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Original Research Article

A hospital-based cross-sectional study on health problems and the factors affecting the health of adolescent girls in rural population

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ABSTRACT

Background: Many adolescent girls die prematurely due to various preventable or treatable reasons, and many more suffer from chronic ill-health and disability. The objective of this study was to assess the nutritional status, gynaecological problems, and psychological problems of adolescent girls attending the Paediatric OPD and ward. The aim was to study the prevalence of malnutrition in adolescent girls attending paediatric OPD and ward.
Methods: A cross-sectional hospital-based study was conducted on adolescent girls attending Paediatric OPD and ward of Adichunchanagiri institute of medical sciences and research centre, B. G. Nagara from November 2019 to November 2020. A total of 374 adolescent girls (10-17 years) were enrolled. Clinical examination was done after recording their weight and height. Body Mass Index was computed.
Results: Mean age of the study participants was 13.05 years, and majority of them were from low socioeconomic status. Around 41.2% of the fathers had semi-skilled jobs, and 19.3% of the mothers had clerical jobs, shop owners, or farmers. About 71.1% of the adolescents attained menarche with a mean age of 13.2 ± 0.11 years. 62% had normal BMI, followed by 25.1% with underweight, overweight in 9.4%, and obese in 3.5% of the adolescents. Around 62% of the adolescents were normally nourished, and 38% were malnourished.
Conclusions: Socioeconomic status, occupation of mothers, family types and diet of the adolescents had a significant association with poor nutritional status. It is important to understand the need for evaluation of malnourished adolescent females and their causes to prevent chronic illness and death among them.

Keywords: Adolescent girls, Menarche, Diet, Malnutrition

INTRODUCTION

Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19 years. It is a unique human developmental stage and a crucial time for laying the strong foundations of good health. Adolescents experience rapid physical, cognitive and psychosocial growth. This affects how they feel, think, make decisions, and interact with the world around them. Despite understanding the importance of this healthy stage, there is significant death, illness, and injury in the adolescent years. Much of this are preventable or treatable. Adolescents acquire some patterns of behaviour during this phase, such as behaviour linked to their food habit, substances they use, physical activity and sexual activity, that can either safeguard their health and others too who are around them or they will put their own health at risk now and in the future.[1]

Adolescents represent around 21% of the total population of India, amongst which girls are considered to be a more vulnerable group than boys. The onset of puberty in females is menarche which indicates the transition from girlhood to womanhood. Particularly, this complex transition will be stressful for majority of the girls. The

mean age at menarche changes by population and is known to be a sensitive indicator of different characteristics of the population, including environmental conditions, nutritional status, geographical location, and magnitude of socioeconomic inequalities in society. A deviation from a woman's regular menstrual cycle is referred to as an abnormal menstrual cycle. The abnormality may occur in the total number of years of menstruation, the length or frequency of the cycle, and the length or volume of menstrual flow. Population of healthy adolescent is believed to be a social agent for change toward a healthy life style. In teenage girls, menstrual disorders are normal. Irregular, hard, and/or painful cycles are common, especially in the 1st few years after menarche. Bleeding in between periods, irregular bleeding, and abnormally heavier bleeding can occur as abnormal uterine bleeding in adolescents.[2]

Adolescent females have been presenting more than just gynaecological problems. A considerable portion of the adolescent population had been affected by psychological problems, refractive defects, eating disorders, and fluctuation in weight. Dysmenorrhea and clinical pallor have been significant presentations in menstruating adolescents. The causes cannot be limited to personal health, as there have been studies showing a lot of other social and economic associations. Apart from these causes, malnutrition has been a major prevalence in adolescent girls. At local as well as national levels, there are very little information are available on malnutrition in adolescents especially on children under five years of age. Adolescents go through significant changes in growth and developments aspects at the stage of puberty which includes fine motor skills, improved gross, physical growth as well as biological maturity. Because of the rapid biological functional changes, girls have greater nutritional requirement during this growth phase. As they are the representation of next generation parents, adolescent's nutritional status must be closely monitored.[3]

Adolescent girls must be educated about their general health, menstrual hygiene, and mental health. They should also be taught about proper diet, to identify any health issues, and how to get help if this occurs. They must be made aware of the changes occurring in their body and counselled on the ways to cope with them. The present study is taken up to help determine the prevalence of malnutrition, nutritional requirements, gynaecological problems, and psychological problems in adolescent girls. This would help assess the prevalence of various problems faced, which in turn would help in educating and counselling the girls.

METHODS

A cross-sectional hospital-based study was conducted on school-going adolescent girls (10-17 years) over a period of one year from November 2019 to November 2020 who were attending Paediatric OPD and Ward of Adichunchanagiri Institute of Medical Sciences and Research Centre, B. G. Nagara. Parents of the adolescent girls were briefed about the aim and objectives of the study, and informed written consent of the guardian was taken. Institutional Ethical Committee clearance was taken up for the conduction of the study. A total of 374 adolescent girls in the age group of 10-17 years were enrolled. The statistical software named SPSS 22.0, was used for the analysis of the data and Microsoft Word and Excel have been used to generate graphs, tables etc Adolescent girls in the age group of 10-17 years and willing to participate in the study were included. Adolescent girls aged less than 10 years and more than 17 years and girls who had any chronic illness or genetic disease were excluded from the study. After obtaining consent from parents of adolescent girls, a pre-designed proforma was provided for the study participants. The contents of the proforma were made clear to them, and how to fill it was explained in detail. The girls were subjected to clinical examination after recording their weight and height. Body mass Index (BMI) was computed using the standard formula: BMI (kg/m2) = Weight (kg)/Height2 (m2) for every girl and classified accordingly. Revised Indian academy of paediatrics 2015 growth charts for BMI for 5-18-year-old Indian Girls were used to categorize the nutritional status of the adolescent girls.

RESULTS

The age distribution showed that the majority of the adolescents were aged 14 years (21.9%), followed by 13 years (19.5%). The lowest number of participants were seen in 17 years age group (1.9%). The mean age of study participants was 13.05 years (Table 1).

Table 1: Distribution of the participants in terms of age (n=374).

Age (years)	N	%
10	19	5.1
11	66	17.6
12	60	16.0
13	73	19.5
14	82	21.9
15	45	12.0
16	22	5.9
17	7	1.9
Mean age 13.05±1.69 years		

The majority of the patients were from low socioeconomic status. The highest number of the family were seen among an upper lower-middle-class group (39.3%), followed by the lower-middle-class (31.6%), and the least number of families were of the upper class (2.7%). The family type in the study mainly was the nuclear family (89.8%), and the rest was the joint family (10.2%). The majority of the study participant's fathers were doing semi-skilled jobs (41.2%), and the majority of the mothers were doing clerical jobs, shop owners, or farmers (19.3%). The clinical examination showed that almost all the study participants had normal pulse rates (3.4%), having more than 100 beats per minute.

Table 2: Association of nutritional status and SES among adolescent girls.

Association of Nutritional status and SES	Upper class (N)	Upper Middle class (N)	Lower middle class (N)	Upper Lower middle class (N)	Lower class (N)	Chi-square test
Underweight	10	39	60	108	15	Test value 141.408 (df=8), p value <0.001
Normal	0	39	11	38	6	
Overweight and obese	0	0	47	1	0	

Table 3: Association of nutritional status between mother's occupation, family type, and diet among adolescent girls.

Parameters	Mother working (N)	Homemaker (N)	Chi-square test
Association of nutritional status and mother's occupation			
Normal	165	67	test value 9.783 (df=2) p value 0.008
Underweight	61	33	
Overweight and obese	23	25	
Association of nutritional status and family type	**Joint family (N)**	**Nuclear family (N)**	**Chi-square test**
Normal	20	212	test value 23.189 (df=2) p value <0.001
Underweight	4	90	
Overweight and obese	14	34	
Association of nutritional status and diet	**Mixed diet (N)**	**Vegetarian diet (N)**	**Chi-square test**
Normal	201	31	test value 14.639 (df=2) p value 0.001
Underweight	72	22	
Overweight and obese	48	0	

Respiratory rate was mostly between 12 to 16/min in 59.4% of the participants, and 40.6% of subjects had it between 12 to 22/min. The systolic blood pressure was less than 110 mmHg in 84.2% of the participants, and 15.8% had more than 110 mmHg. Diastolic blood pressure was in the normal range for all the subjects.

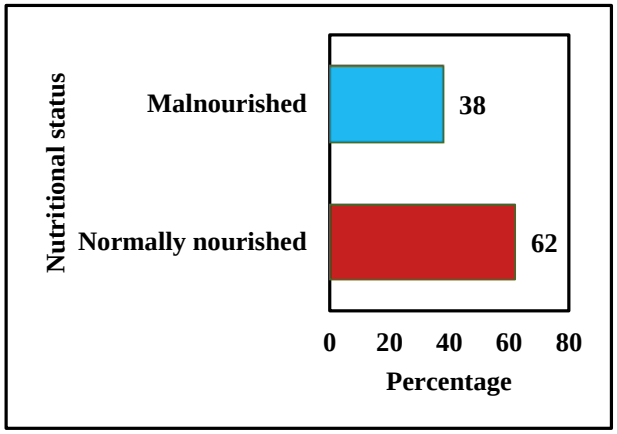

Figure 1: Distribution of the participants in terms of nutritional status.

The anthropometric measurements showed that the mean height in the adolescents were 1.276 meters, followed by a mean weight of 27.72 kg, and the mean BMI in the total study population was 17.38. The BMI interpretations showed the majority (62%) were with normal BMI, followed by 25.1% with underweight, overweight in 9.4%, and obese in 3.5% of study participants. The pallor was present in less than one-fourth of the participants (19.5%). The menstrual history showed that nearly three-fourths of the adolescents (71.1%) attained menarche with a mean age of 13.2 ± 0.11 years. The majority of subjects (64.3%) had cycles of 5 to 6 days. Just more than half of the subjects (53.5%) had irregular cycles, and nearly half of them had scanty flow (42.9%). The health problems assessment showed around one-fourth of the adolescents had refractive defects (25.1%). 10 had a headache (2.7%), and 9 adolescents had psychological problems (2.4%). Dysmenorrhea was observed in 28.6% of the study population. The majority had a mixed diet (85.8%), and the rest, 14.2% were pure vegetarians.

The nutritional status showed that most of the study participants were normally nourished (62.0%), and 38% were malnourished (Figure 1). There was a significant statistical association between Social Economic Status (SES) and nutritional status (p value <0.001) (Table 2), also between nutritional status and occupation of the mothers of the adolescents (p value=0.008). There was a significant statistical association between the nutritional status and family type, as more adolescents were underweight in a nuclear family (p value<0.001). The association between the nutritional status and diet showed that there was a significant association between the two variables, as all the overweight adolescents were in the mixed diet group (p value=0.001) (Table 3).

DISCUSSION

This study enrolled adolescent females who were aged between 10 to 17 years. The age distribution findings showed that the majority of the adolescents were in early adolescence, which is comparable to the studies by Nair et al. and Phuljhele et al.[4,5] In this study, the socioeconomic status of the patients showed that the majority of them were of low socioeconomic status. Amongst the subjects, the highest number of families belonged to an upper lower-middle-class group, and most of the family types were nuclear families, which is similar to other studies reported by Kumar et al and Patanwar et al.[6,7] In the present study, the mean age of menarche was 13.2±0.11 years and showed nearly three-fourths of the adolescents (71.1%) attained menarche. Other reported studies showed an analogous level of attaining menarche. Omidvar et al. reported a mean age of menarche was 13±1.1 years, and a comparable study by Singh et al. reported mean menarche age of 12.5±1.52 years.[8,9] A study by Tarannum et al. observed that 69.7% had attained menarche and a mean age of menarche is 12.52±1.415, which is largely comparable to our study.[10]

Dysmenorrhea was observed in 28.6% of the study population and, when compared to the other studies, showed a similar level of prevalence by Sharma et al where there were 33% dysmenorrhoea.[11] On the contrary, Jampana et al. had a higher prevalence of dysmenorrhea (71.5%) in their study.[12] In our study, clinical anaemia (pallor) was present in less than one-fourth of the adolescents (19.5%). Comparable to this, the study by Siva et al. had a prevalence of anaemia of 21%.[13] Our study had 9 adolescents with psychological problems (2.4%). In a study on adolescent girls at Trivandrum, the prevalence of severe and extreme depression was 2.6% and 0.2%, respectively, which is consistent with our study.[14] The majority of the study participants (62%) showed normal BMI, followed by 25.1% with underweight. The nutritional status showed that 62% of the patients were normally nourished, and 38% were malnourished. There was a significant statistical association between poor SES and poor nutritional status of the adolescents. In the study by Chandrashekarappa et al 36.4% of adolescents were malnourished, and the remainder had normal BMI.[15] The study by Srivastav et al had an undernourishment prevalence of 24%.[16] In our study, overweight adolescents were 9.4%, and obese were 3.5%. The study conducted by Chandrashekarappa et al reported the prevalence of overweight was 12.3% which is comparable to our study findings.[15] Furthermore, a study by Padmaja et al confirmed that socially, economically, and educationally weaker sections of the adolescent population, especially females, were more likely to be undernourished.[3] There were certain limitations that had to be faced with respect to this study. Since this was a hospital-based study and not a community-based study, the data collected would be biased. Only BMI was used to determine the nutritional status of the adolescent girls. The sample size considered in our study was small, whereas a higher sample size would have yielded a more representative result.

CONCLUSION

Common health problems noted among adolescent girls were malnutrition (38%), refractive errors (25.1%), irregular menses, psychological conditions (2.4%), overweight (9.4%) and obesity (3.5%). The factors affecting the health issues observed were low socioeconomic status, poverty, nutritional habits, occupation of their parents & rural atmosphere. Many more studies with larger sample size at community level is needed to support our observations in this study.

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