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Assessment of nutritional status of adolescent girls in an urban slum area

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Abstract
The term "Adolescence" represents a hyper anabolic phase of growth, mediated by normal factors and characterized by peck velocities of growth (Gopalan, 1989). Adolescents are more vulnerable to malnutrition. The aim of this study is to assess the nutritional status of adolescent girls of an urban slum area of Jaipur. This is a cross sectional study design using multistage random sampling method 100 adolescent girls aged 13-18 years were selected as the study subjects. Information was obtained on a predesigned and pretested interview schedule. The data thus obtained was analyzed using SPSS. Analysis shows that 34% of adolescents girls were undernourished (BMI <18.5) & 12% adolescent girls were at high risk of developing obesity in near future due to increased (BMI >25.9). Caste, religion and marital status were significantly (P<0.05) associated with nutritional status of adolescents. Therefore the study recommends the strong need of nutritional education for adolescents in an urban area of Jaipur. Focus will be given to adolescents who are married & belong to weaker section of society.

Keywords: Adolescence, Undernourished, Obesity, Anemia, Nutritional education.

Introduction
The term "Adolescence" represents a hyper anabolic phase of growth, mediated by normal factors and characterized by peck velocities of growth (Gopalan, 1989) [1]. This is a crucial stressful yet fascinating period in an individual life. Stanley Hall, (1988) [2] term adolescence as a phase of "Stress and Strom". Adolescence is the transitional period between childhood and adulthood. During this period individual move towards physical and psychological maturity, and economic independence and acquire their adult identity.

Adolescent girls, constituting nearly one tenth of Indian population, form a crucial segment of the society. The girls constitute a more vulnerable group especially in the developing countries where they are traditionally married at an early age and are exposed to greater risk of reproductive morbidity and mortality. In general adolescent girls are the worst sufferers of the ravages of various forms of malnutrition because of their increased nutritional needs and low social power (Chaudhary *et al* 2003) [1].

Nutritional deficiencies have far reaching consequences, especially in adolescent girls. If their nutritional needs are not met, they are likely to give birth to undernourished children, thus transmitting under nutrition to future generation. Unfortunately assessment of nutritional status of adolescent girls has been the latest explored area of research particularly in India (Shivramkrishna, H.R *et al* 2011) [4]. Malnutrition prevails in slum area due to low economic status, less awareness about healthy diet of adolescent girls. Hence it is essential to assess the nutritional status of adolescent girls, especially in slum area.

Objectives
- To assess the nutritional status of adolescent girls.
- To ascertain the association between different socio-demographic characters (Caste, religion and marital status) and nutritional status.

Material & Methods
A community based cross – sectional study was conducted in slum area of Jaipur i.e. Jawahar Nagar, Teela No. 6. Hundred adolescent girls of the age group 13-18 years were interviewed. Height & weight were measured using standard techniques.

Nutritional assessment was done on the bases of BMI. Pertinent information on socio-demographic variables was obtained on a pre-design and pre-tested interview schedule.
Following standard techniques were used for measurements:
Height: Height in centimeters was marked on a wall with the help of measuring tape. All girls were measuring against the wall without footwear and with heels to getter and their heads positioned so that the live of vision was perpendicular to the body. A glass scale was brought down to the top most point on the head (Soumyajit, M *et al* 2011) [5].
Weight: The weight was measured using a weighing machine (Libra) with an accuracy of +100 guess the subjects were asked to remove their footwear before measuring thin weight. The scales were recalibrated after each measurement. Accuracy of the weighing scale was verified from time to time against known weights (Deshmukh, P.R *et al* 2006) [6].
BMI: BMI of the study subject was calculated by using the formula weight (Kg)/Height $(m)^2$, and classified standard criteria of WHO.
Statistical Analysis: Data thus generated were analyzed using SPSS software.

Results

Out of hundred adolescent girls participated in the study majority (79%) were Hindus caste wise distribution shows that more than fifty percent were belong to OBC category (32%) general and only (15%) were SC. In the study area majority of the respondent were (72%) schools going & approximately one third was school dropouts.
Almost same findings were observed in relation to marital status of respondents, three forth of the total were unmarried & only 17% were married and living with their husband. Out of the total socio demographic variables considered in the study significant association was seen with caste, religion and marital status only.
The finding of this study shows that out of 100 adolescent girls, more than 54% were having BMI between 18.5– 24.9 and 34% were below 18.5 only 12% were above 24.9 & at higher risk of developing obesity.

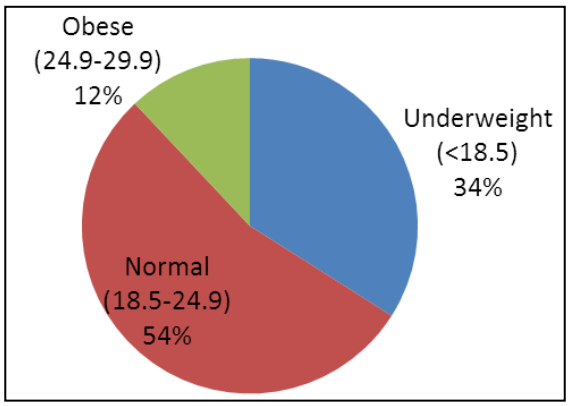

Fig 1: Percent distribution of adolescent girls according to BMI status

Out of total hundred adolescent girls 15%, 53% and 32% belonged to SC, OBC and other caste category respectively. Nutritional status of adolescent girls was found significantly (P<0.05) associated with their caste. Under nutrition was significantly high among girls who belonged to schedule caste category, under different caste categories. 8%, 14% and 6% study subjects were underweight in SC, OBC and other caste groups, respectively.
This variation in under-nutrition among girls from different caste groups may be due to variation in their socio-economic characteristics and thereby difference in availability of quality food. (Table: 1)

Table 1: Percent distribution of BMI according to caste

Caste	Underweight (BMI < 18.5)	Normal weight (BMI 18.5-24.9)	Total
SC	8	7	15
OBC	14	39	53
Other (General)	6	26	32
Total	26	74	100

Chi-square (x^2) = 9.003, P=0.011

Majority (79%) of adolescent girls were Hindu by religion. Religion was found to have a significant (P<0.05) influence on nutritional status of adolescent girls. Hindu girls were more vulnerable to under nutrition (54%) in comparison to Muslim girls (7%). This variation in the trend indirectly represents religion wise variability in food accessibility and dietary intake. (Table 2)

Table 2: Percent distribution of BMI according to religion

Religion	Underweight (BMI < 18.5)	Normal weight (BMI 18.5-24.9)	Total
Hindu	54	25	79
Muslim	7	14	21
Total	61	39	100

Chi-square (x^2) = 4.199, P=0.040

As much as three forth (76%) respondents were unmarried while 24% girls were married or engaged to be married. Table 3 indicates that nutritional status of adolescent girls was significantly (P<0.05) associated with their marital status. That represents the girl psychology to look slim and beautiful at the time of marriage, so indulge in dieting and other aggressive physical activities to reduce their weight drastically within a short span of time. Marriage and complete settlement of family was showing a psychological satiety effect on nutritional status (Table 3)

Table 3: Distribution of BMI on the basis of marital status of adolescent girls

Marital Status	Underweight (BMI < 18.5)	Normal weight (BMI 18.5-24.9)	Total
Unmarried	26	50	76
Married	6	11	17
Engaged	2	5	7
Total	34	66	100

Chi-square (x^2) = 1.22, P=0.007

Discussions

Adolescence is an intense anabolic period when requirements for all nutrients increases. This period is very crucial since these are formative years in the life of an individual when major physical, psychological and behavioral changes take place (Patil, S.N *et al* 2009) [7]. In present study 34% of adolescent girls were underweight and 12 % where found at high risk of overweight and obesity. Most of the girls in the study area were having normal BMI 54%. This variation is due to adequate knowledge and awareness regarding nutritional health, because majority of the girls were school going. The extent of under nutrition was slightly lower 34% in our study in comparison to 36.4% of under nutrition reported by Mukhopadhya A *et al* (2005) [8]. The correlation between nutritional status and demographic characters are

similar to the study done by (Ashok T.K *et al* 2012) [9]. Improving the general health and nutrition of the girl child, increasing the age of marriage and subsequent child bearing along with timely and quality ante-natal care reduces the incidence of anemia, LBW babies and premature deliveries (Saxena, P *et al* 2010) [10]. Hence there is a need for discouraging the teenage pregnancy, educating the girls on health and nutrition and preparing them for ideal age of marriage.

Conclusion & Recommendations

This study found that majority 54 % of adolescent girls have normal BMI, 34 % have lower BMI, if their nutritional needs are not met, they are likely to give birth to undernourished children, thus transmitting under nutrition to future generations therefore it is essential to provide nutritional education to adolescent girls especially in slum areas and to the weaker sections of the society. It is essential to implement adolescent friendly health services at primary health care level with emphasis on nutritional counseling component both married and unmarried. This will decrease the poorly nourished adolescent mothers, who are more likely to give to low birth weight babies, perpetuating a cycle of health problems which pass from one generation to another. There is a government program named 'Sabla', which is exclusively for the adolescent girls. This programme needs to be strengthened.

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