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Factors Associated with Nutritional Status of Adolescent Schoolchildren in Tripura

Among 893 adolescent school children from 31 schools, 78.9% were found to have normal body weight; prevalence of thinness and overweight were 8.1% and 13%, respectively. Compared to the National reference, 95th percentile value of Body Mass Index was higher; while both weight and height were lower. Literacy, economic and physical activity status were the most significant predictors influencing nutritional status.

Keyword: *Obesity, Ethnic, Overweight, Thinness*.

The existence of ethnic differences between different tribes of India in regards to their nutritional health is well reported [1]. Hence, in the present study, nutritional status and its correlates among both ethnic (Tripuri) and non-ethnic (Bengali) adolescent of Tripura was assessed.

Subjects (14-18 y) were selected using random numbers, from 31 different government schools of Tripura (3-4 school per district selected randomly). Only the students whose parents agreed to sign the informed consent were included in the study. Ethical clearance was obtained from Institutional Human Ethical Committee of Tripura University. A prevalence of 30% for malnutrition was taken to calculate the sample size with 95% confidence interval and absolute precision of 5% [2]. The sample size was 893. History of nutritional and socioeconomic status was obtained by questioning the parents using a pre-validated questionnaire. Weight and height were recorded. Frequent calibration of the scale was done. Subjects were grouped into thinness, overweight and normal weight categories based on CDC criteria [3]. Student t test, chi-square test, and logistic regression were applied for statistical analyses.

A total of 893 students (54.8% males) were evaluated. Prevalence of thinness, overweight and normal weight was found to be 8.1%, 12.9%, and 78.9%, respectively. Highest (14.61%) and lowest (2.07%) prevalence of thinness was seen in 14 years age group of Bengali and Tripuri male subjects, respectively. On the other hand 18 years and 14 years age group of Bengali female was found to have highest and lowest prevalence for overweight (20% and 11.2%, respectively) compared to other groups (***Table* I**). Compared to ICMR reference, 95th percentile value of weight and height were found to be lower and BMI was higher in both sexes of our subjects.

On multiple logistic regression analysis, only literacy status of parents, socioeconomic class, and physical activity level were found to be significantly related to being overweight or being thin (***Table* II**).

Ethnic Tripuri subjects showed equal and in many cases better physical characteristics compared to non-ethnic Bengali subjects, which contradicts the findings from other studies [4,5]. Another significant observation of the study was a non-significant urban and rural difference in nutritional status of adolescents from both the communities of Tripura [6]. Overall prevalence of thinness found in study was much lesser than the prevalence reported from other Indian studies [7]. Similar to our findings, previous studies reported that early adolescence was more vulnerable period for malnutrition [8].

TABLE I Association Between Nutritional Status and Socio-Demographic Status (*N*=893)

Demographic factors	*% No.(%)*	*Nutritional status(%)*	
		Thinness	*Overweight*
Female gender	404 (45.24)	8.66	12.87
Community			
Tripuri	530 (59.35)	6.72	12.86
Bengali	363 (40.65)	9.95	13.17
Study area			
Rural	419 (46.92)	9.07	12.17
Urban	474 (53.08)	7.17	13.71
Age group			
14 y	398 (44.57)	6.78	12.06
15 y	223 (24.97)	7.62	13.01
16 y	118 (13.21)	9.32	13.56
17 y	90 (10.08)	11.11	14.44
18 y	64 (7.17)	10.94	15.62

TABLE II Logistic Regression Analysis of Factors Used With Nutritional Status

Factor	*Thinness OR (95% CI)*	*Overweight OR (95% CI)*
*Literacy status**		
Elementary	3.10 (1.59-6.42)	1.84 (0.60-5.11)
High School	4.98 (2.66-9.33)	3.06 (1.09-8.65)
College	7.77 (2.78-21.61)	6.11 (2.06-18.07)
Socioeconomic class[#]		
Middle	1.15 (0.66-2.01)	2.52 (1.53-4.17)
Upper Middle	1.77 (0.77-4.04)	3.09 (1.74-5.49)
Upper	2.77 (0.97-7.91)	3.64 (2.03-6.52)
Physical activity[‡]		
Low	2.58 (1.23-5.42)	2.43 (1.49-3.96)
Moderate	1.66 (0.84-3.26)	3.04 (1.78-5.19)
High	0.79 (0.43-1.46)	5.45 (2.69-11.09)

*[#]P<0.001 for all classes as compared to lower socioeconomic class; [‡]P<0.001 for high and moderate physical activity and P=0.01 for low physical activity, as compared to none; *P<0.001 for college educated and P=0.02 for high school educated, as compared to illiterate group.*

Nutritional status of subjects was significantly influenced by educational status and literacy status of their parents. Similar influence of parental education in raising the nutritional status of children is well reported [9]. Similar to our study, Kotian, *et al*. [10] also showed that the risk of overweight was two-times higher among the adolescents of high socio-economic status [10]. It has been shown previously an established fact that no or low level of physical activity is associated with overweight and obesity, which was also evident in our study.

The present study suggests that literacy, economic and physical activity status plays determinant role in nutritional status of adults. Overall, there is little difference in nutritional status between Tripuri and Bengali adolescents; as well as among urban and rural subjects from both the groups.

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