**Original article:**

# A study of morbidity status of adolescent girls residing urban/rural areas of Lucknow district

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**Abstract**

**Background:** Adolescent girls form an important vulnerable sector of population that constitute about one-tenth of Indian population. Under-nutrition among adolescents is a serious public health problem internationally, especially in developing countries.

**Objectives:** To study the Morbidity pattern among the adolescent girls in urban and rural areas of Lucknow district.

**Material and Methods:** It was a cross-sectional study which was carried out over a period of 6 months (July 2015 to December 2015). 500 girls of age 10-15 years were examined during that period. Data was collected by interviewing the girls using predesigned, pre tested, semi-structured schedule. Anthropometric measurements were recorded using standardized methodology as recommended by World HealthOrganization (WHO).

**Results:** A total 500 girls were studied, 200 in urban areas and 300 in rural areas. Of that 30%,33% (60,100) were in the age group 13 years in urban and rural areas respectively. Followed by 27.5,25% were in age group 14 years. In the present study according to WHO reference standards, 40%, 50.7% (80,152) girls were under-nourished (BMI≤18.5). The Girls suffering from chronic energy deficiency (CED) grade I, II and III were 23.65%, 13.35% and 8.3% respectively. 7.5% ,5% were found to be overweight in urban and rural areas respectively and only 2.5% of the girls was found to be obese in urban areas and none in rural areas. 160 out of 500 (32%) showed clinical anaemia, 130/500 (26%) were having dental caries, 100/500 (20%) were having reproductive problem (dysmenorrhoea), 40/500 (8%) were skin problem, 5% Eye problem( defective vision & refractive errors), 3.2 % were having URTI and 2.8 % ENT problem.

**Conclusion:** It was concluded that there is a high prevalence of under nutrition, dental caries and clinical anaemia among adolescent girls in urban and rural areas of Lucknow. The present study calls for Health education and nutrition interventions to reduce the serious health problem on priority basis.

**Keywords:** Adolescent girls, Morbidity pattern, BMI, Dental caries, Anaemia

**Introduction:**

WHO defines Adolescence as the segment of life between the ages of 10-19 years. Adolescence is a transition phase through which a child becomes an adult. It is characterized by rapid growth and development; physiologically, psychologically and socially.[1] 85% of them live in developing countries.[2] Adolescent girls form an important vulnerable sector of population that constitute about onetenth of Indian population.[3] Under-nutrition among adolescents is a serious public health problem internationally, especially in developing countries.[4] Early adolescence after the first year of life is the critical period of rapid physical growth and changes in body composition, physiology and endocrine.[5] Adolescent girls health covers nutritional status, morbidity, and reproductive health. During the period of adolescence the nutrient needs are the greatest.[6] The girls are usually physically stunted a manifestation of chronic protein energy malnutrition. A large proportion of adolescent girls suffer from various gynecological problems, particularly menstrual irregularities such as menorrhagia, polymenorrhea, oligomenorrhea, and dysmenorrhea.

The importance of this target group lies in the fact that they are going to be the mothers of tomorrow – whose well being is critically important for improving the nutritional, health and educational status of women in the State. Various base line surveys also revealed that the health, nutritional and educational status of adolescent girls are at sub-optimal level.[7] The data regarding the morbidity status amongst adolescent girls are sparse, despite the usefulness of such information in the management of illness and upliftment of health status for these groups. In this context, the present study was taken up among adolescent girls residing in urban and rural outreach areas of Career Institute of Medical Sciences, in Lucknow district.

**Aim and Objectives:**

To study the Morbidity pattern among the adolescent girls in urban and rural areas of Lucknow district.

**Material and Methods:**

It was a cross sectional study which was conducted from July 2015 to December 2015 among the adolescent girls residing in the field practice areas (urban/rural) of Career Institute of Medical Sciences, Lucknow. A total of 500 girl children formed the study subjects. The medical officer along with Residents/Consultants under department of paediatrics and Obs & Gynae provided medical checkup and treatment for children once in a month. Those requiring specialist treatments will be referred to district hospital.

Data regarding morbidity status was collected using a pre-tested proforma. During the first visit, every child was examined physically from head to toe and deviations from normal, if any, were recorded. Enquiry was made about the health ,reproductive problems and occurrence of any ailment during previous two weeks. Nutritional status of girls was assessed by Anthropometric measurements viz height, weight, BMI. Stadiometer (measuring rod) capable of measuring to an accuracy of 0.1 cm was used to assess height of the subjects. A portable weighing machine with an accuracy of 100gms was used to record the weight of the girls. BMI was calculated using the formula (BMI =Weight in kg/height in m2). The girls were categorized into Various grade based on BMI according to WHO International Standard.[8,9,10] that is, Grade 3 thinness (BMI < 16 kg/m2), Grade 2 thinness (BMI 16-16.9 kg/m2), Grade 1 thinness (BMI 17-18.49 kg/m2), Normal (BMI 18.5-24.99 kg/m2), Overweight (BMI



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25-29.99 kg/m2) and Obese (BMI >30 kg/m2).[11] Data collected was entered in Microsoft Office Excel and analysed by using SPSS Version 17.0.

**Results:**

A total 500 girls were studied, 200 in urban areas and 300 in rural areas. Of that 30%,33% (60,100) were in the age group 13 years in urban and rural areas respectively. Followed by 27.5,25% were in age group 14 years. 20,13.3% were in age group 12 years. 10,16.7% were in age group 15 years and very few that is 7.5 and 5% in the age group 11 and 10 years. (Table -1).

In the present study according to WHO reference standards, 40%, 50.7% (80,152) girls were under-nourished (BMI≤18.5). The Girls suffering from chronic energy deficiency (CED) grade I, II and III were 23.65%, 13.35% and 8.3% respectively. 7.5% ,5% were found to be overweight in urban and rural areas respectively and only 2.5% of the girls was found to be obese in urban areas and none in rural areas. According to the new guidelines by the Government of India as per the dianostic cut-off values the 45 % was found to be undernourished while 6.25 % was found to be Overweight (BMI >23.5 kg/m2). (Table-2)

160 out of 500 (32%) showed clinical anaemia, 130/500 (26%) were having dental caries, 100/500 (20%) were having reproductive problem (dysmenorrhoea), 40/500 (8%) were skin problem, 5% Eye problem( defective vision & refractive errors), 3.2 % were having URTI and 2.8 % ENT problem. (Table 3).

| Age in years | Urban | | Rural | |
|---|---|---|---|---|
| | Frequency (n) | % | Frequency (n) | % |
| 10 | 10 | 5.0 | 15 | 5.0 |
| 11 | 15 | 7.5 | 20 | 6.67 |
| 12 | 40 | 20.0 | 40 | 13.3 |
| 13 | 60 | 30.0 | 100 | 33.3 |
| 14 | 55 | 27.5 | 75 | 25.0 |
| 15 | 20 | 10.0 | 50 | 16.7 |
| **Total** | 200 | 40.0 | 300 | 60.0 |

**Table 1: Age wise distribution of study subjects (adolescent girls)**

| Grade of Undernutrition | BMI cut off value ($Kg/m^2$) | No. of adolescent girls in urban area (%) | No. of adolescent girls in rural area (%) |
|---|---|---|---|
| **Grade 3 thiness** | <16 | 10 (5.0%) | 35 (11.7) |
| **Grade 2 thiness** | 16-16.9 | 20 (10.0%) | 50 (16.7) |
| **Grade 1 thiness** | 17-18.49 | 50 (25.0%) | 67 (22.3) |
| **Normal** | 18.5-24.99 | 100 (50.0%) | 133 (44.3) |
| **Overweight** | 25-29.99 | 15 (7.5%) | 15 (5.0) |
| **Obese** | >30 | 05 (2.5%) | 00 (0) |

**Table 2 : Nutritional status of study population as per WHO standard**



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| Morbidity status | Urban | | Rural | |
|---|---|---|---|---|
| | Frequency (n) | % | Frequency (n) | % |
| URTI | 06 | 3.0 | 10 | 3.33 |
| Skin problems | 20 | 10.0 | 20 | 6.67 |
| Eye problems | 10 | 5.0 | 15 | 5.0 |
| ENT problems | 04 | 2.0 | 10 | 3.33 |
| Dental | 55 | 27.5 | 75 | 25.0 |
| Reproductive | 40 | 20.0 | 60 | 20.0 |
| NAD | 05 | 2.5 | 10 | 3.33 |
| Anaemia | 60 | 30.0 | 100 | 33.3 |
| **Total** | 200 | 40.0 | 300 | 60.0 |

**Table 3 : Morbidity status of adolescent girls**

**Discussion:**

In the present study according to WHO reference standards.[11] 45% girls were under-nourished (BMI≤18.5 kg/m2). Girls with thinness grade I, II and III were 23.6%, 13.3% and 8.3% respectively. Out of the total 500 girls, 6.25% were found to be overweight and only 1.25% of the girls were found to be obese. According to the new guidelines by the Government of India (ICMR)[12] as per the diagnostic cut-off values the 232/500 (45%) was found to be undernourished while 6.25% was found to be Overweight. In a study conducted by Kapil et al.[13] 8.1% were CED grade I, 6.65% were CED grade II and 78.8% were CED grade III. In a study by Raheena Begum[14] in Kerala, 53% in 14 years age group and 33% in 15 years age group were having BMI <18.5 kg/m2. The study of urban slum girls in Dhaka reported prevalence of thinness 17% [15].

The health problems of adolescent girls vary from place to place and several studies conducted in India and abroad revealed that the main morbidity conditions include malnutrition, dental caries, and diseases of skin, problem of Eye & Ear and reproductive problems. In the present study, the leading causes of morbidity were undernutrition 45%, dental caries (26%), dysmenorrhoea (20%), clinical anaemia (pallor) 30% and 8%, 5% skin and eye infections respectively. In contrast to this a study conducted by Srinivasan[10] (2000), in Tirupati in 598 children aged 6-17 years, the common morbid conditions found were skin disorders 25.7%, dental caries 21.5%, ARI 1.7% and diarrohea 1.2%.

**Limitations of study:**

As it was a single centre study the results cannot be genralized to entire population. Furthermore comprehensive and multicentric studies including meta analysis of various earler studies should be done, to have a more meaningful and high impact results.

**Conclusion:**

It wass concluded that there is a high prevalence of under nutrition, dental caries and clinical anaemia among adolescent girls in urban and rural areas of Lucknow. The present study calls for Health education and nutrition interventions to reduce the serious health problem on priority basis.



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