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Perceived health discomfort among adolescent girls and related factors in an urban area, South India

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Abstract:

INTRODUCTION: Adolescence is a period of life that is a bridge between childhood and adulthood. India has the world's largest adolescent girl's population, and adolescent girls are an important vulnerable group of population. Perceived health is a predictor of morbidity and mortality in adults and has been an important marker of the health status in population health studies for decades. The aim of the study was to describe adolescent's perception of health and association between some factors such as nutrition status, socioeconomic status (SES), and health status. As their perception of health discomfort affects their health behavior and self-care, therefore, their health status is an important matter to discuss.

MATERIALS AND METHODS: A cross-sectional study was conducted in urban areas from a major city in South India. Six hundred and fifty adolescent female students aged 10–19 years formed the study population. Standardized self-reporting questionnaires were used to obtain relevant data regarding demographic features, SES, and health status. BMI calculated for each individual. The data were analyzed using SPSS version 16.

RESULTS: About 83.3% of participants ranked their health status as good to excellent. A majority of the girls had one or more problems related to their menstrual cycles. The most common occurring problem was headache (45.3%). 47.8% of participants exhibited symptoms of mild insomnia. Strong significant association between nutritional status and SES was found. Higher percentage of undernourished adolescents belonged to low SES.

CONCLUSION: Adolescents are expected to enjoy good health, but this does not seem to be the case in the developing countries like India, where poverty, malnutrition, and repeated infection are rampant. Majority of the problems such as healthy nutrition and self-care can be solved by community-based programs, health education, and food fortification.

Keywords:

Adolescent, health, India

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Introduction

Adolescence refers more broadly to the phase of human development encompassing the transition from childhood to adulthood. In terms of age, it is the period of life that is extended from 10 to 19 years, which includes pubertal development also. This period is very crucial since these are the formative years in the life of an individual when major physical, psychological, and behavioral changes take place.[1]

This period of life is a bridge between childhood and adulthood. India has the largest population of adolescents in the world being home to 243 million individuals aged 10–19 years.[2] This population comprising nearly one-fifth (22%) of India's total population.[3] The country also has the world's largest adolescent girl population (20%).[4]

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Adolescent girls are an important vulnerable group of population. There are reports of a greater risk of nutritional problems than adolescent boys, including anemia and underweight. In addition, over half of girls aged 15–19 (56%) are anemic.[5]

Adolescents have the lowest mortality among the different age groups and have therefore received low priority. However, recent studies have shown that the prevalence of malnutrition and anemia is high in these age groups.[6,7] Various baseline surveys also revealed that the health and nutritional status in adolescent girls is at suboptimal level.[8]

The present study was planned with an objective to investigate the health and nutritional status among adolescent girls from urban area and demographic correlates with their nutritional status.

Materials and Methods

The present study was a cross-sectional design conducted in urban areas from a major city in South India. Six hundred and fifty adolescent female students aged 10–19 years formed the study population. They were asked to complete the anonymous questionnaire distributed. The aim of the study and the contents of the questionnaire were explained to each participant, and voluntary participation was requested. The questionnaire included data regarding demographic features such as chronological age, health status, family details relating to family size and type, parent's education, and occupation. Information about the possession of costly goods such as vehicles, computer, TV, DVD, refrigerator, and phones as well as house type were obtained and considered for classifying socioeconomic status (SES) along with parents' education and occupation. Each of these variables was designated a score, and the sum of total score was equally distributed into 3 divisions, the lowest to highest divisions were labeled as low and highest is high and in between was designated as middle SES.

Since the importance of body mass index (BMI) as an index of nutritional assessment has emphasized, therefore, all the participants were measured for linear height and body weight. Height measuring scale was used to measure height to the nearest of 0.1 cm. Body weight was measured using a battery operated digital balance (Glan Electronic Scale); the balance was checked for its accuracy each time before use; measurements were made to the nearest of 0.1 kg. This information was used to compute BMI.

A consent letter based on participant's willingness and interest to be in the study was obtained. The research protocol was approved by the Ethical Committee, University of Mysore (IHEC-UOM No. 31).

The data were analyzed using SPSS for Windows version 16(SPSS, Inc., Chicago, IL, USA). Descriptive statistics was used to determine mean and percentages. The categorical data were analyzed using Chi-square, correlation, and regression analyses.

Results

Subjective information is presented in Table 1; the mean age of participants was 16.2 ± 2.1 years and varied between 11 and 19 years. The majority of participants practiced Hinduism (81.5%). Higher proportion of fathers' education level was graduation; however, higher percentage of mothers was educated to PUC level and was not in higher education. More than 55% were from families with less than five members. About 50.2% of the participants belonged to middle of SES (50.2%) and only 9.4% were from high SES.

Table 2 presents the general health profile of the selected participants. As it can be seen from Table 2, a total of 83.3% participants ranked their health status as good to excellent. Nearly, 13.4% of the participants mentioned to have experienced sickness frequently and more frequently. It was considered important to investigate

Table 1: Sociodemographic profile of the selected population

Variables	*n* (%)
Age	
Early adolescence	352 (54.4)
Late adolescence	295 (45.6)
Religion	
Hindu	525 (81.5)
Muslim	96 (14.9)
Christian	11 (1.7)
Other	12 (1.9)
Father's education	
Illiterate	42 (7.4)
Up to 8th standard	90 (15.8)
9th standard to PUC	186 (32.7)
Graduation	229 (40.3)
Professionals	21 (3.7)
Mother's education	
Illiterate	68 (11.6)
Up to 8th standard	105 (17.9)
9th standard to PUC	276 (46.9)
Graduation	134 (22.8)
Professionals	5 (0.9)
Family size	
≤4	358 (55.3)
5-8	279 (43.1)
>8	10 (1.5)
SES	
Low	261 (40.3)
Middle	325 (50.2)
High	61 (9.4)

SES = Socioeconomic status

Table 2: General health status and practices of the participants

General health information (experienced in last 6 months)	*n* (%)
Overall health status – self-rating	
Very poor	5 (0.8)
Poor	37 (6)
Satisfactory	171 (27.5)
Good	304 (49)
Very good	72 (11.6)
Excellent	32 (5.2)
Commonly occurring problems	
Headache	292 (45.3)
Cold and cough	192 (29.7)
Stomach ache	205 (31.7)
Body ache	101 (15.6)
Fever	104 (16.1)
Tooth problem	59 (9.1)
Nausea and vomiting, ear infection, diarrhea	0 (0)
Menstrual problems	
Irregularity	130 (20.3)
Dysmenorrhea	441 (68.6)
Heavy blood loss	217 (33.9)
Anemia	73 (11.4)
Falling sick frequently*	
More frequently	83 (13.4)
Sometimes	83 (13.4)
Blood loss due to stomach or intestinal problem	
Yes	39 (6)
No	607 (94)
Consulted doctor for health problems*	
Yes	468 (73.1)
Not answered	7 (1.1)
Self-medication	
Yes	126 (20.1)
Not answered	20 (3.1)
Sleep behavior	
Insomnia	
Yes	
Mild	264 (47.8)
Severe	45 (7.5)
Satisfactory	323 (49.9)
Poor	15 (2.3)
Exercise minimum 3 times/week*	
Regular	78 (12.2)
Sometimes	130 (20.3)

*Difference in total corresponds

if there were health problems with bleeding episodes. About 6% of participants claimed to have blood loss due to stomach or intestinal problems.

Consulting doctors when sick is essential information about the health management since self-medication is known to have serious health consequences. Our results indicate that nearly 73.1% of the participants consulted doctors while 20.1% mentioned to practice self-medication. A majority of the girls had one or more health problems. Most prevalent health problem was headache (45.3%). A majority of the girls had one or more problems related to their menstrual cycles. Dysmenorrhea (68.6%) was the most common problem reported to be associated with menstruation by the study participants. Nearly, 34% of the participants reported heavy blood loss during menstruation. About 20.3% mentioned that they have irregular periods.

Information about sleep behavior in general and occurrence of insomnia in particular was elicited from the participants. It is discouraging to note that 49.9% of participants claimed to have satisfactory sleep. However, it is of concern that 47.8% of participants exhibited symptoms of mild insomnia. The pattern of exercise followed by the participants was also obtained. It is evident from Table 2 that small percentage of the participants practiced regular exercise and 20.3% of participants claimed to exercise sometimes.

We found a strong significant association between period of adolescence and BMI.

Mean BMI among adolescents was found to be 19.4 ± 3.3 years. Mean BMI for the group in early and late adolescence period was 18.7 ± 3.1 and 20.3 ± 3.4kg/m^2, respectively. In general, the mean BMI increased with increasing age. This indicates the high prevalence of undernourishment among adolescent girls of Mysore[6] individuals. Malnutrition is of common occurrence in populations, the two major forms of malnutrition, i.e. under- and over-nutrition coexist in populations while their proportions vary due to the population characteristics. Table 3 presents the participants' BMI status. Higher percentage of adolescents was underweight (47%). The girls suffering from chronic energy deficiency grade I, II, and III were 23.2%, 12.2%, and 11.6%, respectively. A perusal of the table suggests that participants older than 15 years had higher BMI and were heavier than their younger counterparts. It is known that participants during their adolescence have low body weight and therefore lower BMIs. As the table shows higher proportion of participants in early adolescence were underweight (66.4%) and higher percentage of overweight and obese participants belonged to late adolescence period (71.1%). According to the guidelines by the Government of India (Indian Council of Medical Research) as per the diagnostic cutoff values, 47% were found to be undernourished while 12.2% were found to be overweight and obese.[9]

Table 4 presents the association between family characteristics and BMI. We found a significant association between father's education and BMI. The highest prevalence of underweight girls was belonged to a family in which fathers were illiterate (59.5%).

Table 3: Nutritional status among the selected population

Variables	*n* (%)	Adolescence period		χ^2
		Early adolescence	Late adolescence	
BMI according to WHO*				
<18.5	304 (47)	202 (66.4)	102 (33.6)	38.124***
18.5-24.99	298 (46)	137 (46.0)	161 (54.0)	
≥25	45 (7)	13 (28.9)	32 (71.1)	
BMI according to proposed Asian criteria**				
<16	75 (11.6)	57 (76.0)	18 (24.0)	43.748***
16-16.9	79 (12.2)	56 (70.9)	23 (29.1)	
17-18.49	150 (23.2)	89 (59.3)	61 (40.7)	
18.5-23.5	264 (40.8)	123 (46.6)	141 (53.4)	
>23.5	79 (12.2)	27 (34.2)	52 (65.8)	

*WHO the international classification of underweight, overweight, and obesity according to BMI 2004. **Indian Council of Medical Research, 2009. BMI = Body mass index, WHO = World Health Organization ***P=0.000

Table 4: Association between family characteristics and body mass index among selected population

Family characteristics	BMI			χ^2
	Underweight, *n* (%)	Normal weight, *n* (%)	Overweight and obese, *n* (%)	
Father's education				
Illiterate	25 (59.5)	15 (35.7)	2 (4.8)	17.054**
Up to 8th standard	47 (52.2)	39 (43.3)	4 (4.5)	
9th standard to PUC	91 (48.9)	87 (46.8)	8 (4.3)	
Graduation and professional	94 (37.6)	129 (51.6)	27 (10.8)	
Mother's education				
Illiterate	40 (58.8)	25 (36.8)	3 (4.4)	12.525 (NS)
Up to 8th standard	50 (47.6)	50 (47.6)	5 (4.8)	
9th standard to PUC	127 (46.0)	131 (47.5)	18 (6.5)	
Graduation and professional	50 (36.0)	74 (53.2)	15 (10.8)	
Family size				
≤4	157 (43.9)	165 (46.1)	36 (10.0)	12.752**
≥5	147 (50.9)	133 (46.0)	9 (3.1)	
Family type				
Joint	4 (21.1)	14 (73.7)	1 (5.2)	8.362 (NS)
Nuclear	263 (47.3)	251 (45.1)	42 (7.6)	
Extended	35 (53.0)	29 (43.9)	2 (3.1)	
SES				
Low	142 (54.4)	106 (40.6)	13 (5.0)	30.578***
Middle	152 (46.8)	150 (46.1)	23 (7.1)	
High	10 (16.4)	42 (68.9)	9 (14.7)	

BMI = Body mass index, NS = Not significant, SES = Socioeconomic status ***P=0.000 **P=0.009

However, there was no significant association between mother's education and BMI. The importance of educational level for higher work position and higher income is a certainty. Interestingly, higher percentage of underweight participants was belonged to families with five or more members. On the other hand, higher percentage of overweight participants was related to small families. We found negative association between family size and BMI.

We found strong significant association between nutritional status and SES. As it is evident from the table, higher percentage of undernourished adolescents belonged to low SES; however, higher percentage of over-nourished girls was from high socioeconomic group.

Discussion

Adolescence typically marks a healthy stage in a person's life, as evidenced by mortality rates. While mortality among adolescents and young adults remains relatively low in India, there is a wide range of health issues specific to this age group that requires targeted prevention efforts.[10]

Anemia among the female population is a major public health problem in India. As reported by some studies, anemia probably could be due to an early onset of menarche and poor quality of diet consumed from early childhood.

In the present study, although we did not perform any blood analysis, 11.4% of the participants mentioned that

they were diagnosed as anemic. Anemia was found to be a widespread nutritional problem, and its prevalence ranged from 32% to 55%.[11] However, in urban areas, 93.5% of adolescent girls were found to be anemic.[12]

About 68.6% of the participants had primary dysmenorrhea. Our observation is consistent with previous studies reporting dysmenorrhea occurrence between 45% and 85% from India and other countries.[13-17] Nearly, 20.3% had irregular menstruation, Patil *et al*. found almost same frequency of irregular menses (16.9%) among adolescents in Maharashtra.[1]

About 9.1% of participants mentioned tooth problems. However, it reported 27.1% in Wasnik *et al*. study from Andhra Pradesh.[18]

Tooth decay and periodontal disease may result from a combination of poor oral hygiene and poor eating habits. At this time, dental problems are more widespread in industrialized than developing countries. Education for dental hygiene and health and fluoridation of drinking water and toothpastes, and to a certain extent, the use of sugar substitutes, are contributing to a reduction in numbers of cavities, filled and missing teeth. However, in developing countries, dental health may deteriorate rapidly as a consequence of dietary changes.[19]

Our findings shows only 50% of adolescents have satisfactory sleep. Poor sleep and disturbed sleep is an established etiology for a variety of psychological health problems. Recent health implications have indicated serious concern about sleep quality; therefore, it is worthy to pay more attention.

The study indicates that adolescent girls are the worst sufferers of the ravages of various forms of malnutrition since the beginning of the adolescent period. Government reports mentioned more than one-third of women in India (41% rural and 23% urban) are undernourished. We found 47% undernourished in urban area which is higher than other reports.[20]

Although recent studies have shown that the prevalence of malnutrition is high in these age groups,[21,22] the poor nutritional status of adolescents, especially girls, can lead to adverse reproductive outcomes.

We found strong significant association between SES and BMI. On the other hand, the father's educational level was found to be associated with the participant's BMI. It exhibits low SES is related to father's education more than mother's education because employed mothers were very rare; therefore, buying cheaper food due to economic problems and fear of running out of money to buy food may be effective on nutritional status.

A study from West Bengal showed 32.3% urban schoolgirls were in the normal range while 65.3% were overweight or obese. While in our study, it was completely different as normal weight range was 46%, and frequency of being overweight and obese was only 7%.[23]

Low SES may place individuals at risk for poorer health for a variety of reasons, such as having less access to health care, poorer living conditions, less knowledge about the negative consequences of health-compromising behaviors, and greater psychological stress.[24-26]

In contrary with studies from western countries, in India, higher BMI is belonged to higher SES and vice versa; therefore, based on such pattern, essentially it is predictable that low educated fathers have low BMI girls and it may be cause of SES class. Employed mothers were very rare; therefore, buying cheaper food due to economic problems and fear of running out of money to buy food may be effective on nutritional status.

We found higher prevalence of undernourished adolescent girls in families with five members or higher. As income per capita decreases by increasing family size, it is evident that nutritional status is highly related to SES.

Conclusion

The health and nutritional status among the adolescents was found to be low. As the problems related to menstruation are quite frequent and often result in the interruption of the daily routine of the adolescent girls, adolescents are expected to enjoy good health, but this does not seem to be the case in the developing countries like India, where poverty, malnutrition, and repeated infection are rampant.

The majority of the problems can be solved by community-based programs, health education, and food fortification.

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Conflicts of interest

There are no conflicts of interest.

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