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STUDY OF NUTRITIONAL STATUS OF ADOLESCENT GIRLS RURAL AREA IN DISTRICT OF MAHARASHTRA

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ABSTRACT

Adolescence is a time of fast physical, mental, emotional, and social growth that bridges the gap between childhood and maturity. Adolescent females are particularly vulnerable to nutritional insufficiency, which has devastating effects on their growth and development. With this context in mind, researchers in one rural part of the district used anthropometry to evaluate the nutritional health of teenage girls and collect data on their social and demographic characteristics. From January to June of 2022, researchers in 10 different villages throughout a district participated in a cross-sectional study. Anthropometric measurements were taken and interviews were conducted with 583 teenage females. Microsoft Excel 2007 and SPSS version 23.0 were used to do statistical analysis of the data. Participants' mean ages were 13.952.48 years old. The majority were members of nuclear families (54.72%) and identified as Hindu (63.12%). Only 45.63 percent have completed their high school education. Girls from socioeconomic class IV made up the largest percentage (45.46 percent). In this research, 36.54 percent of participants were underweight and 48.37 percent were stunted. Adolescent females' marital status was shown to be correlated with their weight ($p=0.029$). There was a statistically significant ($p<0.05$) correlation between age, religion, and level of education and stunting. The participants' mean body mass index (BMI) was 17.662.42 kg/m2. The research found a prevalence of thinness of 18.87 percent, with significant correlations to religious affiliation, family structure, and socioeconomic position ($p<0.05$). High rates of undernourishment were found among teenage females in our research, suggesting that these young women might benefit from targeted health education and nutrition intervention programmes.

Keywords: Adolescent, Girls, Nutritional status, Rural area, Anthropometry

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INTRODUCTION

The adolescent years span the ages of 10 to 19. Both "neither children nor adults" and "growing-up years" are used to define this time period. The Latin word "adolescere," which means "to grow, to mature," is whence we get the English word "adolescence." Adolescence is a time of profound change, both physically and mentally, as the individual moves from infancy to maturity. There are now three categories used to classify adolescents:
First, those between the ages of 10 and 13, second, those between the ages of 14 and 16, and third, those between the ages of 17 and 19.

The biological, psychological, and developmental underpinnings of this categorization. Rapid physical and mental maturation characterise adolescence, making it a particularly dangerous time in the human life cycle (NNMB, 2000). There are distinctive characteristics of this era. These include fast growth and development in all spheres of life (physical, social, and mental) as well as sexual maturity.5

More over 21.4% of India's population is under the age of 18, with teenage females making up about 10% of the country's total. The transition into womanhood, known as menarche, is a difficult process that may occur during a girl's tumultuous adolescent years. Adolescents have unique challenges including but not limited to malnutrition, menstrual difficulties, leucorrhea, and mental health issues.

No one, especially in urban India, seems particularly interested in accurately estimating the prevalence of undernutrition among teenage females. In light of the dearth of literature on the topic, the present community-based cross-sectional study set out to investigate the nutritional status of adolescent girls in a district's rural areas through anthropometric measurements.

METHODS

A cross-sectional research was undertaken in 10 villages serviced by a district's Primary Health Centre from January to June of 2015. Girls aged 10 to 19 from a randomly chosen rural section of a district made up the research population. The research did not include girls aged 10-19 whose parents did not provide informed permission. Non-permanent inhabitants (defined as those who resided in the research region for 6 months or longer) and those who could not be located even after 3 attempts to do so were not included.

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One of the research on rural Indian teenage girls used a BMI for age 5th percentile according to NCHS/WHO guidelines, yielding a prevalence of inadequate nutrition of 43%.7 Cochran's formula, N= Z2 P (1-P) / E2, was used to determine the necessary number of samples (N).

where P is the estimated prevalence in the research population, E is the acceptable margin of error, here defined as 10% of prevalence, and Z is the 95% confidence range for this estimate (about 2).

N=4×43×57/4.3×4.3=530

A non-response or dropout rate of 10% was assumed. In the end, 583 teen females were randomly chosen from the population under investigation. The population of teenage girls in the research region was 1,759 in December 2021, according to data acquired from the District Health Office of the district. We used systematic random selection to choose 583 teenage females from the original pool of 1,759. We used a random number table to choose one teenage female from each village's list, and then we chose every third adolescent girl until we reached our desired sample size of 583.

Each of the chosen females had her home visited. After obtaining their parents' approval, we visited them, conducted interviews, and measured their height and weight. The information was coded numerically and placed into Microsoft Excel 2007 before being imported to SPSS 23. Statistical tests, such as the Chi-squared test, were used to examine the data.

Data Analysis

The majority of the 583 female adolescents surveyed were in the early teenage age range (47.34%), while just 18.01% were in the late adolescent age range. See Figure 1. The vast majority of teenage females were Hindu (63.12%), over half were raised in nuclear families (54.72%), and 2.40 percent were married. The majority of the women were from either socioeconomic class IV (45.46%) or V (42.02%) according to the Modified BG Prasad categorization system.

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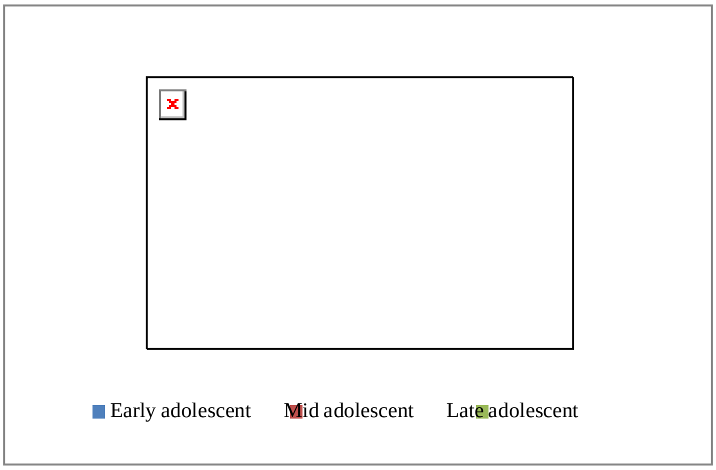

Figure 1: Distribution of adolescent girls according to their age group.

In the research, 583 teenage females had a mean weight of 37.588.33 kg. With a frequency of 36.54 percent, 213 out of 583 female participants were underweight according to the NCHS/WHO 2007 growth standards. There was a higher prevalence of underweight among late-adolescents (40.00%), Hindus (38.32%), girls from nuclear households (39.81%), the uneducated (50.00%), married women (64.29%), and those from socioeconomic class I of the modified BG Prasad categorization (50.00%). Except for married status (p=0.029), none of these demographic features of teenage females was significantly related to the frequency of underweight among them.

Adolescent girls' underweight is linked to a number of social and demographic factors, as shown in Table 1.

Variables	**Underweight**		**Total**	**Chi square, degree of freedom and p value**
	Present	**Absent**		
Age group				
Early adolescent	102 (36.95)	174 (63.05)	276 (47.34)	χ^2=1.057, df=2, p=0.590
Mid adolescent	69 (34.16)	133 (65.84)	202 (34.65)	
Late adolescent	42 (40.00)	63 (60.00)	105 (18.01)	
Religion				
Hindu	141 (38.32)	227 (61.68)	368 (63.12)	χ^2=3.645, df=3, p=0.302
Muslim	23 (28.05)	59 (71.95)	82 (14.07)	
Sikh	0 (00.00)	1 (100.00)	1 (00.17)	
Buddhist	49 (37.12)	83 (62.88)	132 (22.64)	
Type of family				

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Nuclear	127 (39.81)	192 (60.19)	319 (54.72)	
Joint	43 (34.40)	82 (65.60)	125 (21.44)	χ^2=3.603, df=2, p=0.165
Three generation	43 (30.94)	96 (69.06)	139 (23.84)	
Educational status				
Illiterate	1 (50.00)	1 (50.00)	2 (00.34)	
Primary	30 (35.71)	54 (64.29)	84 (14.40)	
Middle	69 (38.33)	111 (61.67)	180 (30.88)	χ^2=2.881, df=4, p=0.578
High school	90 (33.83)	176 (66.17)	266 (45.63)	
Intermediate	23 (45.10)	28 (54.90)	51 (08.75)	
Marital status				
Unmarried	204 (35.85)	365 (64.15)	569 (97.60)	χ^2=4.764, df=1, p=0.029
Married	9 (64.29)	5 (35.71)	14 ((02.40)	
Socio economic class				
I	3 (50.00)	3 (50.00)	6 (01.03)	
II	6 (27.27)	16 (72.73)	22 (03.77)	χ^2=9.110, df=4, p=0.058
III	17 (37.77)	28 (62.23)	45 (07.72)	
IV	82 (30.94)	183 (69.06)	265 (45.46)	
V	105 (42.86)	140 (57.14)	245 (42.02)	
Total	213 (36.54)	370 (63.46)	583 (100)	

In this analysis, stunting was defined as a height for age that was below the third percentile according to the NCHS/WHO criterion from 2007. There were 583 people in the research, and their average height was 145.039.90 cm. In this analysis, the prevalence of stunting was found to be 48.37%. There was a statistically significant (p0.05) increase in the prevalence of stunting among females in elementary school (59.52%) and among adolescents (57.60%). There was a statistically significant link between religious affiliation and childhood short stature (p=0.008). Girls from three-generational families were more likely to be stunted than girls from single-parent families or couples, although this link was not statistically significant (p>0.05). Stunting was more common as one moved up the modified BG Prasad classes, although the correlation was not significant (p=0.058).

To define thinness, participants' body mass index (BMI) had to be below the fifth percentile according to the NCHS/WHO 2007 criteria. The participants' mean body mass index (BMI)

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was 17.662.42 kg/m2. In our sample, 18.87% of participants were underweight. Early adolescents (19.93%), girls with a primary education (20.24%), and single women (19.16%) had the highest rate of being underweight, however none of these relationships were statistically significant (p>0.05). Buddhist girls were more likely to be underweight (27.27%) than girls from other religious backgrounds, 22.88 percent of girls from nuclear families, and 33.33 percent of girls in class I of the modified BG Prasad categorization.

DISCUSSION

In this cross-sectional research conducted in a rural part of a district, the nutritional condition and socio-demographic profile of 583 teenage females aged 10 to 19 were evaluated.

The majority of the females in our research sample were in the early adolescent age range (47.34%) and the smallest proportion (18.01%) were in the late teen age range. The majority of the females in our research were Hindu, which is consistent with the findings of a study by Dutt et al. and Kumar. More over half of our participants came from nuclear families (54.72%), which is in line with previous research. The marital rate was 2.40% in our sample. Dutt et al. and Baliga et al. found that 0.98 percent and 3.75 percent of teenage females got married, respectively. In contrast, Kollur et al. found that a larger proportion of teenage females were married.

The frequency of being underweight was 36.54 percent in this research. Our findings of a high incidence of underweight among rural teenage females may be due to an overestimation of underweight relative to NCHS/WHO guidelines. All characteristics except homeownership were shown to be substantially linked with the prevalence of underweight in the research by Venkaiah et al. (p<0.05).

Conclusion

The rate of stunting in this research was much greater than previous ones (48.37%). The research conducted by Das et al. indicated that 38.2% of the participants were stunted, defined as having a height-for-age score below the 5th percentile. Our findings are consistent with those of Bhattacharyya et al., who found a greater frequency of stunting among early adolescents and in socioeconomic class IV, but found that this difference was not statistically significant. There was no statistically significant variation in the frequency of thinness between the early and late teenage age groups, as was the case in our research (18.87%).16

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Our results showed that the link between socioeconomic status and thinness was statistically significant (p=0.046), with the highest prevalence seen in socioeconomic class I and the lowest in class IV. On the other hand, Bhattacharyya et al. found no statistically significant correlation between socioeconomic status and thinness. Differences in prevalence of thinness among BMI categories may reflect differences in age range, sample size, assessment methodologies, and other socio-demographic characteristics. The bulk of these variables affecting teenage girls' nutritional health are adjustable and avoidable, it seems. Adolescent health clinics need to be established and run efficiently in rural parts of India, using a primary health care strategy, in order to improve the general outlook on adolescent health. Our study's sample was collected from a small region. As a consequence, we cannot generalise the findings. The study's cross-sectional methodology meant that its results couldn't be extrapolated too far.

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