

Changing Spectrum of Malnutrition in Urban Cities

We read with interest the recent study published in [1] regarding persistent levels of undernutrition in city like Chandigarh. The authors have concluded that the prevalence of underweight among under-five year old children remained almost stagnant in the last one decade from 51.6% (1997) to 50.4% (2007). We would like to point out that sampling frame and design of the published study pose limitation in inferring the prevalence estimates to the whole population of Chandigarh. Their study selectively sampled only one stratum of the society i.e. the children attending the Anganwadis or the non-registered children staying in close proximity of these Anganwadis. There are nearly 420 Anganwadis in Chandigarh city out of which only 10% of the Anganwadis are located in urban centers whereas rest of the centers are either in rural or slum areas which constitute 40% of total population of Chandigarh. These centers primarily cater to the marginalized populations and study evaluating children in these centers has disproportionately aggravated the overall level of undernutrition in the population of Chandigarh due to sampling and selection bias.

We have also carried out a cross-sectional survey to quantify the prevalence of malnutrition in Chandigarh city in the year 2009 using multistage cluster design with probability proportional to size (PPS) sampling on the pattern of the NFHS -3 [2]. A total of 30 non-overlapping clusters, stratified as urban ($n=18$), rural ($n=3$) and slum ($n=9$), were selected randomly across the Union territory of Chandigarh. The prevalence of undernutrition (using WHO standards) estimated in our study sample of 597 children is 23.6% (95% CI: 20.2-27.0%) which is almost half of estimate reported by them.

Second, the estimated prevalence of underweight in children also depends upon the standards used for comparison. In children less than 5 years the estimated prevalence is nearly 1.4 times higher when IAP standards rather than the new WHO standards are used, with the absolute difference being 14.5%. Therefore the prevalence estimated by Thakur, *et al.* [1] to be 50.4% as per IAP standards should read as 35.7% as per WHO standards [3]. The comparisons of malnutrition rates with (Punjab and Haryana) made during discussion section in the paper have been made with the figures from NFHS -3 which are

presently using WHO growth standards to permit International comparisons [4]. In order to facilitate the analysis of changes in nutritional status over time, nutritional status in NFHS-2 were recalculated using the new WHO standard to make valid comparisons. So the comparison of prevalence estimates of underweight using IAP standards cannot be made with the figures used in NFHS-3 figures unless recalculation is done using WHO standards from the raw data.

Third, the analysis by Thakur, *et al* does not describe the levels and trends of overweight in the preschool children. We estimated the prevalence of overweight children, (defined as BMI for age Z score ≥ 2) in our population to be 6% (36/597) which is above the national average. (Urban 3.5%, Rural 2.1%) [4]. The prevalence of overweight and obesity observed in developed countries is about double that in developing countries (11.7% and 6.1%) but the decadal trends have revealed that the relative increase has been higher in the developing countries (+65% vs +48%) [5].

Therefore, the interventional programs in the urban cities like Chandigarh must be targeted to reduce the prevalence of undernutrition on one hand and prevent the onset of overweight in children <5 years on the other hand to tackle the dual burden of malnutrition.

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