes (World Health Organization, 1998).

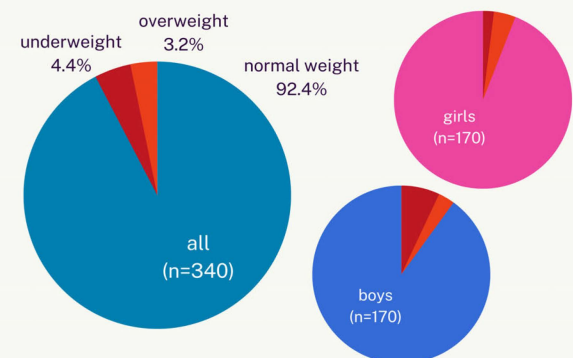


figure 4: subsample with inclusion of adolescent boys of same age range from the included households showing presence of malnourishment whilst being normal weight.

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