
Nutritional Awareness and Status of Adolescent Girls Studying in Schools of Urban and Rural Areas of District Kurukshetra

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Abstract: Adolescent constitute about 20% of the total population, during this period they experiment for their adult identity and transition from dependence to independence. This leads to development of feeling of awkwardness and development of malnutrition among them. The malnutrition during this period affects their later life i.e., adulthood and old age. Keeping this in view, present study has been conducted on them with the objective to assess their level of nutritional awareness as well as eating habits and nutritional status. For the purpose of study, total 970 adolescent girls, 500 from urban and 470 from rural area were randomly selected from different Government schools situated in urban and rural areas of district Kurukshetra. Questionnaire cum interview schedule techniques were adopted for collecting the data related to family background and dietary pattern as well as of nutritional knowledge. Out of 970 female adolescent subjects, majority (65.46%) of them were living in nuclear families followed by joint (34.53%). The maximum subjects belonging to nuclear families were from urban area (71.2%) as compared to rural area (59.36%) but maximum number of joint families belonged to rural (40.63%). About 89 % of adolescent girls were belonging to Hindu community. Sikh and Muslim girls constituted only 0.1% and 0.01% respectively. Regarding ordinal position maximum subjects of both urban and rural area had ordinal position first. The educational status of both mothers and fathers of the subjects were very low. Educated fathers of the respondents who were graduated were only 6.8% and mothers 1.2%. fathers of most of the subjects were involved in agricultural activities(58.64%) and doing government jobs were only 0.84%. mother of most of the respondents were housewife 85.89%. maximum subjects of both rural and urban area were vegetarians and trend of taking lunch was very poor. Only 8.45% girls used to take the packed lunch. Pocket money used for eatable purposes at school was between the ranges of one to five rupees 68.15%. 55% girls purchased eatables sometimes and 24.2% never purchased any eatables. The money used to purchase and consume the eatables in the school was samosa and patties. Adolescent subjects belonging to urban area had better knowledge than subjects belonging to rural area. Regarding height and weight and body mass index, measurement of height and weight and calculation of BMI showed that about 81% were underweight and 1.8% was approaching towards obesity.

Keywords: Nutrition, Adolescent Girls, Malnutrition, Nutritional Awareness

1. Introduction

Adolescence, age between 10-19 years is the period of life when there is a rapid physical, social and psychological growth as well as sexual maturity. Adolescent girls are very important section of our society as they are the potential mothers and homemakers in future. Moreover, they perform various other roles in the family and the community. It is a transitional period of dramatic physical growth and

development. This period is marked by rapid and sequential physical and mental changes that transform a small child into a young adult girl. During this stage, adolescent experiments for his adult identity and transition, from the total socio-economic dependence to relative independence. They have to adjust with their physical growth, development and with their surroundings too. These unexpected changes may lead to feeling of awkwardness. In the case of adolescent girl, a large percentage, get married at below the age of 20 in India.

It is regrettable that there is no period of adolescence in India as they budge from childhood to adulthood and soon become pregnant. These future impending mothers and home makers continue to face the restraints of nutritional scantiness.

Table 1. Family Profile of Urban and Rural Adolescent Subjects of District Kurukshetra

| Parameters | Rural (n-470) | Urban (n-500) | Grand Total (n – 970) |
|-------------------------------------------------------|----------------|----------------|------------------------|
| Type Of Family | | | |
| Nuclear | 279 (59.36%) | 356 (71.2%) | 635 (65.46%) |
| Joint | 191 (40.63%) | 144 (28.8%) | 335 (34.53%) |
| Religion | | | |
| Hindu | 411 (87.44%) | 452 (90.4%) | 863 (88.96%) |
| Sikh | 52 (11.06%) | 45 (9%) | 97 (0.1%) |
| Muslim | 7 (1.489%) | 03 (0.6%) | 10(0.01%) |
| Other | -- | -- | -- |
| Ordinal Position Of Respondents In The Family | | | |
| First | 217 (46.17%) | 225 (45%) | 442 (45.56%) |
| Middle | 142 (30.213%) | 139(27.8%) | 281 (28.96%) |
| Last | 111 (23.61%) | 136 (27%) | 247 (25.46%) |
| Hereditary Problems In The Family | | | |
| Diabetes | 62 (36.9%) | 75 (15%) | 137 (33.66%) |
| High Bp | 53 (31.54%) | 72 (14.4%) | 125 (30.71%) |
| Low Bp | 12 (7.143%) | 17 (3.4%) | 29 (7.125%) |
| Obesity | 31 (18.452%) | 56 (11.2%) | 87 (21.37%) |
| Other | 10 (5.952%) | 19 (3.8%) | 29 (7.125%) |
| Educational And Occupational Status Of Parents | | | |
| Education Of Father | | | |
| Uneducated | 69 (14.9%) | 86 (17.47%) | 156 (16.33%) |
| Primary | 168 (36.28%) | 268 (54.47%) | 435 (45.5%) |
| Secondary | 177 (38.2%) | 122 (24.8%) | 299 (31.3%) |
| Graduate | 39 (8.42%) | 12 (2.4 3%) | 51 (5.34%) |
| Post Graduate/Above | 10(2.15%) | 04 (0.81%) | 14 (1.46%) |
| Education Of Mother | | | |
| Uneducated | 219 (46.79%) | 190 (38.3%) | 409 (42.42%) |
| Primary | 189 (40.38%) | 202 (40.7%) | 392 (40.66%) |
| Secondary | 60 (12.82%) | 92 (18.54%) | 151 (15.66%) |
| Graduate | -- | 12 (2.42%) | 12 (1.244%) |
| Post Graduate/Above | -- | -- | -- |
| Occupation Of Father | | | |
| Unemployed | 27 (5.83%) | 31 (6.3%) | 59 (6.18%) |
| Private Job | 57 (12.31%) | 55 (11.17%) | 111 (11.62%) |
| Government Job | -- | 8 (1.62%) | 8 (0.84%) |
| Labourer | 268 (57.88%) | 292 (59.34%) | 560 (58.64%) |
| Self Employed/ Business | 111 (23.97%) | 106 (21.54%) | 217 (22.72%) |
| Occupation Of Mother | | | |
| Housewife | 411 (87.82%) | 416 (83.87%) | 828 (85.89%) |
| Private Job | -- | 16 (3.23%) | 16 (1.66%) |
| Government Job | -- | -- | -- |
| Labourer | 48 (10.25%) | 24 (4.84%) | 71 (7.36%) |
| Self Employed/ Business | 09 (1.92%) | 12 (2.42%) | 21 (2.18%) |
| Other | -- | 28 (5.64%) | 28 (2.9%) |

In most developing countries, nutrition initiatives have been focusing "on children and women, thus neglecting adolescents. Addressing the nutritional needs of adolescents could be an important step towards breaking the vicious cycle of intergenerational malnutrition, chronic diseases, and poverty. Epidemiological evidence from both the developed and developing countries indicates that there is a link between fetal under nutrition and increased risk of various chronic during adulthood (Adolescent Nutrition, WHO, 2006).

Adolescents are tomorrow's adult population and their health and well being are crucial. Yet, interest in the health of adolescents is relatively recent and a focus on nutrition is even more recent with the exception of adolescent — pregnancy. The future economic development of poorer countries rests in large part on the prospects of having increasing proportion of future adults who are educated, healthy, and economically productive (Discussion Papers, WHO, 2005)

The main nutritional deficiency in female adolescent is iron deficiency anemia. A very few literature is available on adolescent's knowledge about nutrition, practices and attitude towards healthy eating habits and nutritional status. Therefore the present study has been undertaken with the following objective: To assess and evaluate awareness about nutrition, eating behavior and nutritional status of adolescent girls.

Materials and methods: Adolescent girls (970) between 13-18 years of age, were chosen from urban (500) and rural (470) areas of district Kurukshetra. Questionnaire cum interview method was adopted for collecting the data regarding family background and dietary pattern as well as of nutritional awareness. Anthropometric measurements like height and weight and body mass index were used in the assessment of nutritional status of the adolescent subjects

Family profile: questions related to family profile included type of family, caste, religion, ordinal position of each girl, hereditary problems and family composition of the subjects.

Personal profile: under this, information regarding school in which subjects were studying and educational status of the respondents were gathered.

Anthropometric measurements: it is a technique of quantitatively expressing the form of body; Anthropometric measurements vary in number and complexity, but can help in detecting sub-clinical stages of malnutrition. It has been recognized as a reliable tool in identification of nutritionally vulnerable groups.

Considering this, the height and weight were measured to assess the growth and nutritional status of the adolescent girls. Height was measured by using the methods of (Jelliffe, 1966). The weight was recorded in kilograms, to the nearest (Jelliffe, 1966 and ICMR, 2005). Comparison of anthropometric measurements with ICMR, NCHS and other reference values helped to determine growth performance, prevalence and incidence of degree of malnutrition among the adolescent females. The teenagers were classified according to their BMI as per classification given by James *et. al.*, (1988).

2. Result & Discussion

Family Profile of the Respondents

Type of Family: Majority (65.46%) of female adolescent subjects were belonging to nuclear families followed by joint (34.53%). The maximum subjects belonging to nuclear families were from urban area (71.2%) as compared to rural area (59.36%) but maximum number of joint families belonged to rural (40.63%).(Table 1)

Religion: The maximum subjects (88.96%) were belonging to Hindu community. Sikh and Muslim girls constituted only 0.1% and 0.01% respectively.(Table:1)

Ordinal Position Of Respondents: (45.56%) were the first child of their families followed by middle child (28.96%) and (25.46%) last child of their families. The maximum number of subjects was the first child in both urban (45 %) and rural (46.17%) group. (Table:1)

3. Educational and Occupational Status of Parents

Educational Status of Fathers: Educational status is an important indicator to judge the socio economic status as well as nutritional status of that community. Among all the selected subjects, 45.5% of the fathers were primary educated, 31.3% were secondary educated, 16.33% were uneducated and the remaining (6.8%) were graduates or post graduates and above.

Amid uneducated fathers, 44.23% were from rural area and 55.12% were from urban area which means urban areas have a large proportion of uneducated fathers.

In rural area, maximum proportion of the fathers (38.2%) were secondary educated whereas in urban area, maximum proportion of the fathers (54.47%) were primary educated.

It has been observed that the percentage of fathers who were graduate or post graduate and above was very less contributing 10.57% in rural areas and 3.24% in urban areas.

Educational Status Of Mothers: Majority (42.42%) of mothers of the respondents were uneducated, 40.66% of the mothers were primary educated, 15.66% were secondary educated, and the remaining (1.244%) were graduates. Among uneducated mothers, 53.5% were from rural area and 46.45 % were from urban area which means rural areas have a large proportion of uneducated mothers.

In rural area, maximum proportion of the mothers (46.79%) were uneducated whereas in urban area, maximum proportion of the mothers (40.7 %) were primary educated.

It has been observed that the percentage of mothers who were graduate was very less.

Occupational Status Of Fathers: Fathers of 58.64%, 22.72%, 11.62% and 0.84% were involved in agricultural activities (as labourers), in their own business, private jobs and government jobs respectively. 6.18% of the total was unemployed. In rural area, none of the father was employed in government job whereas in urban area, this figure was 1.62%.

In rural and urban areas, maximum proportion of fathers was employed as labourer and figure was 51.88% and 59.39% respectively.

Occupational Status of Mothers: Among all the selected subjects, 85.89%, 7.36%, 2.18%, 1.66% and 2.9% of the mothers were housewives, labourers, involved in their business, doing private jobs and involved in other jobs respectively.

Table 2. Dietary Patterns of the Adolescent Subjects of Rural and Urban Area of District Kurukshetra

| Parameter | Rural (n-470) | Urban (n-500) | Grand Total (n- 970) |
|----------------------------------------------------------------|----------------|---------------|------------------------|
| Dietary Habits | | | |
| Veg | 213(45.31%) | 172 (34.4%) | 385 (39.69%) |
| Non-Veg | 109(23.191%) | 133(26.6%) | 242 (24.94%) |
| Ovatarian | 158(33.6%) | 195 (39%) | 353 (36.39%) |
| Do You Take Packed Lunch To School? | | | |
| Yes | 55 (11.7%) | 27 (5.4%) | 82 (8.45%) |
| No | 388 (82.55%) | 459 (91.8%) | 847 (87.31%) |
| Sometimes | 27 (5.744%) | 14 (2.8%) | 41 (4.22%) |
| Details Of Pocket Money Taken From Parents | | | |
| Amount | Rural | Urban | |
| Nil | 94 (20%) | 76 (15.2%) | 170 (17.5%) |
| 1-5 | 284 (60.84%) | 196 (39.2%) | 480 (49.48%) |
| 6-10 | 82 (17.44%) | 188 (37.6%) | 270 (27.83%) |
| 11-15 | -- | 12 (2.4%) | 12 (1.23%) |
| 16-20 | 10 (2.12%) | 24 (4.8%) | 34 (3.5%) |
| 21-25 | -- | 4 (0.8%) | 4 (0.41%) |
| Amount Spent On Eatables From Pocket Money | | | |
| Amount | Rural | Urban | |
| Nil | 160 (34.04%) | 76 (15.2%) | 236 (24.32%) |
| 1-5 | 256(54.46%) | 344 (68.8%) | 600 (61.85%) |
| 6-10 | 47 (10%) | 72 (14.4%) | 119 (12.26%) |
| 11-15 | 5 (1.06%) | 4 (0.8%) | 9 (0.92%) |
| 16-20 | 2 (0.425%) | 0 (0%) | 2 (0.20%) |
| 21-25 | -- | 4 (0.8%) | 4 (0.41%) |
| Frequency Of Purchasing Eatable Items | | | |
| Sometimes | 227 (48.2%) | 309 (61.8%) | 536 (55.25%) |
| Weekly | 6 (1.27%) | 8 (1.6%) | 14 (1.4%) |
| Daily | 77(16.3%) | 107 (21.4%) | 184 (18.96%) |
| Never | 160 (34.04%) | 76 (15.2%) | 236 (24.32%) |
| Name Of Snacks Frequently Purchased By Adolescent Girls | | | |
| Samosa/ Patties | 201(64.83%) | 204 (48.11%) | 405 (41.75%) |
| Funflips/ Kurkure/ Chips | 47 (15.16%) | 108(25.471%) | 155 (15.97%) |
| Chocolate/ Toffee | 40 (12.9%) | 92 (21.69%) | 132 (13.60%) |
| Biscuit | 10 (3.225%) | 8 (1.88%) | 18 (1.85%) |
| Fruits | 5 (1.61%) | 4 (0.94%) | 9 (0.92%) |
| Others | 7 (2.258%) | 8 (1.88%) | 15 (1.54%) |

In rural areas, a large proportion of the mothers were housewives contributing 87.82%. None of the mother was engaged in private/ government jobs unlike urban areas where this figure was 3.23%. In rural areas, 10.25% of the mothers were labourers whereas this figure is quite less (4.84.5) when urban areas were seen. (Table: 1)

Dietary Habits – Data regarding the dietary habits of selected adolescent girls clarify that maximum girls from both urban and rural group were consuming vegetarian diet regularly in their meals even if they were non-vegetarian. Among all them maximum subjects (39.69%) were observed vegetarians followed by ovaterians (36.39%) and only 24.94% of the subjects were found non vegetarians. This occasional consumption of non vegetarian meals by the girls might be due to their weak socio economic status.

Nearly 23.19% of the girls were non vegetarian in rural group and 26.6% in urban group however most of them consumed these products occasionally or once in a while.

Maximum subjects in rural area (45.31%) were having vegetarian food habits as compared to urban (34.4%). In urban area group maximum subjects were ovatarains (39%). (Table: 2)

Packed Lunch – The trend of packed lunch was not common in the subjects of both groups. Among all the (970) subjects only 8.45% girls used to take lunch with them. Maximum subjects in rural areas (20%) were taking packed lunch as compared to urban (15%) however the percentages of both groups are considered low. The reason behind this might be the provision of canteens in schools and outside schools. Other main reason of not taking lunch dislikes of given packed meals. (Table: 2)

Details Of Pocket Money – data regarding the amount of pocket money taken by the adolescent girls belonging to rural and urban area. Among the (970)selected girls the maximum amount (68.15%) received from parents is between the ranges of one to five rupees. The minimum percentage was 0.20% amount ranging 21-25 rupees. The number of rural girls (34.4%)who did not take money from parents are comparatively higher than urban group girls(15.2%). (Table: 2)

Frequency of Purchasing Eatable Items: 55% girls out of total (970) selected girls purchased eatables sometimes and 24.2% never purchased any eatables. The maximum amount spent on eatable items belonged to urban group 61.8 % 1.6% & 21.4% sometimes,weekly and daily respectively and amount spent on eatables from rural group were 48.2% 1.27% & 16.3% sometimes,weekly and daily respectively. (Table: 2)

Name Of Preferred Snacks Frequently Purchased By Adolescent Girls: samosa and patties were the only snacks most liked and purchased by the both urban(34.11%) and rural(64.83%) adolescent girls. The most disliked and less purchased snacks were fruits in both urban (1.61%) and rural (0.94%) groups. (Table: 2)

Table 3. Level of Nutritional Awareness in Experimental Adolescent Girls of Urban and Rural Areas

| Parameter | Rural (n-470) | Urban (n-500) | Grand Total (n-970) |
|-----------------------|---------------|---------------|---------------------|
| Nutritional Knowledge | | | |
| Nil | 170 (36.17%) | 121 (24.2%) | 291(30%) |
| Marginal | 147 (31.27%) | 152 (30.4%) | 299(30.82%) |
| Average | 99 (21.06%) | 124 (24.8%) | 223(22.98%) |
| Good | 35 (7.446%) | 71 (14.2%) | 106(10.92%) |
| Very Good | 19 (4.042%) | 32 (6.4%) | 51(5.25%) |

Awareness about Nutrition

Nutritional knowledge: females of urban group were having better nutritional knowledge than the girls of rural group, the nutritional awareness was found comparatively better in the subjects belonging to urban group. In rural group girls did not show any awareness about nutritional knowledge, 31.27% of them knew marginally and 21.06% were having average knowledge of nutrition whereas only 4.04% were having good nutritional knowledge about nutrition. In urban and rural adolescent girls 36.17 and 34.2% did not possess any nutritional knowledge, whereas rests of them were having marginal to average knowledge about nutrition.

Table 4. Anthropometric Measurements

| Parameter | Rural (n-470) | Urban (n-500) | Grand Total (n-970) |
|-------------|----------------|---------------|---------------------|
| Weight (kg) | | | |
| 20-25 | -- | 28 (5.6%) | 28 (2.88%) |
| 26-30 | 94 (20%) | 108 (21.6%) | 202(20.82%) |
| 31-35 | 150 (31.91%) | 112 (22.4%) | 262(27.01%) |
| 36-40 | 160(34.04%) | 172 (34.4%) | 332(34.22%) |
| 41-45 | 28 (5.9%) | 48 (9.6%) | 76(7.83%) |
| 46-50 | 28 (5.9%) | 24 (4.8%) | 52(5.36%) |
| 51-55 | 10 (2.12%) | 08 (1.6%) | 18(1.85%) |
| Height(cm) | | | |
| 121-130 | -- | 12 (2.4%) | 12(1.2%) |
| 131-140 | 66 (14.04%) | 52 (10.4%) | 118(12.16%) |
| 141-150 | 197 (41.91%) | 168 (33.6%) | 365(37.6%) |
| 151-160 | 207 (44.04%) | 224 (44.8%) | 431(44.4%) |
| 161-170 | -- | 44 (8.8%) | 44(4.53%) |
| BMI(kg/m2) | | | |
| < 18.5 | 374 (79.5%) | 412 (82.4%) | 786(81.03%) |
| 18.5-24.9 | 94 (20%) | 72 (14.4%) | 166(17.11%) |
| 25-29.9 | 02 (0.4%) | 16 (3.2%) | 18(1.85%) |
| >30 | -- | -- | -- |

Body Mass Index: Out of total 970 females, 81% females were found underweight and only 1.85% were found at high risk over weight. Only 17.11% girls out of total girls were having normal BMI. (Table:4)

4. Conclusion

The low values for anthropometry and socio-economic stage acquired from this study suggest that there is need for improvement in the nutritional status of these adolescents. Also, more attention needs to be done to address the issue of adolescent malnutrition. Various macro and micro- nutrient

deficiencies are more common nutritional problems in kurukshetra. This may arise different types of complications that may be life threaten for adolescent girls. There is no magic pill that can reduce or increase the nutritional status of the girls. If the individuals are cognizant about nutritional knowledge, nutritional deficiency diseases, nutritional value of food and dietary practices, they can easily beat those problems and can make their body sound and healthy without assassinating excess money.

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