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Original Research Article

Anthropometry based nutritional status of unmarried adolescent girls (15-19 Y) of urban Vadodara, Gujarat, India

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ABSTRACT

Background: The word 'adolescence' is derived from the Latin verb 'adolescere', which means "grow to maturity." The World Health Organization (WHO) defines adolescents as young people aged 10-19 years. There are about 1.2 billion adolescents, a fifth of the world's population. Nutrition is key to unlocking the potential of investment in the health of women, children and adolescents.

Materials and Methods: After obtaining necessary permission from Vadodara Mahanagar Seva Sadan 250 unmarried adolescent girls aged 15-19 years were enrolled in the study. Data on Socio-Economic background (SES) for enrolled girls' families, Weight and Height was collected using pre-tested semi structured questionnaire. Thinness was assessed using age and sex specific WHO cut-offs for BMI for age (5-19Y). Stunting was identified using WHO cut-offs for Height for age criteria.

Findings: Mean age of the adolescent girls was 16.3 years. 62% of the adolescent girls were attending school. 70% of adolescent girls were belonging to reserve category (SC/ST/OBC). It was found that 15.2 % and 6.4% of the girls were moderately and severely thin respectively. Only 13.2 % adolescent girls had normal BMI for age. Prevalence of stunting was 80.8%.

Conclusion : Thinness and stunting in unmarried adolescent girls (15-19 years) of urban area is a cause of concern.

1. Introduction

The word 'adolescence' is derived from the Latin verb '*adolescere*', which means "grow to maturity." Adolescence is a grey area in the spectrum of life falling between childhood and adulthood. It is an age of transition when an individual experiences rapid growth and development, both physical and psychological and changes from being a child to an adult.

The World Health Organization (WHO) defines adolescents as young people aged 10-19 years. Four out of five adolescents live in developing countries, the vast majority of adolescents (90%) live in low- or middle-income countries. Some 1.2 billion adolescents (10–19 years old) today make up 18 per cent of the world's Population. More than half of all adolescents live in Asia. In absolute numbers, India is home to more adolescents – around 243 million – than any other country. It is followed by China, with around 200 million adolescents. The adolescent population of either of these countries' dwarfs that of any other country.[1] According to WHO (2002) number of world's adolescent population, between 10 to 19 years of age, is 1200 million, and out of which 19% faces a series of nutritional challenges. Such nutritional challenges not only affect their growth and development but also their livelihood. Nevertheless, the adolescent population remains largely neglected, as they seem difficult to measure, and

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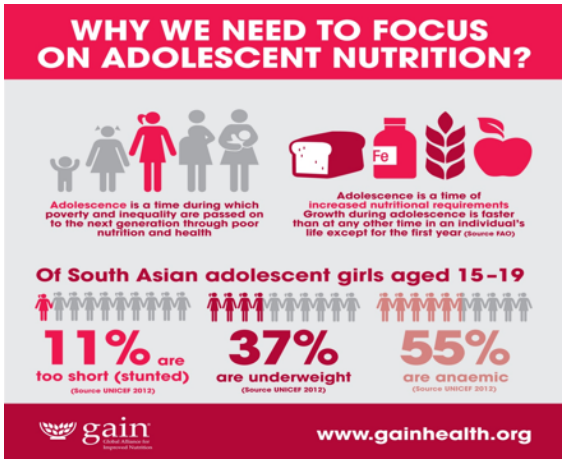
hard to reach, in which the need of adolescent girls in particular are often ignored.[2] As per UNICEF (2012) the prevalence of underweight among 15-19 years old in some countries is very high. In India 47% of adolescent girls are underweight.[1]

Dual burden of malnutrition is a cause of concern among adolescents in low- and middle-income countries. Nearly 50 per cent of adolescent girls aged 15–19 in India are underweight, with a body mass index of less than 18.5, and more than one quarter are underweigh in 10 other countries. Such undernutrition renders adolescents vulnerable to disease and early death and has lifelong health consequences. In adolescent mothers, undernutrition is related to slow fetal growth and low birth weight. From the data base of NFHS 3 and NFHS 4, it was highlighted that prevalence of chronic energy deficiency (CED) in 15-49 years of decreased from NFHS 3 to NFHS 4 but still it is 22.9%. It was found to be higher in rural women as compared to urban women.[3]

RSOC (2013-14) also highlighted the dual burden of malnutrition among adolescent girls. it showed that 44 percent of the adolescent girls aged 10-18 were severely thin and additional 19 percent were moderately thin or under-nourished, so in all 63 percent of the girls were thin or undernourished. A small proportion of the girls were either overweight 2% or obese 1%. Only about one-third 34% of the adolescent girls were neither underweight nor overweight. The percentage of undernutrition was relatively higher among girls from rural areas 64% than those from the urban areas 59%.[4,5] NFHS 5 Gujarat factsheet revealed that in Gujarat also nutritional status of women in reproductive age group is also a care of concern. Twenty five percent women (15-49 years) showed CED and proportion of such women was higher in rural area as compare to urban area.[5–10]

According to RSOC (2013-14) Gujarat data, 52.6% of girls in the age range of 15-18 showed chronic energy deficient.[4]



2. Materials and Methods

Under Vadodara Mahanagar Seva Sadan there are four zones i.e. East, West, North and South Zones. Out of four zones one zone i.e. East Zone was purposively selected and from that one UHC Sawad was Purposively selected. Under Sawad UHC there are 12 AWCs from that 7 AWCs were randomly selected after obtaining necessary permission from Vadodara Mahanagar Seva Sadan. The study was approved under the Department of Medical Ethics Committee (No. IECHR/2017/18). The Maharaja Sayaji Rao University of Baroda,Vadodara.

School going (195) and out of school (95) unmarried adolescent girls who gave written consent and Assent were enrolled for the study. Data on Socio-Economic background (SES) for enrolled girls families, Weight, Height was collected using pre- tested semi structure questionnaire. Nutritional status was assessed in terms of thinness and stunting using WHO growth standard 2007.

2.1. Criteria for identification of anthropometry based nutritional status

1. Thinness (BAZ>-2SD to <-3SD)
2. Stunting(HAZ>-2SD to <-3SD)

Thinness is defined as low BMI for age(5-19Y). Stunting is defined as low height for age.

3. Results

Socio economic background of the enrolled unmarried adolescent girls

In all 250 unmarried adolescent girls in the age of 15-19 years were enrolled for the study**.** General information like age of AGs, education, occupation, religion, income level and type of family was elicited from 250 enrolled girls for the study. Highlights of the socio-economic profile of girls is presented in Table 1.

It was found that mean age of girls was 16.3±1.25 years. Nearly 51 % of the adolescent girls had studied up to secondary level. With regards to occupation of the adolescent girls, 13.2% of the girls were only engaged in earning. 62% of the adolescent girls were attending school. Almost all the subjects were Hindu (99.2%). Seventy percentage of the enrolled girls were from reserved category like SC/ST/OBC. 41.2% enrolled girls belonged to BPL category. Nearly 46% of the families had monthly family income in the range of Rs.6000-10000. Seventy-five percentage of the families were nuclear and average family size of the family was 5.4.

From total 250 adolescent girls, 62% were school-going and 38.0% were out of school. Eighty -seven percentage of the OSG had studied up to Primary/Secondary level.Table 2.

Table 1: Socio-demographic profile of the adolescent girls.

Characteristics	N (250)	%
AGE (years)		
15	108	43.2
16	50	20
17	50	20
18	38	15.2
19	4	1.6
Mean age = 16.3		
Education Level		
Illiterate	5	2.0
Primary	50	20.0
Secondary	129	51.6
Higher secondary	47	18.8
Collage	19	7.6
Occupation of Adolescent Girls		
Engaged in earning	33	13.2
Not engaged in earning	217	86.8
Religion		
Hindu	246	99.3
Muslim	2	0.8
Cast		
General	72	28.8
SC	55	22.0
ST	50	20.0
OBC	73	29.2
Economic Status		
APL	147	58.9
BPL	103	41.2
Income		
<3000	4	1.6
3000-6000	68	27.2
6000-10000	115	46.0
>10000	63	25.2
Type of Family		
Nuclear	187	74.8
Joint	29	11.6
Extended	34	13.6
Family Size		
<4	69	27.6
4-8	170	68.0
>8	11	4.4
Mean family size = 5.4		

Table 2: Educational background of adolescent girls.

Category	N=250	%
School going	155	62.0
Out of school	95	38.00

Table 3: Prevalence of malnutrition (Z-scores) among school going and out of school adolescent girls (N, %)

Category	SG	OSG	Total	't' value
Thinness (BMI for age)				
Normal (Median to <-1SD)	23(14.7)	10(10.5)	33(13.2)	
Mild (>-1 to <-2SD)	63(40.6)	50(52.6)	113(45.2)	0.587
Moderate (>-2SD to <-3 SD)	25(16.1)	13(13.7)	**38(15.2)**	
Severe (>-3SD)	12(7.7)	04(4.2)	**16(6.4)**	
Stunting (Height for age)				
Normal (Median to <-1SD)	30(19.4)	18(18.9)	48 (19.2)	
Mild (>-1 to <-2SD)	88(56.8)	55 (57.9)	143 (57.2)	1.790
Moderate (>-2SD to <-3 SD)	32 (20.6)	17 (17.9)	49(19.6)	
Severe (>-3SD)	05 (3.1)	05 (5.3)	10(4.0)	

WHO Growth std. 2007 for 15-19 years girls *Values in parenthesis indicates percentage.

4. Prevalence of Thinness and Stunting

Prevalence of anthropometry based undernutrition was assessed based on WHO growth std. (2007) using BMI for age and Height for age. Data is presented in Table 3 It was found that 15.2 % and 6.4% of the girls were moderately and severely thin respectively. Moderately stunting was found to be 19.6%. Severe stunting was found in 4% of thegirls. In both indices, prevalence of moderate thinness and stunting was higher in school going girls as compared to out of school going girls.

5. Conclusion

From the findings, it can be concluded that prevalence of thinness and stunting is acause of concern for urban unmarried adolescent girls (15-19Y). Various government national programmes like RKSK, School health and wellness programm under Ayushman Bharat needs to be familiarised among adolescent girls for improving nutritional status of adolescent girls. Data from Comprehensive National nutrition Survey-CNNS (2016-18) Gujarat data also reports similar results.

6. Discussion

The findings of present study revealed that there is acause of concern for thinness and stunting among adolescent girls. only 13.2% of girls had normal BMI for their age and 19.2% of girls had normal cutoffs for Height for age. School girls were slightly better as compared to out of school girls. Thirty eight % of girls (15-19Y) are found to be out of school There is a need to counsel these girls for readmission in the schools under Sarve Shiksha Abhiyan.

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8. Source of Funding

None.

9. Conflict of Interest

None.

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