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Assessment of Nutritional Status of Teenage Adolescent Girls in Urban Slum of Varanasi

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ABSTRACT

Aim: India has one of the fastest growing youth populations in the world and adolescent girls of age 13 to 19 year constitute nearly to 66 million. Nutritional deficiencies have far reaching consequences, especially in adolescent girls. Adolescents are more vulnerable to malnutrition.

1. To assess the nutritional status of teenage adolescent girls and

2. To determine the association between socio demographic profile and nutritional status.

Methodology: A cross sectional study was carried out to assess the association between socio demographic profile and nutritional status of teen age adolescent girl in Varanasi city. A total no 418 teen age adolescents of 13 to 19 years were selected from urban slum of Varanasi during 2016.

Results & Discussion: Nutritional status was assessed by anthropometric measurements. Result shows that 60.3% of adolescent girls were undernourished I 35.2% were normal and only 4.6% were overweight. Age and socio economic status of adolescent girls were significantly associated with their nutritional status ($p < 0.05$).

Conclusion: It was found that higher proportions of adolescent girls were undernourished. This indicates that adolescents in urban slums need health awareness and importance of nutrition to maintain nutritional status.

Key Words: Malnutrition, Adolescent, Nutritional status

INTRODUCTION

Adolescence is the transitional period between childhood and adulthood. During this period individual move towards physical and psychological maturity, and economic independence and acquire their adult identity. According to World Health Organization, adolescent is the period of life spanning the ages between 10 to 19 years. [1] And it constitutes about 22.8 per cent of the population in India. [2] In general adolescent girls are the worst sufferers of the ravages of various forms of malnutrition because of their increased nutritional needs and low social power. [3]

Nutritional deficiencies have far reaching consequences, especially in adolescent girls. If their nutritional needs are not met, they are likely to give birth to undernourished children, thus transmitting under nutrition to future generation. Unfortunately assessment of nutritional status of adolescent girls has been the latest explored area of research particularly in India. [4]The urban slum adolescent girl is subjected to more physical and mental challenges on a day-to-day basis due to ever increasing pressure of modernization as compared to the rural set up. Malnutrition prevails in slum area due to low economic status, less awareness about healthy diet of

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adolescent girls. Hence it is essential to assess the nutritional status of adolescent girls, especially in slum area.

Objectives:

1. To assess the nutritional status of teenage adolescent girls.
2. To determine the association between socio demographic profile and nutritional status.

MATERIAL METHODS

A community based cross-sectional study was carried out in slum areas of Varanasi, Uttar Pradesh on 418 adolescent girls aged between 13-19 years. Out of the 210 slums, five slums (Indrapur, Gilat Bajar, Bhogabeer chupepur karundi) were selected by use of stratified random sampling methods. Study participants (Teen age girls aged 13-19 years and unmarried) present in a family at the time of interview were included in the study. Girls suffering from severe illness and unable to communicate during interview were excluded from the study. Tools for data collection includes Performa for demographic characteristics i.e. age, religion, residence, type of family, education, occupation and per capita income, and anthropometric measurements (Height, Weight and Body Mass Index (BMI). This study was approved by Institute Ethical Committee, Institute of Medical Sciences, and Banaras Hindu University.

Measurements

Height: Height was measured in centimeters that were marked on a wall with the help of measuring tape. All girls were measuring against the wall without footwear and with heels to getter and their heads positioned so that the live of vision was perpendicular to the body. A glass scale was brought down to the top most point on the head. [5]

Weight: The weight was measured using a weighing machine (Libra) with an accuracy of +100 guess the subjects were asked to remove their footwear before measuring thin weight. The scales were recalibrated after each measurement. Accuracy of the weighing scale was verified from time to time against known weights. [6]

BMI: BMI was calculated as weight in (kg) divided by height in (m2) and classified under standard criteria of Asian Criteria.

Statistical Analysis: Data has been coded and was entered into the MS Excel. For the analysis of data Statistical Package of Social Science (SPSS 21.00 Version) was used. Percentage for all variables was calculated. Association between Nutritional status with independent variables was tested by applying Chi square test. P-value less than 0.05 were considered as statistical significant.

Ethical clearance: The study protocol was approved by the Ethical Committee of Banaras Hindu University, India

(Approval number: ECR/526.Inst/UP/2014 Dt.31.1.14). The study purpose and the procedure used for collecting information were clearly explained to each participant and they were all informed that they were free to leave the study at any time without prejudice. Written informed consent was obtained from all study participants. Privacy and confidentiality were maintained throughout and personal identifiers were removed prior to the data analysis.

Result

Table 1: Socio-demographic characteristics of study Subjects.

Characteristics	Category	Number (n=418)	Percentage
Age	13-14 years	90	21.5
	15-16 Years	126	30.1
	17-19 Years	202	48.3
Religion	Hindu	404	96.1
	Muslim	18	3.3
Caste	General	60	14.4
	OBC	157	37.6
	SC/ST	201	48.3
Type of Family	Nuclear	329	78.7
	Joint	89	21.3

Out of 418 adolescent girls participated in the study, 48.3% belonged to 17-19 years of age group. Majority (96.7) of subjects was Hindu and almost half of them (48.3%) were from SC/ST category. More than three-fourth (78.7%) was from nuclear families and only 21.3% were from joint families.

Table 2: Socio-economic status of teenage adolescent girls and their parents.

Characteristics	Category	Number	Percentage
Educational Status			
Education of subject	Illiterate	13	3.1
	Primary	25	6.0
	Middle	111	26.6
	High school	81	19.4
	Intermediate	109	26.1
	Graduate & Others	79	18.9
Continuity of Education (n=405)	Continuing	360	88.9
	Discontinued	45	11.1

Education of Father	Illiterate	91	21.8
	Primary	40	9.6
	Middle	62	14.8
	High school	76	18.2
	Intermediate	62	14.8
	Graduate & above	87	20.8
Education of Mother	Illiterate	164	39.2
	Primary	56	13.4
	Middle	67	16.0
	High school	46	11.0
	Intermediate	37	8.9
	Graduate & above	48	11.5
Occupational Status			
Occupation of subjects	Student	360	86.1
	Working Outside	58	13.9
Occupation of Father	Agriculture	19	4.6
	Service	163	39.0
	Business	92	22.0
	Labour	105	25.1
	Expired	39	9.3
Occupation of Mother	Home maker	318	76.1
	Service	33	7.9
	Business	5	1.2
	Labour	52	12.4
	Expired	10	2.4

Modified kuppu swami Socio Economic status- Jan 2017

Score	Category	Number	Percent
<5	Lower	4	1.0
5-10	Upper lower	196	46.9
11-15	Lower middle	108	25.8
16-25	Upper middle	62	14.8
26-29	Upper	48	11.5

Table 2 represents the socio-economic characteristics of the study participants. Majority (96.9%) of the adolescent were literate and few (11.1%) were discontinued their education. In regard to education of fathers and mothers of study subjects, 21.8% and 39.2% were illiterate respectively. Occupational status of study subject shows, 13.9% adolescent girls were working outside (involve in service, business) and majority of 86.1% of the girls were students. In regard to occupation of fathers, 39.0% were in govt./pvt.Service, one fourth (25.1%) were lobour and 22.0% involved in business where as 4.6% involved in agriculture. Similarly, In regard to occupation of mothers, 76.1 % were house wife and 12.4% were engaged in lobour work and few involved in business/ service (9.1%). The maximum percentage (44%) of fathers was labourers, 22% had small businesses, and 10% were in the service sector. It was found that about 47% of the participants belong to upper lower class of socio-economic status followed by lower middle (25.8%), upper middle (14/8%) and upper class (11.5%).

Table 3: Distribution of study subjects according to nutritional status.

Nutritional status	Grade	BMI	Frequency	Percentage
Under Weight	Grade III under nutrition	<16.0	85	20.3
	Grade II under nutrition	16.0-16.99	63	15.1
	Grade I under nutrition	17.0-18.49	104	24.9
Normal	Normal	18.5-22.9	147	35.2
	Over weight	23.0-24.9	15	3.6
Over Weight	Pre-obese	25.0-29.9	04	1.0
	Type-1 obese	30-40	-	-

Regarding BMI, more than half (60.3%) were found to be under nourished, among them 20.3% were in grade III, 15.1% in grade II & 24.9% in grade I under nutrition. Around one third (35.2 %) were normal or well nourished, and overweight and pre- obese constitute only 3.6% and 1.0% respectively.

Table 4 describes association between nutrition status and socio demographic variables of teen age girls in urban slum area. The nutritional status of study subjects were significantly associated with age ($p<0.0001$) and socio economic status ($p<0.0001$), but other variables like religion, caste, type of family were not associated with the nutritional status of the participants ($p>0.05$). It was observed that, as the age increases the percentage of undernourishment decreases. In 13-14 years, the percentage of undernourishment was 74.4% whereas in 15-16 years and 17-19 years it was 63.5% and 52.0%, respectively. Similarly the parentage of undernourished is also decreasing as socio economic status increased. In lower and upper lower socio economic class, the percentage of undernourished was 75.5% whereas, in middle lower and middle upper class was 48.2% but in upper class proportion of undernourished was only 39.6%.

Table 4: Association of Sociodemographic characteristics and Nutritional Status among study subjects (n=418).

Characteristics	Category	Nutritional status		Total	Test of significance	p-value
		Undernourished n=252, (%) (BMI ≤ 18.5)	Normal & above n=166, (%) (BMI ≥ 18.5)			
Age	13-14 years	67(74.4)	23(25.6)	90		
	15-16 Years	80(63.5)	46(36.5)	126	χ^2 =13.8, df=2	P<0.0001
	17-19 Years	105(52.0)	97(48.0)	202		
Religion	Hindu	244(60.4)	160(39.6)	404	χ^2 =0.6, df=1	P=0.807
	Muslim	8(57.1)	6(42.9)	14		
Caste	General	28(46.7)	32(53.3)	60		
	OBC	102(65.0)	55(35.0)	157	χ^2 =6.0, df=2	P=0.47
	SC/ST	122(60.7)	79(39.3)	201		
Type of Family	Nuclear	204(62.0)	125(38.0)	329	χ^2 =1.90, df=1	P=0.167
	Joint	48(53.9)	41(46.1)	89		
Socio Economic Status	Lower &Upper	151(75.5)	49(24.5)	200		
	lower	82(48.2)	88(51.8)	170		
	middle(Lower Upper)	19(39.6)	29(60.4)	48	χ^2=38.24, df=2	p<0.001
	Upper					

DISCUSSION

Adolescence is an important stage of growth and development that requires increased nutrition and adolescent anthropometry varies significantly worldwide. [5] Growth and development is closely linked to the diet they receive during childhood and adolescence. [7] Under nutrition among adolescent girls is a serious public health problem internationally, especially in developing countries.[8] Out of 418 adolescent girls participated in the study, 48.3% belonged to 17-19 years of age group. Majority (96.7) of subjects was Hindu and almost half of them (48.3%) belonged to SC/ST category. These findings is very similar to study done by Singh et al in rural area of Varanasi about 91.7 % were Hindu and only 13.4% belonged to SC category which is inconsistent with the finding of this study. [9] In this study more than three-fourth (78.7%) was from nuclear families and only 21.3% were from joint families. Another study also reported similar observations that majority (78.4%) of the respondents were from nuclear family. [10]

Regarding BMI, more than half (60.3%) were found to be under nourished, among them 20.3% were in grade III, 15.1% in grade II & 24.9% in grade I under nutrition. These findings are consistent with other study from Urban India 73.3% girls were under-nourished (BMI<18.5) and prevalence of chronic energy deficiency based on BMI (grade I, II and III) were 23.0%, 28.3%, and 22.2 % respectively.[4] Another study reported 50% adolescent girls were found to be underweight[11]. Other studies from India suggested 53.8% of the adolescent girls were thin (BMI≤18.5) and prevalence of chronic energy deficiency based on BMI (grade I, II and III) were 26.0%, 14.4%, and 13.4 % respectively. [12] In the present study around one third (35.2 %) were normal or well nourished, and overweight and pre- obese constitute only 3.6% and 1.0% respectively, which is very similar to the findings of another study where out of the 230 girls, none of the girls was found to be overweight or obese.[4] The similar finding was also reported by Pratibha et al suggested none of the girls was found to be obese and only 3.6 % girls were overweight.[12] One more study conducted in hilly regions of Bangladesh by Mosarrof et al reported 35 % were normal and 8.33% are overweight and 6.67% are obese. The Body mass index indicator is based on body weight and height, while age is not included in its measurement. In contrast to the findings of this study, Shahid et al found that 20% of the girls are underweight (BMI<18.5), 77% were within normal limits (BMI >18.5), and 3% were obese (BMI > 30). [13] This study also assessed the association between nutritional status and socio demographic variables of teen age girls in urban slum area.

The nutritional status of study subjects were significantly associated with age (p<0.0001) and socio economic status (p<0.0001), but other variables like religion, caste, type of family were not associated with the nutritional status of the participants (p>0.05). However in contrast with the findings of this study, Singh et al found that nutritional status of adolescent girls was significantly associated with their caste and religion (p<0.05)[9] Under-nutrition was significantly high among girls who belonged to Schedule Caste category. Under different caste categories 39.1%, 26.6% and 22% study subjects were underweight in SC, OBC and Other caste groups, respectively. Hindu girls were more vulnerable to under nutrition (27.7%) in comparison to Muslim girls (14.8%). This variation in the trend indirectly represents religion and caste

wise variability in food accessibility and dietary intake. [9] In this study, it was observed that the parentage of undernourished is decreasing as socio economic status increased. Another study also suggested significant association with stunting, underweight and socio economic indicators. [14]. Similar to this study one more study conducted in urban slums of Nashik city India Socio economic status were significantly associated with the nutritional status of adolescent girls.[15]

CONCLUSION

This study found that majority of the adolescent girls is undernourished. These findings of malnourished among adolescent girls in urban slums are quite alarming and steps need to be taken to improve their nutritional status. Therefore, nutrition education and health awareness programs for the adolescents should be implemented in urban slum areas.

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