Original Article ▐

NUTRITIONAL STATUS AND FACTORS AFFECTING NUTRITION AMONG ADOLESCENT GIRLS IN URBAN SLUMS OF DIBRUGARH, ASSAM

Himashree Bhattacharyya[1], Alak Barua[2]

Author's Affiliation:
[1]Senior Resident Doctor, Department of Community Medicine, North East Indira Gandhi Regional Institue of Health & Medical Sciences, Shillong, Meghalaya; [2]Professor & Former Head, Department of Community Medicine, Assam Medical College, Dibrugarh, Assam

Correspondence:
Dr. Himashree Bhattacharyya,
Email: bhimashre@yahoo.co.in

ABSTRACT

Objective: To assess the nutritional status and and factors affecting nutrition of adolescent girls residing in urban slums of Dibrugarh town.

Methods-A community based cross sectional study of 284 adolescent females in the age group 10-19 years was conducted in all the 10 slums in Dibrugarh town . The BMI for age <5th percentile and height for age< 3rd percentile or <-2 Z scoresof NCHS reference standard were used as criteria for thinness and stunting respectively.

Results: The overall prevalence of thinness was 25.70% and the prevalence of stunting was 31.33%. A significant association was observed between the nutritional status of adolescents and the mother's literacy level and family size. The various morbidities prevalent amongst the adolescent girls were found to be pallor (93.30%); menstrual problems (83.09%); dentalcaries (42.25%); angular stomatitis (35.56%); glossitis (34.15%); Skin problems (20.07 %); lymphadenopathy (10.21%) diarrhoea (7.04%), Goitre (4.22%) and bitots spots (0.35%).

Key words: Adolescent, nutritional, anthropometry, stunting, thinness.

INTRODUCTION

The entire period of transition from childhood to adulthood is considered as adolescence. Adolescence begins with pubescence – the earliest signs of development of secondary sexual characteristics and continues until morphological and psychological changes approximate adult status. [1]It is the period when 35% of the adult weight and 11-18% of the adult height is acquired. [2]This crucial period of transition is identified by a range of age of 10-19 years by the World Health Organization.[3]

The adolescents are generally expected to enjoy good health being less vulnerable than the very young or very old. But the actual picture is somewhat different. Inadequate diet and unfavourable environments in developing countries may adversely influence the growth

and nutrition of the adolescents.[4]Adolescent girls are particularly at high risk of malnutrition because of gender discrimination in distribution of, and access to, food within the family. The needs of these adolescent girls are often ignored and they remain a largely neglected population of our society.[3]The present study was therefore conducted to assess the nutritional status of adolescent girls residing in the urban slums.

MATERIALS AND METHODS

This community based cross sectional study was conducted from June – December, 2008 in the urban slums of Dibrugarh ,Assam. The study population comprised of adolescent girls in the age group 10-19 years residing in the study area. There are 10 slums in Dibrugarh district. All the slums were included for the study. The sample size was calculated by the formula $4PQ/ L^2$, where P=58.5% (Positive character), Q=1-P, L= Allowable error. Considering the prevalence of under nutrition among adolescents as 58.5% from a previous study conducted by National Institute of Nutrition, Hyderabad and taking 10% as allowable error the sample size was calculated to be 284. In the slums, the systematic random sampling was used to select the individual subjects .The total number of adolescent girls in all the slums was found out to be 1487. From this sampling interval was calculated to be 5. The first adolescent girl was selected at random by lottery method by choosing any number between 1 and5. Thereafter the other subjects were interviewed by adding every 5th adolescent girl consecutively starting from the first adolescent girl till the required sample size was fulfilled.

The data was collected using pre tested and pre designed proforma. Verbal informed consent was obtained from every adolescent and their guardian present and the subjects were informed of confidentiality of their data. Nutritional status was assessed by anthropometry along with general clinical examination and history taking to look for any signs of vitamin deficiency

Statistics:

Height for age < 3rd percentile or < -2 Z scores of NCHS reference standard and BMI for age < 5th percentile of NCHS reference standard were the indices used for assessing nutritional status.[4] The data were analyzed using the descriptive statistics and Chi- Square test.

RESULTS

A total of 288 households were visited to meet the required sample size of 284.There were only two non respondents in the study. In the selected household all the adolescent girls in the age group 10-19 years were included in the study.

Among the 284 adolescent girls studied, 54.57% belonged to early adolescence (10-14 years) and 45.42% girls belonged to late adolescence (15-19 years).84.50 %of adolescent girls were found to be literate and 15.50% were found to be illiterate. 42.95% of the mothers and 30.28% of the fathers of the study subjects were illiterate.[Table1]

Table-1: Socio-Demographic Characteristics of the Study Population

Characteristics	Adolescent (%)
Age Group	
10-14	155(54.57)
15-19	129 (45.43)
Literacy	
Literate	240(84.51)
Illiterate	44(15.49)
Socio Economic Status (Kuppuswami's classification)	
Class I	3(1.04)
Class II	51(17.93)
Class III	108(38.01)
Class IV	122(43.02)
Class V	Nil
Family Size	
<5	98(34.51)
≥5	186(65.49)
Father's Literacy	
Literate	198(69.72)
Illiterate	86(30.28)
Mother's Literacy	
Literate	162(57.04)
Illiterate	122(42.96)

The overall prevalence of stunting was 31.33% (95% CI= 25.83-36.83%).Though the prevalence of stunting was higher among early adolescents than late adolescents, but it was not statistically significant (p=0.255).The overall prevalence of thinness was found to be25.70%.(95% CI= 20.52-30.88%) There was also no statistically significant difference between prevalence of thinness among early and late adolescents (p=0.556)[Table2].

Table 2: Nutritional Status of Adolescents by Age

Nutritional Status	Total (n= 284)	10-14yr (n=155)	15-19 yr (n=129)	P value	OR	CI (95%)
Stunting	89 (31.33)	53(34.19)	36 (27.90)	0.255	1.342	0.807-2.231
Thinness	73 (25.70)	42 (27.09)	31(24.03)	0.556	1.175	0.686-2.011

*P value<0.05 is considered as significant

Both the prevalence of stunting (36.06%) and thinness (27.09%) was highest in Socio-economic class IV. In the present study, however no significant association was found between socioeconomic status and prevalence of stunting (p=0.201)or thinness (p=0.831).The prevalence of both stunting (38.37%) and thinness(31.39%) was high among girls whose father's were illiterate. But, the present study showed no significant association between prevalence of stunting (p=0.092) and thinness (p=0.1481) and literacy status of father. The prevalence of both stunting (41.80) and thinness (44.26%) was much higher among girls who cameform families whose mother's were illiterate. In the present study a significant association was found between the prevalence of both stunting (p= 0.001) and thinness (p<.001) with the literacy status of the mother. In the study, we found that 34.09%of illiterate girls were found to have stunting (p=0.668) whereas 25.00% of illiterate girls were found to have wasting (p=0.907) but it was not statistically significant.It was observed that 36.5% of girls with stunting belonged to families with ≥ 5 members. (p=0.009).A statistically significant difference was also observed with respect to thinness, where 31.72% of girls belonged to families with ≥5 members.(p=0.001) [Table3].

The commonly prevalent nutritional disorders among girls were found to be Pallor (93.30%), menstrual problems (83.09%), Dental caries (42.25%), Angular stomatitis (35.56%), Glossitis (34.15 %), Skin problems (20.07 %), Lymphadenopathy (10.21%), Diarrhoea (7.04%), Goitre (4.22%) and bitot's spots (0.35%).

DISCUSSION

The present study shows that the prevalence of stunting was 31.33%. Similarly, a report on diet and nutritional status by National Nutrition Monitoring Bureau also showed the prevalence of stunting to be 39.1%.[5]A study conducted in rural West Bengal showed the of prevalence of stunting to be 52.45%.[6]

Table 3: Stunting and Wasting as per Socio Demographic Variables

Characteristics	Stunting (n=89) (%)	Thinness (n=73) (%)
Socio economic status		
Class I (n=3)	0	0
Class II (n=51)	16 (31.37)	13 (25.49)
Class III (n=108)	29 (26.85)	27 (25.00)
Class IV (n=122)	44 (36.06)	33 (27.09)
Class V (n=0)	0	0
P value	0.201	0.831
OR (95% CI)	0.71 (0.42-1.20)	0.94 (0.54-1.63)
Literacy Status-Father		
literate (n=198)	56 (28.28)	46 (23.23)
illiterate (n=86)	33 (38.37)	27 (31.39)
P value	0.0921	0.648
OR (95% CI)	0.63 (0.37-1.08)	0.66 (0.37-1.16)
Literacy Status-Mother		
Literate (n=162)	38 (23.45)	19 (11.72)
Illiterate (n=122)	51 (41.80)	54 (44.26)
P value	0.001	<0.001
OR (95% CI)	0.43 (0.25-0.71)	0.167 (0.09-0.30)
Literacy status-Adolescent		
Literate (n= 240)	74 (30.83)	62 (25.83)
Illiterate (n= 44)	15 (34.09)	11 (25.00)
P value	0.668	0.907
OR (95% CI)	1.04 (0.5-2.19)	0.86 (0.44-1.7)
Family size		
<5 (n=98)	21(21.42)	14 (14.28)
≥5 (n=186)	68(36.55)	59(31.72)
P value	0.009	0.001
OR (95% CI)	0.47 (0.27-0.83)	0.36 (0.19-0.68

* P value<0.05 is considered as significant

The prevalence of thinness in the present study was found to be 25.70%.This is almost consistent with other studies which had reported prevalence of 35.5% and 30.1% respectively.[7,8] NFHS-2 reported a higher rate of 38.8% among ever married adolescent girls of 15-19 years of age.

In the present study, no significant association was observed between prevalence of stunting or thinness with socio economic status of the family. No association was also observed between nutritional status and per capita family income. A study in Rural Wardha observed a significantly higher prevalence of stunting among adolescents from the lower family income group.[10]Das DK and Biswas R [11] in their study also did not find any association between socio-economic status and prevalence of thinness or stunting.

The present study did not find any association between the nutritional status of adolescent girl with the father's literacy status. However, a significant association was found between stunting and thinness and mother's literacy status. Das DK and Biswas R [11] in their study also reported no association between nutritional status of adolescent girls with father's literacy status. However, they found a significant association between thinness and mother's literacy status. Thus, a mother's literacy level is a better determinant than Socio economic status as it affects the type of food prepared, distributed including the type of care received by the girls in a particular family. In a study conducted in Gaza by Abudayya A it was observed that in adolescent girls' mothers' education was negatively associated with stunting.[12]The present study showed no significant association between literacy and nutritional status of the adolescent girls. Deshmukh PR et al in his study observed that prevalence of thinness was significantly higher in those having education less than 8th standard than those educated at least up to 8th standard.

In the present study, a significant association was found between both stunting and wasting with respect to family size. A study of nutritional status of rural adolescents found a significant association between underweight /Chronic Energy deficiency and family size.[13]Factors such as family composition and distribution of food in the family may play a role in this association. However, in the present study no analysis was done to individually predict the indicators for stunting and thinness. Inability to adjust for these confounding factors can be considered to be a limitation in this study.

The present study has revealed a high prevalence of pallor (93.30%) in the study population. Other important causes of morbidity were menstrual problems (83.09%) ,dental caries (42.25%), Angular stomatitis (35.56%), Glossitis (34.15%), Skin problems (20.07%), Lymphadenopathy (10.21%), Diarrhoea (7.04%), Goitre (4.22%) and bitot's spots(0.35%) respectively.Singh.J.et al in a study reported that deficiency signs of vitamins were found in 28.7% of girls; a majority of them (22.2%) showed signs of Iron deficiency and 3% of girls showed signs of signs of Vitamin A deficiency.[14]Das K.D. and Biswas. R in their study conducted in rural West Bengal showed that the common prevalent nutritional deficiency disorders among adolescent girls were Anemia (44.8%) followed by Dental Caries (25.9%) and Angular Stomatitis (15.4%).Goiter was found only in 1.4% of girls.[11]A study on health problems of adolescents in an urban field practice area of Nagpur observed that the major problems were acute nasopharyngitis/ tonsillitis (62.7%), anemia (57.28%), dental caries (37%), menstrual problems (30%), Vitamin B complex deficiency (26.28%), history of passing worms in stool (19.42%), scabies (6.43%, and pediculosis (7.43%).[15]

CONCLUSION

Improvement of the nutritional status of adolescent girls requires a multi-sectoral approach in order to ensure adequate food supply, maintain equity in food distribution and promote improved knowledge about nutrition and healthy eating habits [3]. Low level of literacy and higher family size has been the major factors contributing to the poor health status of the adolescent girls. Thus, health and nutrition education especially of the mothers can play a vital role in improving the nutritional status of these adolescent girls.

REFERENCES

1. Chapter in the book: Ghai O P, Gupta P. Adolescent Health: Social and Health issues. Ghai OP, Paul VK, Bagga A, Editors. Textbook of Preventive and Social Medicine. Ghai O.P, Gupta P-2007.CBS Publishers and Distributors: p428-433.

2. Chapter in the book: Sharma S, Nutrition in Adolescent Girls: Possible role of Calcium and other minerals; Sachdev HPS, Choudhury P, Editors. Nutrition in Children: Developing Country Concerns. 2ndEdition.Sachdev HPS, Choudhury P. B I Publications, New Delhi: p 272-273.

3. World Health Organization-10 facts on adolescent health. Available At www.who.int/features/facilities/adolescent-health/en/; Accessed on 18.7.2011.

4. World Health Organization-Physical status: The use and interpretation of Anthropometry Report of a WHO Expert Committee-TRS 854. Geneva, WHO: 1995.p-271. Available at www.who.int/child growth/publications/physical _status/.../index.html; Accessed on 18.7.2011

5. National Nutrition Monitoring Bureau. Report on Diet and Nutrition Status of Adolescents. NNMB Technical Report No 20, National Institute of Nutrition, ICMR, Hyderabad 2000.

6. Das P, Ray SK, Joardar GK, Dasgupta A. Nutritional Profiles of Adolescents in A Rural Community of Hooghly District in West Bengal. Indian Journal of Public Health 2007; 51 (2):120-121.

7. Kapoor G, Aneja S- Nutritional Disorders in Adolescent Girls- Ind Ped 1992; 29(2) : 969-973.

8.   Anand K. Nutritional status of Adolescent school children in rural north India. Ind Ped. 1999; 36 (2): 810-815.

9.   National Family Health Survey (NFHS-2) (1998-1999): Mumbai; International Institute of Population Sciences and Macro; 2000.

10.   Deshmukh PR, Gupta SS, Bharambe MS, DongreAR, Maliye C, Kaur S, Garg BS. Nutritional status of adolescents in rural Wardha. Indian Journal of Ped. 2006; 73(2):139-141.

11.   Das D Kumar, Biswas R. Nutritional Status of Adolescent Girls In A Rural Area Of North 24 Parganas District, West Bengal. Indian Journal of Public Health 2005; 49(1): 18-21.

12.   Abudayya A, Thoresen M, Abed Y, Ottesen GH. Overweight, stunting and anemia are public health problems among low socio-economic goups in school adolescents in North Gaza strip. Nutrition Research.2003; 27 (12):762-771.Available at http://linkinghub.elsever.com/ retrieve/pil; Accessed on 6/7/08.

13.   Venkiah K et al: Diet and nutritional status of rural adolescents in India. European Journal of Clinical Nutrition. 2002; 56(11): 1119-1125. Available at www.nature.com/ejcn/journal/V 56/n 11/Full/ 1601457 a.html.; Accessed on 12/7/2011.

14.   Singh J Singh JV, Srivastava AK, Suryakant ; Health status of Adolescent Girls in Slums of Lucknow. Indian Journal of Community Medicine. 2006; 31(2): 102-103.

15.   Kalamka HS. Study of Health Problems of Adolescents in Urban Field Practice Area. Dept. of Preventive & Social Medicine, Indira Gandhi Medical College, Nagpur 2001.Studies on Adolescent girls: An Analytical Review; Published by National Institute of Public Co operation and Child Development, New Delhi,2008 Available at www.nipccd.nic.in/reports/eag.pdf; Accessed on 6/7/08