Original Research Article

Morbidity pattern of school children: a study conducted in the urban field practice area of a tertiary health care centre of Odisha, India

Krishna Kar[1], Sasmita Pradhan[2]*, Barada P. Samal[3]

[1]Department of Community Medicine, PRM Medical College, Baripada, Odisha, India
[2]Department of Community Medicine and Family Medicine, AIIMS, Bhubaneswar, Odisha, India
[3]Department of Orthopaedics, GMCH, Balasore, Odisha, India

*Correspondence:
Dr. Sasmita Pradhan,
E-mail: saisasmitapradhan@gmail.com

ABSTRACT

Background: School is acknowledged as the place where children gain knowledge from health education sessions on various aspects of personal hygiene, sanitation and social customs. Health is one of the key factors determining the enrollment, performance and continuation in school. Objective was to study the morbidity pattern of school children.
Methods: The present cross sectional study was conducted in selected schools (both govt. and Private) of urban field practice area of SCB Medical College, Cuttack, Odisha during January 2016 to December 2016. A total of 660 school going children were taken for the study. After taking informed consent of the head of the school data was collected by using a Pre-designed, pre-tested questionnaire. Clinical examination was conducted to detect any morbidity pattern.
Results: In the present study most common morbidity detected was pallor (47.6%) followed by skin disease (34.5%) and dental caries (23.2%). Other morbidities found were acute respiratory infections 21.9%, eye problems 21.4%, fever 6.8%, pain abdomen 3%, diarrhoea 3.2%, ear discharge 3.9%, headache 5% and rhinitis 3.9%.
Conclusions: More emphasis should be given on primordial and primary preventive measures for prevention of childhood morbidities. School based health education programme may be a useful effort in this regard.

Keywords: Children, Govt. vs. private school, Morbidity, Urban area

INTRODUCTION

School is acknowledged as the place where children gain knowledge from health education sessions on various aspects of personal hygiene, sanitation and social customs. Health is one of the key factors determining the enrollment, performance and continuation in school. School health services has been considered as an important tool in the assessment and promotion of health among children.[1] School health services are considered to be an ideal platform for early detection of the health problems among children. Early identification of childhood illnesses through regular school health check-ups can prevent complications.[2]

School health services focus more attention on nutritional support, clinical assessment and personal hygiene. These factors are considered to be important especially in a developing country like India.[3]

Poor hygienic practices like improper hand washing lead to diarrhoea, acute respiratory infections. Most of the health problems among school children are preventable by promotion of healthy hygienic practices. The teacher is the guardian of the child in school and plays a pivotal role in the whole process of primordial prevention.[4] While the health problems of school children may vary from one place to another, surveys carried out in India indicate that the main emphasis will fall on-

- Malnutrition,
- Infectious diseases,
- Intestinal parasites,
- Diseases of skin, eye and ear,
- Dental caries.

Keeping this in view, the present study was carried out with the objective to study the morbidity pattern among school children in the urban field practice area of SCB Medical College and Hospital.

METHODS

The present cross sectional study was conducted from January 2016 to December 2016 in the schools located in the urban field practice area of SCB Medical College, Cuttack.

For sample size estimation, prevalence of anaemia was taken into account (as anaemia is one of the common morbidities among school children found in several research studies.[5,6] p = 40% (considering prevalence of anaemia in schoolchildren to be 40% according to a study conducted by Suba Joice et al).[3]

q = 100-40=60
L =10% of prevalence i.e. 10% of 40= 4
Sample size (S) = 4×40×60/4×4 =600

After adding a non-response error of 10%, an additional 60 children were included. Thus, a total of 660 school children were selected for this study.

Sampling technique

Multistage sampling technique was used to select the schools, classes and sections as follows i.e.

- Simple random sampling- to identify the schools, the classes in each school and subsequently the sections in the selected classes,
- Systematic random sampling- to identify children in the particular section.

Steps of activity

Selection of schools

At the outset a written permission for conducting the research work was taken from the District Education Officer, Cuttack and a complete list of all govt. and private schools located in Cuttack city was obtained from the office.

Out of total 19 schools located in urban field practice area, 16 were govt. schools and rest 3 were private schools. 50% of the total schools i.e. 10 schools (8 govt. schools and 2 private schools) were selected by simple random sampling method.

Selection of classes

Out of 10 classes, 2 (20%) classes i.e. one each from primary and high school was selected randomly. So, 5th and 9th class was selected for the study. It was decided to have equal number of students i.e. 330 (50% of 660) students from each class.

Selection of sections and study subjects

After reaching the individual school, the number of sections in the required class was enquired. From each class sections were chosen by simple random sampling method. The registers of the selected sections were collected from the school office and from the register, the students were chosen by systematic random sampling method till the required sample size is reached. If anybody from the selected roll number was absent, then the next roll number was taken into account for the study. Among the schools that were selected, in 2 schools both 5th and 9th class were present. By this procedure 47 (330/7=47) students from class 5th of each selected seven schools and 66 (330/5=66) students from class 9th of each selected five high school were taken for the present study. After preparation of questionnaire, pretesting was done in one English medium and one Odia medium school, then necessary correction in the questionnaire was done. Students were interviewed through oral questionnaire method.

Exclusion criteria

- Children with chronic illnesses and/or on long term medications.
- Those children who were unwilling to participate in the study.

Tools for data collection

The children were surveyed through pre-designed and pre-tested questionnaire. The questionnaire was designed according to the study objectives.

Social and demographic parameters

Type of family, parents' occupation and education, birth order of the child.

History of present illness

The children were asked about any illness they suffered on the day of visit. They were also enquired about any illness which they suffered within the last 15 days.

General examination

General examination was done for all students. Thyroid Gland and Lymph nodes examination was carried out to find out any abnormality. Anaemia was detected from

clinical signs such as presence of pallor on the lower conjunctiva.

Prior permission and ethical clearance for the study was obtained from the Institutional ethical committee of S.C.B Medical College. During the process of the data collection, the teachers were given feedback about the morbidities detected. Some of the minor ailments were treated then and there. Those requiring follow up care were advised to consult doctor at urban health and training centre (UHTC). Some of the cases which need specialized care were referred to SCB Medical College and Hospital.

Data analysis

Data thus collected were entered and analysed by using the software SPSS 21 version in the Department of Community Medicine, S.C.B Medical College and appropriate statistical tests were applied in this study

RESULTS

A total of 660 school children were examined during the present study. Table 1 shows the sex wise distribution of study subjects in govt. vs. private schools. The distribution of morbidity cases according to sex is given in Table 2.

Table 1: Sex wise distribution of study subjects in government and private schools (n=660).

School type	Male	Female	Total
Government schools	231 (53)	205 (47)	436 (100)
Private schools	88 (39.3)	136 (60.7)	224 (100)
Total	319 (48.3)	341 (51.7)	660 (100)

*Numbers in parenthesis indicate percentage

Table 2: Morbidities among the male and female students (n=660).

Morbidity	Male	Female	Total
Present	195 (61.1)	242 (70.9)	437 (66.2)
Absent	124 (38.9)	99 (29.1)	223 (33.8)
Total	319 (100)	341 (100)	660 (100)

*Numbers in parenthesis indicate percentage, (Chi-square=7.13, degree of freedom= 1; $p < 0.05$)

Amongst all children examined, 437 (66.2%) were suffering from some disease which included 195 (61.1%) male and 242 (70.9%) female students. Significantly more female students were having some morbidity than their male counterparts.

Table 3 shows that out of 436 students from govt. school 121 (27.8%) had 1 morbidity whereas 165 (37.8%) had 2 morbidities and 45 (10.3%) had more than 2 morbidities. 105 (24.1%) children of govt. school were found to be healthy without any detectable morbidity. Out of 224 students from private school 53 (23.7%) had 1 morbidity whereas 41 (18.3%) had 2 morbidities and 12 (5.35%) had more than 2 morbidities. 118 (52.7%) children of private school were found to be apparently healthy without any detectable morbidity. So significantly more number of students (75.9%) of govt. school were suffering from 1 or more morbidities than their counterparts (47.3%) in private school.

Morbidities detected among the study subjects (multiple responses) is given in Table 4. In this study the most common morbidity detected was pallor (47.6%) followed by skin disease (34.5%) and dental caries (23.2%). Other morbidities found were acute respiratory infections 21.9%, eye problems 21.4%, fever 6.8%, pain abdomen 3%, diarrhoea 3.2%, ear discharge 3.9%, headache 5% and rhinitis 3.9%.

Table 3: Distribution of study subjects according to the number of morbidities in govt. vs. private school (n= 660).

Type of School	Student with no morbidity	1 morbidity	2 morbidities	>2 morbidities	Total
Govt.	105 (24.1)	121 (27.8)	165 (37.8)	45 (10.3)	436 (100)
Private	118 (52.7)	53 (23.7)	41 (18.3)	12 (5.3)	224 (100)

*Numbers in parenthesis indicate percentage, (Chi-square=54.08, degree of freedom= 1; $p<0.05$)

Regarding the presence of various morbidities among the study subjects in government vs. private schools the Table 5 shows that significantly more number of students of govt. school (27.5%) were suffering from acute respiratory infections than their counterpart in private school (11.1%). The magnitude of ear discharge was also more in govt. school (5.7%) than private school (0.4%) which was statistically significant. Similarly, significantly more number of students of govt. school were suffering from louse infestation (26.8%), eye problems (29.1%) rhinitis (5.5%), headache (6.4%) and skin diseases (38.5%) than their counterpart in private school (4.9%, 6.2%, 0.8%, 2.2% and 26.7% respectively). Regarding the other morbidities like pallor, fever, diarrhea, dental caries, angular stomatitis, cheilosis, pain abdomen, lymphadenopathy and food poisoning there was no significant difference between the students of govt. and private school. In Table 6 regarding the sex wise distribution of pallor detected clinically, out of 660 students 314 (47.6%) had pallor. Among the 319 male students 125 (39.2%) had pallor whereas among 341 female students 189 (55.4%) had pallor. So, significantly more number of female students had pallor than the male students.

Table 4: Morbidities detected among the study subjects (multiple responses).

Different Morbidities		Number	Percentage
Pallor		314	47.6
ARI		145	21.9
Fever		45	6.8
Diarrhoea		21	3.2
Headache		33	5.0
Dental caries		153	23.2
Pain abdomen		20	3.0
Angular stomatitis		19	2.9
Ear discharge		26	3.9
Cheilosis		29	4.4
Lymphadenopathy		11	1.6
Food poisoning		11	1.6
Rhinitis		26	3.9
Louse infestation		128	19.3
Eye problem	Conjunctivitis	29	
	Hordeolum	19	21.4
	Conjunctival xerosis	15	
	Refractive error	78	
Skin diseases	Fungal infection	64	
	Scabies	21	
	Miliaria	47	34.5
	Furuncle	35	
	Allergic rash	61	

DISCUSSION

In the present study, 66.2% of children were suffering from some health problems. These figures were higher than those reported by Talukdar et al, (57.4%) but lower than those reported by Kaushik A et al, (85.3%).[7,8] Gender wise distribution shows that morbidity among female students were higher as compared to male students. However, study by Mhaske et al, has reported morbidity among boys is higher as compared to girls.[9]

The magnitude of pallor in the present study was 47.6%, which was similar to that reported by Devi P et al (50.15%), but more than that reported by Tiwari HC et al (33.9%), Semwal et al (28.4%), Panda et al (26%) and Hassan et al (24.8%).[10-13,2] In our study, more number of female students had pallor than the male students and similar findings were reported in all other studies as well.

The magnitude of skin diseases in the present study (34.5%) was less than that reported by Saluja N et al (59%).[14] In the present study, fungal skin infection was found among 9.7% of students which was less than that found by Kaushik A et al, (12.9%) but more than that found by Sehgal R et al (2.61%).[8,15] Cases of scabies were found among 3.1% of students which was similar to that reported by Sehgal R et al (3.09%), Berard AS et al (2.8%) and Sambo MN et al (2.9%).[15-17]

Table 5: Morbidities among study subjects in govt. vs. private school (multiple responses).

Morbidity	Government school	Private school	Total	X^2-value	p-value
Pallor	215 (49.3)	99 (44.2)	314	1.55	P >0.05
ARI	120 (27.5)	25 (11.1)	145	23.1	P <0.05
Fever	31 (7.1)	14 (6.2)	45	0.17	P >0.05
Diarrhoea	16 (3.6)	5 (2.2)	21	0.99	P >0.05
Headache	28 (6.4)	5 (2.2)	33	5.46	P <0.05
Dental caries	104 (23.8)	49 (21.8)	153	0.32	P >0.05
Angular stomatitis	12 (2.7)	7 (3.1)	19	0.07	P >0.05
Cheilosis	23 (5.2)	6 (2.6)	29	2.37	P >0.05
Pain abdomen	12 (2.7)	8 (3.5)	20	0.33	P >0.05
Ear discharge	25 (5.7)	1 (0.4)	26	10.9	P <0.05
Lymphadenopathy	8 (1.8)	3 (1.3)	11	0.22	P >0.05
Food poisoning	7 (1.6)	4 (1.7)	11	0.02	P >0.05
Louse infestation	117 (26.8)	11 (4.9)	128	45.4	P <0.05
Eye problem	127 (29.1)	14 (6.2)	141	46.1	P <0.05
Rhinitis	24 (5.5)	2 (0.8)	26	8.31	P <0.05
Skin disease	168 (38.5)	60 (26.7)	228	9.03	P <0.05

* Numbers in parenthesis indicate percentage

Dental caries was found among 23.2% children in the present study which was similar to that reported by P Panda et al (23.1%).[2] The magnitude was lower than that reported by Sehgal R et al (41.33%), Kaushik A et al (46%), Mhaske MS et al (65.1%) and Rani V et al (36.25%).[15,8,9,18]

Acute respiratory tract infection was detected among 21.9% children in the present study which was similar to that reported by Saluja N et al (23.4%) and Karikatti et al (22.57%).[14,19] Ear discharge was detected among 3.9% children in our study which was more than that reported by Sehgal R et al (2.85%), Ananthakrishnan S et al

(3.1%) but much less than that reported by Kaushik A et al (13.6%) and Tiwari HC et al (21.5%).[15,6,8,11]

The magnitude of acute respiratory infections, ear discharge, louse infestation, skin diseases were more in govt. school children than private school children. This can be attributed to the poor infrastructure and sanitary facilities in government schools and increasing number of enrollments leading to overcrowded classrooms without provision for proper cross ventilation.

Table 6: Sex wise distribution of pallor among the study subjects (n= 660).

Gender	Pallor		Total
	Present	**Absent**	
Male	125 (39.2)	194 (60.8)	319 (100)
Female	189 (55.4)	152 (44.6)	341 (100)
Total	314 (47.6)	346 (52.4)	660 (100)

*Numbers in parenthesis indicate percentage, (Chi-square =17.42, df = 1, p = 0.00)

CONCLUSION

Regarding the morbidities at the time of study or within last 15 days, 437 (66.2%) had some morbidity and 223 (33.8%) were apparently healthy. Common morbidities detected among the school children were pallor (47.6%) followed by skin disease (34.5%) and dental caries (23.2%). Other morbidities found were acute respiratory infections 21.9%, eye problems 21.4%, fever 6.8%, pain abdomen 3%, diarrhoea 3.2%, ear discharge 3.9%, headache 5% and that of rhinitis 3.9%. More emphasis should be given on primordial and primary preventive measures for prevention of childhood morbidities.

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