



Dual Burden of Malnutrition Among the Girl Students of Bengali Medium School from South 24 Paraganas, West Bengal, India.

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Introduction

Child nutritional status is an essential component of a country's overall human development. There is a growing consensus that poor nutritional status during childhood (or even in uterus) can have long-lasting scarring consequences into adulthood, both in terms of health and mortality, and in terms of other measures of human capital such as schooling and productivity (Behrman et al., 2006). Research indicates that nutritional deficiencies and poor health in primary school age children are among the causes of low school enrolment, high absenteeism, early dropout and poor classroom performance (WHO, 1997). Undernutrition continues to be a primary cause of ill-health and premature mortality among children in developing countries (Nandy et al., 2005). As in other developing nations, malnourishment is a burden on considerable percentage of population, the most vulnerable being the youngest of this country (Chatterjee and Saha, 2008). On the other hand, child obesity is increasing rapidly worldwide. Childhood obesity has more than tripled in last 40 years (Ogden et al., 2010). Obesity has become a Global health problem, affecting more than 1.3 billion adults in both developed and developing countries (WHO, 2005). It is believed that, 50 – 80% of obese children will continue to be obese as adults (Styne, 2001). In developing country like India, especially in urban population, childhood obesity is emerging as a major health problem (Shetty, 1999). In these contexts of dual burden, the present study was undertaken to assess the prevalence of both, undernutrition as well as overnutrition among the girl children from Government aided Bengali Medium Primary School.

Materials and methods

The present cross-sectional study was undertaken among 239 girl students from Government aided Bengali Medium Primary School, located in South 24 Paraganas, West Bengal, India. Most of the girls were from low socio-economic families. Height and weight were measured following standard method (Lohmann, 1988). For assessing thinness and overnutrition, the cut off values of Cole et al, 2007 and Cole et al., 2000 respectively were used.

Results and discussions

Age (Years)	Variables		
	Height (ht)	Weight (wt)	BMI
5; N = 17	106.1 (3.0)	15.7 (2.9)	13.9 (2.4)
6; N = 54	110.4 (7.4)	17.9 (4.1)	14.6 (2.4)
7; N = 40	117.7 (6.0)	21.0 (4.1)	15.1 (2.1)
8; N = 49	122.7 (5.4)	23.2 (5.2)	15.3 (2.7)
9; N = 42	128.2 (6.2)	29.7 (8.3)	17.9 (4.0)
10; N = 37	131.2 (7.1)	30.1 (7.3)	17.3 (3.0)
Overall; N = 239	120.2 (10.3)	23.3 (7.6)	15.8 (3.1)

Table 1: Mean (SD) of the variables among the studied participants.

Table 1 represented the mean (sd) of the anthropometric variables like height, weight and derived variable, BMI among the girls from Bengali medium schools. The overall mean height was 120.2 cm (10.3) and in weight it was 23.3 kg. (7.6). In case of BMI it was

15.8 (3.1). The mean height, weight and BMI (except in the age of 10 year) were increased along the increase of the age of the students.

Age (years)	Thinness			Normal	Overweight	Obese
	Grade-III	Grade -II	Grade - I			
5	5 (2.1)	1 (0.4)	3 (1.3)	6 (2.5)	1 (0.4)	1 (0.4)
6	6 (2.5)	10 (4.2)	12 (5.0)	22 (9.2)	1 (0.4)	3 (1.3)
7	2 (0.8)	1 (0.4)	10 (4.2)	19 (7.9)	8 (3.3)	-
8	5 (2.1)	4 (1.7)	8 (3.3)	23 (9.6)	9 (3.8)	-
9	1 (0.4)	2 (0.8)	4 (1.7)	21 (8.8)	9 (3.8)	5 (2.1)
10	1 (0.4)	-	7 (2.9)	23 (9.6)	4 (1.7)	2 (0.8)
Total	20 (8.4)	18 (7.5)	44 (18.4)	114	32 (13.4)	11 (4.6)
Grand Total	82 (34.3)			114 (47.7)	43 (18.0)	

Table 2: Nutritional status (%) of the studied students

Nutritional status of the studied girl students is explained through the Table 2. Here we considered the dual burden e.g. thinness and overweight obesity simultaneously. The overall prevalence of undernutrition as measured by thinness (Cole et al., 2007) was 34.3%, which is considered as a very high level of undernourishment. Whereas, the prevalence of over nutrition as measured by overweight and obesity (Cole et al., 2000) was also very high (18.0%), out of which prevalence of overweight was 13.4% and obese was 4.6%. Considering the Grade based thinness, it was 8.4% in case of Grade – III, 7.5% in Grade – II and in case of Grade – I it was 18.4%. If we look through the prevalence of overweight based on age, it clearly indicated the increase from lower to higher ages. But it is reversed in the case of prevalence of thinness. In another study among the primary school girl student from Bali Gram Panchayat, Arambagh, where the rate (81.3%) of thinness was very high (Mandal, 2017). Children of same age groups from Purba Midnapur (Chakarabarty and Bose, 2009) also showed high prevalence of thinness (62.2%). On the other hand, the present study also showed very high prevalence of overweight and obesity in spite of the students from Bengali medium school. Another study (Bose et al., 2007) from Bengalee school girls of Kolkata noted more or less same level of overweight (17.63%) and obesity (5.1%). The overweight among the children from Punjab was 14.3% (Sidhu et al., 2007) and Chennai, India was 15.3% (Ramachandran et al., 2002), both were also nearer to the present prevalence. But comparatively high prevalence of overweight (28.5%) was noticed among the urban adolescent English Medium school girls from Kolkata (Mandal Nandi and Mandal, 2012). In the same study, the rate of obesity was more or less same (4.2%). Dual burden was also observed among the adolescent girl students from Cooch Bihar district of West Bengal (Bhowmick and Khatun, 2024) where thinness was 22.5% and overweight was 11.0%. In another study (Manna et al., 2018) of dual burden from college students of Midnapore District, West Bengal reported that the prevalence of undernutrition was 24.2% and overweight –obese prevalence was 15.2%. Whereas, very high prevalence of overweigh and obesity (56.6%) in comparison to thinness (10.9%) were reported among the Rajbanshi girl students from North

Bengal (Bose et al., 2020).

From the above mentioned studies, it can be concluded that, the prevalence of undernourishment as well as over nutrition were simultaneously prevailed among the various population of different places. The same result was noticed among the Bengali School going girl students from in and around Kolkata which indicates the differential socio-economic level of the families.

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