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NUTRITIONAL STATUS OF ADOLESCENT GIRLS FROM SELECTED RURAL AREA OF A DISTRICT FROM CENTRAL INDIA

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ABSTRACT

Introduction: Adolescence is an intense anabolic period when requirements for all nutrients increase. The ultimate intention of nutritional assessment is to improve human health. There is a need to develop a database on the diet and nutritional status of the adolescents from different parts of the country to enable the governments and other nongovernmental agencies to formulate policies and initiate strategies for the well-being of adolescent children.
Objective: To assess the nutritional status of adolescent girls (15-19 years) using anthropometric measures.
Methodology: Cross sectional community based study was conducted in the rural part of Wardha district. With the help of household questionnaire, information was collected for socio-demographic information and anthropometric indices.
Results: The average age of study population was 16.72 years with standard deviation of ± 1.47 years. The majority if the study participants were of class IV (37.14%), as per modified B. G. Prasad classification. Prevalence of wasting was found to be 48.05% where as 30.39% individuals were stunted.
Conclusion: Taking into consideration, the prevalence of under nutrition, window period for intervention is quite short. Though beginning has been made for improvement of adolescent girl's health, still much more needs to be done to address the issue of adolescent mal-nutrition at the national level.

INTRODUCTION

Adolescence is an intense anabolic period when requirements for all nutrients increase (**Giuseppina 2000**). Nutritional deficiencies have far reaching consequences, especially in adolescent girls. If their nutritional needs are not met, they are likely to give birth to under nourished children, thus transmitting under nutrition to future generations (Brabin 1992). One way to break the intergenerational cycle of malnutrition is to improve the nutrition of adolescent girls prior to conception. The vicious cycle of malnutrition, if not broken, will goes on resulting in more and more severe consequences. Surprisingly, information regarding the nutritional status of adolescents from the developing world is lacking. Partof the reason for the lack of information has been the difficulty of interpreting anthropometric data in these age groups(**De Onis 1996**).

Anthropometrics can be sensitive indicators of health, growth and development in infants and children. In particular anthropometry has been used during adolescence in many contexts related to nutritional status (**WHO 1995**). According to World Health Organization, the ultimate intention of nutritional assessment is to improve

human health(**Beghin 1988**). Malnutrition which refers to an impairment of health from a deficiency or imbalance of nutrients is of public health significance among adolescents all over the world. It creates lasting effect on the growth, development and physical fitness of a person. It is well recognized worldwide that anthropometric measurements are indispensable in diagnosing under nutrition. Currently, it is estimated that there are about 69.7 million adolescent girls constituting about 7.0% of the total population. Physical growth at adolescence occurs earlier and is more rapid than during pre-adolescence. In India, the proportion of adolescents getting married before completion of their growth is very high (**Agarwal 1994**). When exposed to pregnancy, growth of these young girls ceases.

Several recent studies have investigated nutritional status of adolescents from different parts of India (**Karande 1999; Singh 2001, Singh 2002**), still there is very little information about diet and nutritional status of adolescents, particularly from rural areas in India. Therefore, there is a need to develop a database on the diet and nutritional status of the adolescents from different parts of the country to enable the governments and other

nongovernmental agencies to formulate policies and initiate strategies for the well-being of adolescent children.So, this study was planned with objective to assess the nutritional status of adolescent girls (15-19 years) using anthropometric measures.

METHODOLOGY

This study was conducted in the field practice area of a tertiary health care training centre, in wardha, central india. After calculating sample size of 385 individuals, with average prevalence of malnutrition as 50% (Semwal 2006), and allowable error 5%. The households were selected randomly, with every 7th house, starting from left lane in the main market lane. If household did not have any adolescent girl, next house was selected, till house with adolescent girl willing to participate in the study was found.

Socio-demographic information: A household questionnaire was used to collect socio-demographic information. Respondents were re-interviewed by the supervisors when item non-responses were encountered.

Anthropometry: Age, sex, weight and height were recorded. Locally made stadio metres with a sliding headpiece, and portable mechanical analogue scales were used to measure height and weight, respectively. Height was measured to the nearest 0.1 cm and weight to the nearest 0.5 kg. Each subject was weighed with minimum clothing and no footwear. The scales were carefully handled and periodically calibrated by placing standard calibration weights of 2 kg iron bars on the scale to ascertain accuracy. If the scale weight did not match the calibration weight, the scale was calibrated by adjusting its calibration screw while the calibration weight was on the scale.

Statistical analysis: Data were entered in Microsoft excel 2007 and was analysed using SPSS 16.0. Descriptive statistics and chi square test were used wherever required, to test statistical significance. Statistical significance was set at p <0.05.

RESULTS

The average age of study population was 16.72 years with standard deviation of ± 1.47 years. Maximum study participants had completed their 16th birthday (123).Most of the study participants (50.65%) were educated up to 10th standard, and 38.96% of the study participants were possessing education more than 10th standard. None o the study participants were illiterate.

The majority if the study participants were of class IV (37.14%), as per modified B. G. Prasad classification, and which was followed by class V, (25.20%). This signifies, majority of the participants were from lower socioeconomic status, and only 17.4% of the individuals belonging to class III (Middle class), as per modified B. G. Prasad classification. 12.21% of the study participants were from class I, i.e. upper class. This shows that total of 62.34% of the study participants were of the lower socio economic class, as per modified B. G. Prasad Classification. 76.04% of the adolescents of 15 years, 71.54% of the adolescents of 16 years and 77.78%of the adolescents of 17 years were found to be having heights normal for their age. However, of 30.39% of the study participants, who were stunted, 23.96% were of 15 years, 28.46% were of 16 years, 22.22% of 17 years, 31.88% of the 18 years, and 44.29% of the 19 years.

It was observed that out of 30.39% of the individuals, who were stunted, 19.48% of the individuals were having 1st degree of stunting, 9.87% had 2nd degree of stunting and 1.04% had III degree of stunting. 30% of 19 years old participants were having 1st degree of stunting. Followed by 26.08% of individuals from 18 years, who had 1st degree of stunting. 13.54%, 15.45%, and 14.81% of the 15, 16 and 17 years participants were having 1st degree of stunting. 1.04% of the study participants had III degree of stinting.

Table I: Socio-demographic distribution of the study participants

Age in years	Participants (N = 385)	
	Number (n)	Percentage (%)
15	96	24.94
16	123	31.95
17	27	07.01
18	69	17.92
19	70	18.18
Total	385	100%
Education of participant		
1st to 4th Standard	40	10.39
5th to 10th Standard	195	50.65
11th – 12th Standard	150	38.96
Total	385	100
Class as per Modified B. G. Prasad classification		
Class I	47	12.21
Class II	31	8.05
Class III	67	17.40
Class IV	143	37.14
Class V	97	25.20
Total	385	100

Table II: age wise distribution of study participants in degree of wasting

Age Years	Normal n (%)	Total Wasting			Total participants N (%)
		Grade 1 n (%	Grade 2 n (%)	Grade 3 n (%)	
15	53 (55.21)	28 (29.17)	13 (13.54)	2 (2.08)	96 (100)
16	64 (52.03)	41 (33.33)	18 (14.63)	0 (0.00)	123 (100)
17	18 (66.67)	7 (25.93)	2 (7.41)	0 (0.00)	27 (100)
18	35 (50.72)	23 (33.33)	10 (14.49)	1 (1.45)	69 (100)
19	30 (42.86)	35 (50.00)	5 (7.14)	0 (0.00)	70 (100)
Total	200 (51.95)	134 (34.81)	48 (12.46)	3 (0.78)	385 (100)

χ^2= 5.11, d.f.= 4, p = 0.276, (NS)
χ^2test is applied to the number of normal individuals and total no of wasted individuals.
Figures in parenthesis indicates row percentages

Table III: Age wise distribution of study participants in grades of stunting

Age Years	Normal n (%)	Total stunted			Total participants n(%)
		I Degree n (%)	II degree n (%)	III Degree n (%)	
15	73 (76.04)	13 (13.54)	9 (9.38)	1 (1.04)	96 (100)
16	88 (71.54)	19 (15.45)	14 (11.38)	2 (1.63)	123 (100)
17	21 (77.78)	4 (14.81)	2 (7.41)	0 (0.00)	27 (100)
18	47 (68.12)	18 (26.08)	4 (5.80)	0 (0.00)	69 (100)
19	39 (55.71)	21 (30.00)	9 (12.86)	1 (1.43)	70 (100)
Total	268 (69.61)	75 (19.48)	38 (9.87)	4 (1.04)	385 (100)

χ^2= 9.409, d.f.= 4, p = 0.043, (S)
χ^2test is applied to the number of normal individuals and total no of stunted individuals.
Figures in parenthesis indicates row percentages

DISCUSSION

There are no previous studies that characterize the nutritional status of adolescents from the study communities. To the best of our knowledge, this is the first report on anthropometric assessment of adolescents from Wardha. These adolescents demonstrate the vulnerability of those who have not received appropriate attention to ensure that their nutritional needs are met.

The study populations were comparable in respect to age, educational status and socioeconomic classification to various other studies conducted in India for assessment of nutritional status of adolescent girls.

The prevalence of wasting in the present study was 48.05% which was lesser to the study conducted by Semwal J(2006) in rural areas of Dehradan district and Seema et al (2003).in Varanasi.

The prevalence of stunting in the present study was 30.39% which is also lesser than the prevalence of stunting observed in various other studies as in study conducted by Haboubi et al (2009), Seema et al(2003) and Kalhan M et al (2010).

The lower prevalence of stunting and wasting can be attributed the level of preventive and curative services provided by two prominent medical colleges, serving in this area for few decades. Improved educational standards of participants and their parents also play important role in the nutritional status.

CONCLUSION

The mean age of the study population was 16.72 years, thus the window period for intervention is quite short. School based mid day meal programme and iron supplementation should receive priority in rural areas. A beginning has been made by inclusion of adolescent girls as beneficiaries of iron tablets under the Integrated Child development Services (ICDS) scheme. Also Government of India launched the National Programme of Nutritional Support to Primary Education (NSPE). Though the primary objective of this programme is to improve school attendance, it is likely to have a major impact on nutritional status of school children. All these initiatives now covered under the umbrella of National Rural Health Mission (NRHM), still much more needs to be done to address the issue of adolescent mal-nutrition at the national level.Improvement of nutritional status is directly associated with improvement of educational standards and improvement of socio economic class.

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