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Socio Demography and Nutritional Status Among Rural Urban Adolescent School Girls : A Comparative Study

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Abstract

Adolescent is person aged between 10-19 years. Adolescents are the future of the nation, in terms of demography and economics. Among adolescents, girls are more nutritionally vulnerable due to various adverse socio-cultural and socio-economic reasons. Hence, a cross-sectional comparative study was conducted among 200 adolescent girls (12–15 years), of government schools located at rural and urban areas of Bengaluru district to study socio demography and nutritional status. Structured questionnaire was used to collect data on various socio demographic variables. Anthropometric measurements such as height, weight and mid upper arm circumference (MUAC) was measured, indices were derived and compared with standards. Data was statistically analyzed. Socio demographic background revealed, majority (77%) of rural and 68 per cent urban respondents were belonged to upper lower socio economic class. The mean height, weight, body mass index, mid upper arm circumference (MUAC) of the urban adolescent girls was high compared to rural adolescent girls. BMI classification revealed 37 per cent of rural respondents to be underweight where as in urban it was 22 per cent. Statistically there was no association between BMI and socio economic status of urban respondents (χ 2= 4.08NS) but it was significantly associated with rural respondents (χ 2=49.77*).The reason for poor nutrition of respondents was due to large families with uneducated or unskilled parents from lower-income households.

Keywords: Adolescence, Anthropometry, RDA, Nutritional status

Adolescence is the period of life spanning the ages between 10-19 years (WHO-2012). Adolescence is a vulnerable period in human lifecycle where nutritional requirements increases due to the adolescent growth spurt (Ghai *et al.,* 2005). Among adolescents, girls are more nutritionally vulnerable, particularly in developing countries including India, due to various adverse socio-cultural and socio-economic reasons. Socioeconomic status (SES) is a composite measure of an individual's economic and sociological standing. It is a complex assessment measured in a variety of ways that account for a person's work experience and economic and social position in relation to others, based on income, education and occupation. Socioeconomic status has been a powerful detriment of health, generally wealthy people tend to be in better health than people of poorer status. The nutritional status of individual is usually a result of multiple factors that interact with each other at different level (Jelliffe, 1966). Assessment of the nutritional status aids in assessing the prevalence of nutritional disorders and planning corrective measures. Nutritional status during adolescence is an important determinant of health outcome and condition of the human body as influenced by intake of nutrients. Nutritional status was assessed by anthropometric measurements, which denotes the pattern of growth and physical status of the human body at various ages and levels of nutritional status. In India poor nutrition is more common among rural areas and large families with uneducated or unskilled parents from lower-income households. Urban girls are influenced by level of socio-economic status and consumption of ready-made foods, industrially processed foods, saturated fat, salt and sugar which are low in vitamins, minerals and fiber. The nutritional transition resulting in a double burden over nutrition of some population groups, along with the existing high proportion of undernutrition in others. Hence, it is necessary to study nutritional status and its associated factors.

Material and Methods

The cross sectional comparative study was carried out in purposively selected Government schools located in Rural and Urban areas of Bangalore district. Data was collected based on sample survey method using predesigned semi structured questionnaire by interviewing the respondents. A total of 200 adolescent girls (100 from rural and 100 from urban) in the age group of 12-15 years studying in 7th, 8th and 9th standard were randomly selected. General information such as age, class studying, religion, family type, family size, parents' occupation, education and family monthly income were elicited from the subjects. The respondent's parents' education and occupation were grouped into education and occupation categories based on scores (Modified Kuppuswamy socioeconomic scale updated for the year 2019 by Saleem 2019). The families were classified into upper, upper middle, middle and low socio economic status based on Socioeconomic scoring developed by (Modified Kuppuswamy socioeconomic scale updated for the year 2019 by Saleem 2019). This scale includes the variables like education, occupation and income of the earner. Height, weight and MUAC was measured and compared with standards. Body Mass Index (BMI) is reliable indicator of nutritional status and indicates both fat and lean tissues; it was calculated and distributed according to WHO classification. Data collected from the survey was consolidated and analyzed for statistical tests by using Percentages, Mean, Standard Deviation, Chi square test, Standard 't' test. The data was supported by Microsoft excel (2010) and analyzed through SPSS (statistical package for the social sciences) software 21.

Results and Discussion

Socio demographic profile of respondents

The socio-demography is defined as characteristics of the population includes age, gender, ethnicity, education level, income etc. The information elicited by adolescent girls with regard to age, class studying, type of family, religion, family size, occupation and income of the parents across the rural-urban areas is as presented in Table 1.

Majority (49%) of rural and urban (32%) adolescent girls belong to age group 13 and 12 years. The difference in respondents belonging to different age group between rural and urban showed a statistically significant difference ($\chi 2=22.15^{**}$). It was observed that majority (70%) of rural respondents belonged to joint family, whereas it was only 13 per cent among urban respondents. This was statistically highly significant ($\chi 2=80.90^{**}$). The findings are contradictory to that reported by Kansagara *et al*., 2013 in a study on dietary intake among school going adolescent girls in rural and urban area of Jamnagar district. However it is in line with the findings reported by Aswathi *et al*., 2015 where majority of the urban adolescent girls were from nuclear family. Majority (88.55%) of respondents were Hindus followed by Muslims and Christians. Similar observation is recorded by Nair *et al*., 2017. Among the subjects selected for the study majority of the rural and urban were from the family comprising 4-6 members. However in rural 38 per cent were from the family size (7-9), followed by 17 per cent with more than 9 members and only two per cent with three members. Whereas in rural only four per cent were from family size 7-9 and three percent with less than five members. The difference in family size of the respondents between rural and urban was found to be statistically significant ($\chi 2=63.12^{**}$). Similar observation was reported by Bhattacharya and Baruva (2013) and Meda and Kamalaja (2017). Data on father's education revealed irrespective of rural (56%) or urban (45%) majority of them were illiterate followed by primary school (23.5%), high school (15.5%) and middle school(10.5%), respectively. None of the respondent's father's education was above high school and this difference in father's education between rural and urban respondents was found to be statistically highly significant ($\chi 2=10.68^{**}$).Similar findings was reported by Fatima *et al*., 2018 in a study on Assessment of nutritional status and its related factors among female adolescent girls. Contradictory findings was reported by Sarkar *et al.,* (2015) and Patanwar and Sharma (2013). 37 per cent father's of rural respondents were Skilled agricultural and fishery workers, followed by 29 per cent plant and machine operators, Whereas

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TABLE 1

Socio demographic profile of respondents

n=200

Variables	Residence			χ^2 value
	R	U	Total	
	%	%	%	
Age (years)				
12	16	32	24	22.15 **
13	49	25	37	
14	13	30	21.5	
15	22	13	17.5	
Class studying				
7th	20	33	26.5	4.39 NS
8th	47	38	42.5	
9th	33	29	31	
Type of family				
Joint	70	13	41.5	80.90 **
Nuclear	24	87	55.5	
Extended	6	0	3	
Religion				
Hindu	93	84	88.5	4.22 NS
Muslim	4	11	7.5	
Christian	3	5	4	
Family size(number of members)				
<3	2	3	2.5	63.12 **
4-6	43	93	68	
7-9	38	4	21	
>9	17	-	8.5	
Father's education				
Illiterate	56	45	50.5	10.68 **
Primary school certificate	28	19	23.5	
Middle school certificate	6	15	10.5	
High school certificate	10	21	15.5	
Intermediate or diploma	-	-	-	
Graduate	-	-	-	
Profession or honors	-	-	-	
Father's occupation				
Legislators, senior officials and manager	-	-	-	64.38 **
Professionals	-	-	-	
Technicians and associate professionals	-	-	-	
Clerks	-	3	15	
Skilled worker and shop and market sales worker	14	50	32	
Skilled agricultural and fishery workers	37	2	19.5	
Craft and related trade workers	-	8	4	
Plant and machine operators and assemblers	29	21	25	
Elementary occupation	20	16	18	
Unemployed	-	-	-	
Mother's education				
Illiterate	34	52	43	18.25 **
Primary school certificate	48	25	36.5	
Middle school certificate	8	17	12.5	
High school certificate	6	6	6	
Intermediate or diploma	4	-	2	
Graduate	-	-	-	
Profession or honors	-	-	-	
Mother's occupation				
Legislators, senior officials and manager	-	-	-	
Professionals	-	-	-	
Technicians and associate professionals	-	-	-	
Clerks	-	-	-	
Skilled worker and shop and market sales worker	-	11	5.5	118.38 **
Skilled agricultural and ishery workers	-	-	-	
Craft and related trade workers	-	5	2.5	
Plant and machine operators and assemblers	-	-	-	
Elementary occupation	22	36	29	
Unemployed	78	48	63	
Monthly income of family (Rs.)				
>78,063	-	-	-	
39,033-78,062	-	-	-	
29,200-39,032	1	5	3	
19,516-29,199	8	14	11	6.65 NS
11,708-19,515	47	50	48.5	
3,908-11,707	44	31	37.5	
<3,907	-	-	-	

**Significant at 1%,
NS: Non-significant, R-rural, U-urban

among the urban respondents majority (50%) were skilled workers. This difference between rural and urban adolescent girls was found to be statistically highly significant ($\chi 2=64.38^{**}$). Similar findings are reported in the study by Deepa S. Patil and Vijayalakshmi, 2015 where majority were depends on agriculture. Contradictory to present findings is reported by Patanwar and Sharma (2013). Only 4 per cent of rural respondents mother's intermediate education. However it is interesting to note that majority of urban (52%) respondents mother's were illiterates followed by primary (25%), middle (17%), high school (6%) and none of them were intermediate or above. This difference in mothers education between rural and urban respondents was highly significant ($\chi 2=18.25^{**}$). Similar finding was observed in a study to assess the impact of nutrition education on knowledge, attitude, practices and beliefs of adolescent girls belonging to rural and urban area of district Kurukshetra by GurpreetArora and Kochar *et al*, 2016. Majority of the rural (78%) and urban (48%), adolescent girls mother's were unemployed.Chi square value ($\chi 2=118.3842^{**}$) indicated statistically highly significant difference. Similar observation is reported by Punshi and Jambhulkar (2018), Patanawar and sharma (2013) where majority mothers were housewive's.

Data on monthly income of family revealed that majority (48.5%) had income of Rs.11,708 - 19,515 followed by 37.5 per cent with income between Rs.3,908 - 11,707.The trend was similar irrespective of rural or urban which is found to be statistically non significant ($\chi 2=6.64$NS). The findings are contradictory to that reported by Punshi and Jambhulkar (2018) in which the family income was higher than the observation in the present study.

Socioeconomic classification of the respondents is as presented in Table 2. Based on the modified Kuppuswamy's socioeconomic status class, majority (77%) rural and urban (68%) respondents belong to upper lower socio economic class followed, by 23 per cent and 31 per cent to lower middle class. However one per cent of urban respondents belonged to upper middle class. Chi square value ($\chi 2=2.74$NS) indicated statistically non significant difference. The results slightly differ to that reported by Kanasagar *et al*. (2013). Contradictory to that reported by Gujan (2018) where majority of the adolescents belonged to socioeconomic status (SES) III followed by SES II, SES I and SES IV, respectively. But similar to that reported by Bhattacharyya and Baruva (2013) in study on nutritional status and factors affecting nutrition among adolescent girls of urban slums of Assam, where majority belong to SES IV, followed by SES III, SES II and SES I, respectively.

TABLE 2

Classification of respondents based on socioeconomic class n=200

Socio economic class	rural (%)	urban (%)
Upper class(II)	-	-
Upper middle class(II)	-	1
Lower middle class (III)	23	31
Upper lower (IV)	77	68
Lower class (V)	-	-
χ 2 value	2.74NS	

NS: Non-significant

Distribution of adolescent girls based on body mass index (BMI) is as presented in Table 3. Majority (54%) rural and 62 per cent of urban respondents were normal followed by 37 and 22 per cent underweight, 7 and 11 per cent over weight and 2 and 5 per cent

TABLE 3

Distribution of adolescent girls based on BMI classification n=200

Indices	Rural	Urban
	%	%
Under weight (<5th percentile)	37	22
Normal weight (5th-84th percentile)	54	62
Over weight (85th -94th percentile)	7	11
Obese (95th percentile)	2	5
χ 2 value	6.54NS	

NS: Non-significant

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TABLE 4

Association of BMI with socio economic status n=200

BMI classification	Socio economic class									
	Rural					Urban				
	Upper class	Upper middle	Lower middle	Upper lower	Lower	Upper class	Upper middle	Lower middle	Upper lower	Lower
Underweight	-	-	5	32	-	-	1	7	14	-
Normal weight	-	-	16	38	-	-	0	18	44	-
Over weight	-	-	2	5	-	-	0	4	7	-
Obese	-	-	-	2	-	-	0	2	3	-
χ 2 value	49.77*					4.08NS				

*Significant at 5% level; NS: Non-significant

obese, respectively. However this difference between rural and urban is statistically non significant (χ2=6.54 NS).

Similar observations was reported by Khwairakpam Bembem *et al.,* 2012, in a cross sectional study on adolescent school girls where majority were normal followed by under weight, over weight and obese respondents. However Rani *et al*. (2013) reported inverse findings in a study to assess impact of nutritional knowledge status of adolescents on their health.

The high prevalence of undernutrition among rural girls could be attributed to social and economic disparities. But better nutritional status in urban girls may be attributed to the impact of better living conditions, medical facilities as well as early biological maturation. Consumption of non staple food items such as meat, egg, fruits, leafy vegetables were not frequent and less than RDA which might be the reason for the respondents lower intake protein, calcium, vitamin A and other micro nutrients worsening the nutritional status.

Association of BMI with socio economic status is as presented in the Table 4. The higher percentage of girls belonging to upper lower class were found to have normal weight irrespective of rural or urban (38% and 44%) and similar trend was also observed among lower middle economic class (16 % and 18%). Statistically there was no association between BMI had socio economic status of urban respondents (χ 2= 4.08NS). Similar findings is reported by Gunjan *et al*. (2018) in a epidemiological study of malnutrition and its associated factors in School going Adolescents, where Statistically non significant association found between socio economic status and nutritional status of respondents was observed. Significant association between lower social class with under nutrition was reported by Pal *et al*. (2017) which is contradictory to present findings.

Study revealed that most of the adolescent girls belonged to lower socioeconomic class. Under nutrition was high (37%) among rural compared to urban (22 %). The reason for poor nutrition of respondents was due to large families with uneducated or unskilled parents from lower-income households. The findings retriate the low social and economic power among adolescent girls which adversely affect nutritional status with less availability, affordability and accessability to healthy foods and medical facilities, if the poor nutritional status is not corrected it adversely effect their reproductive out come in future for which intervention strategies to improve the dietary intake of adolescent are needed so that their nutrient requirement is met.

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