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Abstract

Background and Objectives: Adolescent girls are future mothers. Nutritional status is important determinant of their physical growth and development, which in turn determines the reproductive outcome. Body image is a psychological construct that is part of self-image. The present study on adolescent girls was conducted to assess their nutritional status of adolescent girls and degree of dissatisfaction and misconception about their body image. Materials and Methods: A Community based cross sectional observational study was conducted among 490 late adolescent girls of age group 15-19 years in the urban field practice area of Chitradurga. Subjects were interviewed after obtaining verbal consent. BMI is calculated by measuring height and weight. Results: Majority (50.82%) of subjects belonged to lower Socio economic class, 78% were Hindus and 5.31% of the girls were married. Majority of adolescent girls (53.06%) were underweight followed by normal (45.51%), overweight (1.02%) and obese (0.41%). There was statistically significant association between nutritional status and type of diet. More than half (55.92%) of the girls over estimated their own body weight and only 10.99% of girls underestimated. Majority of the adolescent girls 81.43% of the girls were satisfied and only 18.57% of girls were not satisfied with their body image. There was statistically significant association between consciousness about body image and nutritional status of adolescent girls. Conclusion: In the present study, nutritional status of adolescent girls appeared to be poor. Large numbers of girls are dissatisfied with their body image. Girls of urban areas and even from slums are unconstructively apprehensive about slim figure. It is posing a detrimental threat to their health and nutritional status.

Key-words: Adolescent girls, nutritional status, body image.

Introduction

The origin of the word Adolescence is from Greek Latin word, ‘Adolescere’ which means to grow or to grow to maturity. Adolescence is the transition stage between childhood and adulthood of a person and it is broadly considered as the ages 10 to 19. The adolescence period is an important stage in everybody’s life as it prepares a child for its adulthood life. However, the age from 15 to 19 is considered more crucial as far as the growth, mental maturity and development of reproductive system including health and nutritional status of individuals is concerned. For proper physical, mental, and psychological growth, a person needs increased nutrition, health care and social support during this period.

Based on the NFHS IV data of it is estimated that the adolescents between 15-19 years account for about 10 percent of the total population in different parts of India. Adolescent girls constitute about 1/5th of total female population in the world. Among adolescents, girls are doubly vulnerable, have lower priority, relatively neglected in family, should be given more attention as they are future mothers. Since majority of adolescent girls especially represent underprivileged section of the society and are undernourished with maladies like preference for male child, incidence of early marriages and high rates of maternal mortality. Adolescent girls are future mothers. Nutritional status is important determinant of their physical growth and development, which in turn determines the reproductive outcome. Health education and nutritional supplementation is important in this regard. Action is required to improve the same.
Undernutrition renders adolescents vulnerable to disease and early death and has lifelong health consequences. In adolescent mothers, undernutrition not only contributes to increased morbidity and mortality associated with pregnancy and delivery, but also to increased risk of delivering low birth-weight babies. This contributes to the intergenerational cycle of malnutrition.

Body image is a psychological construct that is part of self-image. Issues regarding body weight, general attractiveness, breast size, complexion and acne are some of the main body image concerns for adolescent girls (Aishwarya Rai Syndrome). The present study on adolescent girls was conducted to assess their nutritional status of adolescent girls and degree of dissatisfaction and misconception about their body image.

Materials and Methods

A community-based descriptive cross-sectional observational study was carried out among girls in the age group of 15-19 years from the urban field practice area of Chitradurga. Urban health training centre caters services to the population of 31186. There were 30 Anganwadi centers in UHTC area. The data collection was carried out for one year from Nov 2015-Oct 2016. Adolescent girls in the age group of 15-19 years residing in urban field practice area were included in the study after taking informed consent. The sample size was calculated by taking the proportion of late adolescent girls in the age group of 5% according to NFHS IV with 95% confidence level and 4% absolute precision sample size comes as 450.4 considering the 5-10% of non-response rate the sample size was 490.

It was decided to take 16 study subjects from each Anganwadi area. A central point in each Anganwadi area was identified and the direction of the first house was selected randomly. The process helped in selecting the first house. Subsequently, house to house search was done, and if any adolescent girl was found in the house, it was included in the study. If there were more than one subject in a single house, a listing of the girls was done on the back of the paper and the numbers of a currency note was used to select only one girl in the study. The verbal consent of the subjects was taken before the interview. The survey information included socio-demographic profile, anthropometric measurements. Measurements: (i) Height: Total standing height was measured with the help of measuring tape. Respondent was asked to stand straight without footwear on a flat floor with parallel feet; while heels, buttocks and shoulders and back of the head touching the wall. The head was held comfortable erect with lower border of the orbit in the same plane as that of the external auditory meatus. Hands were hanging by the sides. A wooden scale was gently applied crushing hair-making contact with the top of the head and height was recorded to nearest 0.1 cm. (ii) Weight: Adolescent girls were weighed bare foot. Weight was recorded by using portable weighing machine. These girls were asked to stand in the centre of the machine, with body weight evenly distributed between both feet. Weight was recorded to nearest 0.5kg.

Body mass index (BMI) was subsequently computed by formula weight (kg)/height (m2). The anthropometric nutritional status was assessed by “BMI for age” and “height for age” as per WHO standards. The subjects with BMI for age below 5th percentile were categorized as thin and those with “height for age” less than 3rd percentiles were considered to be stunted.

Results

A total of 490 adolescent girls were interviewed. The mean age of the subjects was 15.8+0.8 years and more than 50% of the girls belonged to 15-16 years of age group. Majority (77.96%) of the subjects were Hindus, 50.82% of them belonged to class V socio-economic status and 93.67% belonged to nuclear family. Majority of the girls were studying in P.U College (45.71%). About 9.6% of adolescent girls had dropped out of school with the main reasons being marriage (38%) and not interested in schooling (25%). In the present study 5.31% of adolescent girls were married. The mean age at marriage was 17.5±1.29 years. Mean age at first pregnancy was 18.23±0.9 years.

Table 1: Socio demographic variables of the study subjects

<table>
<thead>
<tr>
<th>Socio demographic variable</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hindu</td>
<td>382</td>
<td>77.96</td>
</tr>
<tr>
<td>Muslim</td>
<td>108</td>
<td>22.04</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td>196</td>
<td>40</td>
</tr>
<tr>
<td>P.U. College</td>
<td>224</td>
<td>45.71</td>
</tr>
<tr>
<td>College Studying Degree</td>
<td>70</td>
<td>14.29</td>
</tr>
<tr>
<td>Type of family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuclear Family</td>
<td>459</td>
<td>93.67</td>
</tr>
<tr>
<td>Family</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint Family</td>
<td>23</td>
<td>4.69</td>
</tr>
<tr>
<td>Three generation Family</td>
<td>8</td>
<td>1.63</td>
</tr>
<tr>
<td>Socio Economic Status *</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class I</td>
<td>134</td>
<td>27.35</td>
</tr>
<tr>
<td>Class II</td>
<td>28</td>
<td>5.71</td>
</tr>
<tr>
<td>Class III</td>
<td>15</td>
<td>3.06</td>
</tr>
<tr>
<td>Class IV</td>
<td>64</td>
<td>13.06</td>
</tr>
<tr>
<td>Class V</td>
<td>249</td>
<td>50.82</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unmarried</td>
<td>464</td>
<td>94.69</td>
</tr>
<tr>
<td>Married</td>
<td>26</td>
<td>5.31</td>
</tr>
</tbody>
</table>

*Modified Kuppuswamy Classification
Majority of adolescent girls (53.06%) were underweight followed by normal (45.51%), overweight (1.02%) and obese (0.41%).

Table 3: Association between nutritional status and type of diet in adolescent girls.

<table>
<thead>
<tr>
<th>Type of Diet</th>
<th>Nutritional status</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mixed</td>
<td>Underwt</td>
<td>80 (44.4%)</td>
<td>3 (1.7%)</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>97 (53.9%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>Vegetarian</td>
<td>Overwt</td>
<td>162 (33.06%)</td>
<td>274 (55.92%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>260 (53.1%)</td>
<td>223 (45.5%)</td>
</tr>
</tbody>
</table>

Chi-square=10.696; d.f =3; p = 0.013

The present study shows that there is statistically significant association between nutritional status and type of diet. Majority of vegetarians were underweight compared to those having mixed diet.

Table 4: Consciousness and attitude towards current body image

<table>
<thead>
<tr>
<th>Characters</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body Image</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thin</td>
<td>36</td>
<td>7.35</td>
</tr>
<tr>
<td>Normal</td>
<td>399</td>
<td>81.43</td>
</tr>
<tr>
<td>Overweight</td>
<td>55</td>
<td>11.22</td>
</tr>
<tr>
<td>Discrepancy in weight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Under estimated</td>
<td>54</td>
<td>11.02</td>
</tr>
<tr>
<td>Correct</td>
<td>162</td>
<td>33.06</td>
</tr>
<tr>
<td>Over estimated</td>
<td>274</td>
<td>55.92</td>
</tr>
<tr>
<td>Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfied</td>
<td>399</td>
<td>81.43</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td>91</td>
<td>18.57</td>
</tr>
</tbody>
</table>

The above table shows that 7.35% of the girls perceived themselves as thin, 81.43% as normal and 11.22% as overweight. More than half (55.92%) of the girls overestimated their own body weight and only 10.99% of girls underestimated. Majority of the adolescent girls 81.43% of the girls were satisfied and only 18.57% of girls were not satisfied with their body image.

Table 5: Association between consciousness about body image and nutritional status of adolescent girls

<table>
<thead>
<tr>
<th>Consciousness About body image</th>
<th>Nutritional status</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfied</td>
<td>Underweight</td>
<td>277</td>
<td>69.4%</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
<td>122</td>
<td>30.6%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>399</td>
<td>100%</td>
</tr>
<tr>
<td>Dissatisfied</td>
<td></td>
<td>52</td>
<td>57.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>39</td>
<td>42.9%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>91</td>
<td>100%</td>
</tr>
</tbody>
</table>

Chi-square = 5.066; d.f =1; p = 0.024

The above table shows that 81.43% of the girls were satisfied with their body image and 18.57% of girls were dissatisfied. There was statistically significant association between consciousness about body image and nutritional status of adolescent girls.

Discussion

In our study majority (53.06%) of the adolescent girls were undernourished and only 0.41% were obese. A.S. Indupalli 6 observed that 27.6% of adolescent girls were suffering from chronic energy deficiency and 72.4% were nutritionally normal, while no one was overweight. Shahid et al. 7 conducted a study in Pakistan among adolescent girls and results revealed that 20% of girls had BMI <18.5 and 3% were obese. The high prevalence of malnutrition in our study might be because most of the girls were from the lower socio-economic status. Gender based discrimination in distribution of and access to food within the family could be the strong factor in undernutrition. In these countries more than one fifth of adolescent girls were overweight. Where as in our study the prevalence of overweight was very less. Lifestyle changes related to high fat diet, junk foods and low levels of physical activity results in high prevalence of overweight and obese adolescents.

Both under nutrition and obesity or overweight are problems among adolescents. Under nutrition renders adolescents vulnerable to disease and early death and has lifelong health consequences. In adolescent mothers, under nutrition not only contributes to increased morbidity and mortality associated with pregnancy and delivery, but also to increased risk of delivering low birth-weight babies. This contributes to the intergenerational cycle of malnutrition.

In our study it was observed that there was statistically significant association between nutritional status and type of diet. Majority of vegetarians was underweight compared to those having mixed diet.

Adolescent growth and development is closely linked to the diet they receive during childhood and adolescence. Adequate nutrition of any individual is determined by two factors. The first is the adequate availability of food in terms of quantity as well as quality, which depends on...
importance increases as young people become more

In our study more than half (56.04%) of the girls over
estimated their own body weight and only 10.99% of girls
underestimated. In a study among adolescent girls in Uttar
Pradesh 32.8% of girls had overestimated their weight,
while only 4.9% of girls had underestimated their body
weight. This indicates the misconception about their body
weight. 6

In our study it was observed that 81.43 % of the girls
were satisfied with their body image and 18.57 % of girls
were dissatisfied. A study in Lucknow on adolescent girls
showed that 73.4% of girls were satisfied with their body
image and 26.6% were dissatisfied. 8

In our study more adolescent girls were satisfied with
their body image. Higher levels of body satisfaction are
associated with higher levels of self-esteem.

Body image is a psychological construct that is part of
self-image. Issues regarding body weight, general
attractiveness, breast size, complexion and acne are some
of the main body image concerns for adolescent girls
(Aishwarya Rai Syndrome). 5

Its importance increases as young people become more
body conscious with the physical changes associated with
puberty. Body satisfaction generally decreases with
increasing age.

The present study shows that there is statistically
significant association between consciousness about body
image and current nutritional status of adolescent girls.
A study by Priya D et al. 5 on body image satisfaction
among female medical students about observed that 48% of
the underweight females were satisfied while 52% were
not satisfied with their body image perception.

Among the 111 females with the normal BMI, around
77.5% were satisfied while 22.5% were not satisfied with
the image. The proportion of females not satisfied with
the image was higher with the overweight females. This
difference was found to be statistically significant similar
to our study.

In a study by Swati et al. 5 on consciousness of adolescent
girls, 32.8% were found underweight among those
satisfied with their body image.

Negative body image may produce a deep sense of
inferiority, anxiety, depression, withdrawal and thoughts
of suicide. Adolescents may spend a lot of money, effort
and time caring for and beautifying their bodies and yet
not be satisfied with the results!

Conclusion

The results of study conclude that majority of the girls
were underweight and the desire to become thin are
higher in those who already perceived their body image as
too thin. Large numbers of girls are dissatisfied with their
body image. Girls of urban areas and even from slums are
unconstructively apprehensive about slim figure. It is
posing a detrimental threat to their health and nutritional
status. These findings suggest an urgent need to

encourage adolescent girls for maintaining healthy weight
and dietary habits through all possible channels.

Acknowledgments

The authors thank Department of Community Medicine,
Basaveshwar Medical College for their support. Thanks
are also to all the project investigators, all the adolescent
girls, their parents, and the community members for their
participation during various stages of the project
activities.

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Conflict of Interest: None

Source of funding: Nil

How to cite this article:
Anant T. Pawar, Shankar Bhosale, Durgesh Kumar.

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NJRCM: www.commedjournal.in