

Original Research Article

Morbidity pattern among school going adolescent girls of a North Indian district

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ABSTRACT

Background: The objective of the study was to assess the morbidity pattern among school going adolescent girls in Lucknow district of North India.

Methods: A cross-sectional study was carried out in urban and rural schools of Lucknow district. Multistage random sampling was used to select the requisite number of girls. A total of 847 adolescent girls between 10 and 19 years of age were interviewed and examined physically from head to toe and any signs and symptoms of illness were recorded. Statistical analyses were done using percentage and Chi-square test.

Results: Of 847 adolescent girls, around 64.8% were found to be sick at the time of the study. A maximum of 16.4% girls were suffering with hair problems followed by teeth and gum problems, which was 14.2%. 56.3% girls were suffering with iron deficiency and 0.5% girls with vitamin A deficiency. Riboflavin deficiency was statistically more (2.8%) in rural schools when compared to urban school girls (0.7%).

Conclusions: This study reveals a high prevalence of morbidity. A strong need exists for planning and programming intervention activities for health needs in the area.

Keywords: Adolescent girls, Lucknow district, Morbidity pattern, Anaemia

INTRODUCTION

Adolescence is the period of transition from childhood to adulthood.¹ It is characterized by rapid growth and development physiologically, psychologically and socially.² Adolescents constitutes a sizable proportion of the Indian mothers. 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 health status.³ Although there are many programs that focus on the needs of adolescent girls, but as the health needs of them are tremendous and these have seldom been met, as a consequence of this, their health status is low.⁴ This study focuses on morbidity pattern of school going adolescent girls in Lucknow

district which will reveal their health and related conditions and will ultimately navigate health promoting bodies to enumerate priorities and accordingly to plan the nature and extent of health services needed for them.

METHODS

The study protocol was submitted to the Institutional Ethical Committee and clearance was obtained. Informed consent of the principals of schools was taken before the study and assent from the selected adolescents was also obtained, before initiation of the study.

The present cross-sectional study was carried out among school-going adolescent girls in Lucknow district from

October 2008 to September 2009. An optimum sample size of 847 (593 urban and 254 rural) school-going adolescent girls of Lucknow district, aged 10–19 years, was selected, and the selected girls were interviewed and examined.

The sample size was calculated using the formula, $n = Z_{(1-\alpha/2)}^2 pq/d^2$ (where $Z_{(1-\alpha/2)} = 1.96$ at 95% confidence level; p = prevalence of morbidity, $q = 1 - p$; d = allowable error). For this study, we assumed 50% prevalence of morbidity, hence $p = 0.5$; $q = 0.5$; $d = 5\%$. Thus, the sample size yielded was 385. As the subjects are chosen by multistage random sampling, a design effect due to complex sample design comes into picture. Taking into account the design effect of 2 and 10% as non-respondents, the total number came out to be 847.

Multistage random sampling technique was used to select the requisite number of eligible girls.

First stage

Lucknow district is divided into urban and rural areas. The urban area is spread equally on both sides of Gomti River known as Cis Gomti and Trans Gomti. According to Nagar Nigam Lucknow, urban area is divided into six zones. From Cis Gomti, two zones were randomly selected and similarly from Trans Gomti two zones were randomly selected.

Second stage

At the second stage, from each zone one senior secondary school was selected randomly from the listed senior secondary schools. Similarly two blocks were selected randomly from eight blocks of the rural Lucknow. From each block, one senior secondary school was selected randomly from listed senior secondary schools.

Third stage

At the third stage, students from classes VI to XII of age group 10–19 years were selected. Students within the class were selected through systematic random sampling. In some schools of rural area, the numbers of students in the classes were not enough; therefore, all the students of the class were invited to participate in the study as systematic random sampling was not possible.

A total of six senior secondary schools, four schools from urban area and two schools from rural area were randomly selected from listed senior secondary schools. From these schools, 593 adolescent girls from urban schools and 254 adolescent girls from rural schools were selected for the study.

A structured interview schedule was developed and pre-tested on adolescent girls of a school other than the ones selected for the study. The pre-tested schedule was

modified after pre-testing and finalized. Data regarding morbidity status were collected using pre-tested and finalized interview schedule. A separate room in each school was used for examination purpose. Every girl was examined physically from head to toe and any signs and symptoms of illness were recorded.

Data were entered in Microsoft Office Excel and analyzed with Statistical Package for the Social Sciences (SPSS) version 16.0. Data were analyzed using percentages and Pearson's Chi-square test for normal distribution. P values less than 0.05 were considered significant.

RESULTS

A total of 847 school going adolescent girls (100%) were included in the study. Of 847 adolescent girls, around 64.8% were found to be sick at the time of the study.

Table 1 shows the distribution of the morbidity pattern. Skin diseases were present in 3.2% of adolescent girls, of which scabies was found to be maximum, i.e. 2.4%. There was no association between skin disease and place of schools.

Problems related to hair formed the major burden of morbidity, i.e. 16.4%, of which 14.2% girls in urban schools and 21.6% girls in rural schools were suffering with hair problems. This problem was statistically significant with place of schools.

Eye problems were present in 11.7% of adolescent girls, of which 12.4% girls belonged to urban schools and 9.8% girls belonged to rural schools.

A maximum of 11.3% girls in urban schools and 8.2% in rural schools were suffering with defective vision. There was no association between eye problems and place of schools.

Ear problems were present in 5.2% of girls, of which 5.1% girls belonged to urban

Schools and 5.5% girls belonged to rural schools.

Morbidities involving throat were present in 6.9% of girls and maximum problem was of pharyngitis both in urban schools, i.e. 5.1% and in rural schools, i.e. 3.1%.

Teeth and gums problems were present in 14.2% of girls, of which 13.3% girls were from urban schools and 16.3% were from rural schools. A maximum of 12.5% girls in urban schools and 11.2% in rural schools were suffering with caries.

Table 2 shows that about 5.6% urban school girls and 4.7% rural school girls were suffering with systematic morbidity. About 4.7% of urban as well as rural

adolescent girls were suffering with reproductive system morbidity. None of the rural school girls were suffering

with any systematic morbidity except reproductive system morbidity.

Table 1: Distribution of general morbidity of adolescent school girls.

Morbidity Pattern	Urban (593)		Rural (n=254)		Total (n=847)		Significance urban/rural
	No.	%	No.	%	No.	%	
Skin							
Scabies	15	2.5	5	2.0	20	2.4	Fisher's exact test p value=0.633
Fungal infection	4	0.7	3	1.2	7	0.8	
Total	19	3.2	8	3.2	27	3.2	
Jaundice	2	0.3	0	0	2	0.2	p value=0.000
Lymphadenopathy	1	0.2	1	0.4	2	0.2	
Hair							
Sparse and thin	0	0	1	0.4	1	0.1	p value=0.000
Dyspigmentation	1	0.2	2	0.8	3	0.4	
Flag sign	0	0	0	0	0	0	
Easy pluckability	54	9.1	10	3.9	64	7.6	
Lack of luster	29	4.9	42	16.5	71	8.4	
Total	84	14.2	55	21.6	139	16.4	
Eyes							
Defective vision	67	11.3	21	8.2	88	10.4	Fisher's exact test p value=0.675
Infection	5	0.8	2	0.8	7	0.8	
Night blindness	0	0	0	0	0	0	
Bitot's spot	2	0.3	2	0.8	4	0.5	
Total	74	12.4	25	9.8	99	11.7	
Ear							
Defective hearing	1	0.2	0	0	1	0.1	p value=0.714
Otorrhoea	29	4.9	14	5.5	43	5.1	
Total	30	5.1	14	5.5	44	5.2	
Throat							
Pharangitis	30	5.1	8	3.1	38	4.5	p value=0.449
Tonsilitis	14	2.4	6	2.4	20	2.4	
Total	44	7.5	14	5.5	58	6.9	
Lips							
Angular stomatitis	4	0.7	7	2.8	11	1.3	p value=0.014
Tongue	2	0.3	0	0	2	0.2	
Teeth and gums							
Caries	74	12.5	36	14.2	110	13.0	Fisher's exact test p value=0.307
Inflamed gingival bleed	5	0.8	5	2.0	10	1.2	
Total	79	13.3	41	16.3	120	14.2	
Grand total	339	57.2	165	64.9	504	59.5	

*based on clinical examination

Table 2: Distribution of systematic morbidity in adolescent school girls.

Systemic morbidity	Urban (n=593)		Rural (n=254)		Total (n=847)	
	No.	%	No.	%	No.	%
Musculoskeletal system	1	0.2	0	0	1	0.1
GIT	2	0.3	0	0	2	0.2
CNS	1	0.2	0	0	1	0.1
Cardiovascular system	1	0.2	0	0	1	0.1
Reproductive system	28	4.7	12	4.7	40	4.7
Total	33	5.6	12	4.7	45	5.3

*based on clinical examination

Table 3: Distribution of adolescent school girls in relation to nutritional deficiencies.

Nutritional deficiencies	Urban (n=593)		Rural (n=254)		Total (n=847)		Significance urban/rural
	No.	%	No.	%	No.	%	
Iron	330	55.6	147	57.9	477	56.3	p value=0.550
Vitamin A	2	0.3	2	0.8	4	0.5	
Riboflavin	4	0.7	7	2.8	11	1.3	p value=0.014
Vitamin C	5	0.8	5	2.0	10	1.2	

Table 3 shows the prevalence of nutritional deficiencies in school girls. About 55.6% urban school girls and 57.9% rural school girls were having iron deficiency. In urban schools, vitamin-A deficiency was in 0.3% girls while in rural schools it was in 0.5% girls. In urban schools, Riboflavin deficiency was in 0.7% girls while in rural schools, it was in 2.8% girls and this deficiency was statistically significant.

DISCUSSION

In present study, morbidity due to skin infection is 3.2%, out of which scabies (2.4%) was present in most of the girls. These findings are almost similar with Agarwal et al, who observed skin infections in 4.5% school girls with scabies in 1.2% school girls and Panda et al, who observed that 0.9% girls had skin infections and Ganguli, who observed that 1.3% girls had skin infections.⁵⁻⁷

In our study none of the girls in rural school were suffering with jaundice but lymphadenopathy was present in 0.2% girls. The finding about lymphadenopathy in our study is in contrast with Singh et al (22.2%).⁸ Susmitha et al in their study observed 0.73% lymphadenopathy.³

In the present study, significantly higher hair problems were in rural than urban adolescent school girls with an overall 16.4% girls were suffering with hair problems.

There was no significant difference in eye problems among urban and rural adolescent girls. Defective vision was observed in 10.4% girls. These results are in accordance with that reported by Susmitha et al (12.36%).³ Singh et al also reported defective vision in 4.5% girls.⁸ This difference may be due to inadequate indoor lighting.

In the present study, the ear problems were observed in 5.2% girls and otorrhoea was the main problem (5.1%) in both urban and rural girls. Defective hearing was in 0.1% adolescent school girls.

Ananthkrishnan et al, among adolescent girls observed ear infections in 3.1% girls, Koshi et al also reported defective hearing in 0.25% girls, Singh et al found that ear discharge was in 7.0% girls.⁸⁻¹⁰

Throat problems were in 6.9% girls including tonsillitis (2.4%). Panda et al found tonsillitis in 13.0% girls, Ganguli found tonsillitis in 13.4% girls.^{6,7}

Angular stomatitis was significantly higher in rural school girls (2.8%) than urban school girls (0.7%). In the present study, dental caries was found in 13.0% girls. Panda et al observed dental caries in 22.2% adolescent girls while Ganguli observed dental caries in 5.22% adolescent girls.^{6,7}

In the present study it was observed that in adolescent girls in both urban and rural area, among systemic morbidity, the reproductive system morbidity was maximum (4.7%).

In the present study, it was observed that 56.3% girls were suffering with iron deficiency and 0.5% girls with vitamin A deficiency. Riboflavin deficiency was statistically more (2.8%) in rural schools when compared to urban school girls (0.7%).

Ahmad et al, in Lucknow district also observed that about 43.2% girls in both urban and rural area had iron deficiency.¹¹ Our findings about iron deficiency are almost in accordance with Kapoor et al (60.0%) and Singh et al (56.0%).^{8,12}

Regarding vitamin A deficiency similar findings were reported by Koshi et al (1.58%), Singh et al (3.0%) and Damhare et al (2.78%) and Vitamin B deficiency was 19.44%.^{8,10,13}

CONCLUSION

Adolescent should be considered high-risk group of society (next only to infants and children), so, although they have been neglected till date, still there is time, to provide them helping hands and loving heart, else we will lose millions of perfect women of future. This study reveals a high prevalence of morbidity. A strong need exists for planning and programming intervention activities for health needs in the area.

Interpretation and future implications

Further quantitative descriptive studies are required to validate the results of this study. Further research can be encouraged to improve the health status of adolescent girl's health education.

Programmes on hygiene and common diseases have to be carried out regularly in schools in consultation with concern health authorities.

Limitations

Unable to find the difference regarding morbidity pattern among the school and non-school going adolescent girls because this is school based study.

Key findings

- Prevalence of morbidity was high among school going adolescent girls of urban as well as rural areas of Lucknow district.
- Hair problems and angular stomatitis were significantly associated with place of schools.
- The study provides an indication to implement intensive health educational activities related to common diseases among the adolescent girls, their parents and teachers for effective management of health problems among all adolescent girls.

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