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Morbidity pattern among primary school children in urban field practice area of a tertiary care center in eastern Uttar Pradesh, India

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Abstract
Background: Children are nation's greatest asset. School children constitute around 25% of total population of India. They are more vulnerable to infections and malnutrition than rest of the population. After the family schools are the most important places of learning for children. A survey among the school children in India revealed that about half of the ailments found are related to unsanitary condition and lack of personal hygiene. Health problems of school children vary from one place to another.
Objectives
1. To study the prevalence of morbidity among primary school children.
2. To study the morbidity pattern among primary school children.
Methodology: Community based cross-sectional study.
Methods & Materials: Data was collected through pretested semi-structured questionnaire prepared by the investigators. Data collected were analyzed using statistical package for social sciences (SPSS) 21.0 software.
Results & Conclusions
Total strength of students in the school was 450. Total number of students examined was 423 (94%). Prevalence of morbidity was 38.8%. Highest proportion of students with morbidity was found in class 1 (43.29%). Overall most common morbidity found was skin diseases (25.7%) followed by anaemia (24.0) followed by malnutrition (22.2%) then dental caries (21.7%) followed by URTI (19.4%). Most common referral was ophthalmic reference with (47.91%) students.

Keywords: Prevalence, morbidity, school children

Introduction
Children's health is an integral indicator of the general well-being of the society and at the same time is an indicator of all social and environmental problems [1]. High stressfulness of socioeconomic factors, negative environmental factors, as well as adverse demographic processes in the society significantly reduce the living standards of the population of our country. The life of people nowadays is accompanied by a sharp worsening of the physical, somatic and psychosocial health [2]. Especially serious anxiety is evoked by the health state of modern preschool-age children in view of the increase in pathological changes [3]. The period of pre-school children is an important stage for formation and preservation of health in the future.
Protection of children's health and ensuring the conditions for children comprehensive development are defined in India as a nationwide priority [4]. One of the most important criteria for assessing health situation is the incidence rate (first discovered diseases) and prevalence rate (all diseases). The indicators of physical development (anthropometric data, pace and peculiarities of their changes in the process of growth, harmonious development, correlation of calendar and biological age, etc.) are the most important health parameters and critical indicators of social well-being of the society [5].
Children are nation's greatest asset. School children constitute around 25% of total population of India [6]. They are more vulnerable to infections and malnutrition than rest of the population [7]. Health of the child is viewed as absence of disease and not as comprehensive health in developing countries [8]. Children are the country's biggest human investment for development [9]. School a convergence center for health and education is a

setting that plays an important role in physical, social, mental and emotional development of children. Beginning of school health services in our country dates back to 1909, when for the first time medical examination of school children was carried out [10]. The WHO expert committee on school health services noted as long as 1950 that 'to learn effectively children need good health' [11]. After the family schools are the most important places of learning for children. A survey among the school children in India revealed that about half of the ailments found are related to unsanitary condition and lack of personal hygiene, health problems of school children vary from one place to another. Surveys carried out indicate that the main emphasis will fall in malnutrition, infectious diseases, intestinal parasites, diseases of the skin, eye and ear and dental problems [12]. Childhood is the best time for children to learn health seeking behavior. Education that provides basic academic skill, specific knowledge, attitude and skill related to their physical, psychological and social well-being [13]. According to modern concepts, school health service is an economical and powerful means of raising community health and more important in future generations. By simply doing periodic medical examination and daily morning inspection of students, we can detect many more problems and treat accordingly [14]. The present study was conducted as part of the school health services to assess the common existing health problems of school children and to arouse health consciousness among the children [15].

School is acknowledged as the place where children gain knowledge from health education sessions on various aspects of personal hygiene, sanitation and social customs [16]. 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 [17]. 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 [18].

Poor hygienic practices like improper hand washing lead to diarrhea, acute respiratory infections. Most of the health problems among school children are preventable by promotion of healthy hygienic practices [19]. Teacher is the guardian of the child in school and plays a pivotal role in the whole process of primordial prevention [20].

Aim & Objectives

1. To study the prevalence of morbidity among primary school children.
2. To study the morbidity pattern among primary school children.

Materials and methods

Study area: Primary school located in urban field practice area of a medical college in Eastern Uttar Pradesh.

Study type: Cross-sectional study. This cross sectional study was a part of routine school health services provided by department of Community Medicine

Study duration: 3 months (January – March 2018)

Sampling type: Simple Random Sampling

Sample Size: 423 study subjects were included in the study. The present cross sectional study was carried out in primary school located in the urban field practice area of a medical college in Varanasi from January 2018 to March 2018. This cross sectional study was a part of routine school health services provided by department of Community Medicine. The study subjects were school going children. There were five primary school present in the urban field practice area. Two schools were selected by simple random sampling. Prior permission was taken from the principal of the school after explaining the aims and objectives of the study. From these selected schools, a total number of 423 children studying from grade I to IV, who were present on the day of examination were included the study. The children were examined for the presence of different morbidities by ophthalmologist followed by dentist and a pediatrician and basic information of the child was taken from class teacher. General examination included head to toe examination then systemic examination was done. Visual acuity was assessed using Snellen's chart. The information was collected on pre designed and pretested pro forma.

The collected data entered in Excel sheet and analyzed using appropriate statistical test.

Statistical analysis: All responses were tabulated and graphically represented. Data was analyzed using SPSS software Version17.0. Statistical tools were used as for qualitative and quantitative data as applicable.

Results

Table 1: Distribution of students according to prevalence of morbidity.

Morbidity	No. of Students	Percentage (%)
Present	175	38.88
Absent	248	58.63
Total	423	100

Out of 450 students of the school, 27 were absent so total examined students were 423. 248 students (53.33%) had absolutely no morbidity; 175 students (38.88%) had one or more morbidity.

Table 2: Distribution of study subjects according to presence of morbidity

Class	Total students	Morbidity among students	Percentage%
I	97	42	43.29
II	116	44	37.93
iii	111	40	36.03
iv	99	49	49.49

Highest proportion of students with morbidity is found in class 1 with (43.29%).

Table 3: Morbidities detected among the study subjects (multiple responses)

Class	I	II	III	IV	Total	%
Anemia	13	7	12	10	42	24.0
Lymphadenopathy	1	0	3	1	5	2.8
Skin diseases	9	11	8	17	45	25.7
Ear discharge	1	3	2	3	9	5.1
Pain abdomen	2	1	4	2	9	5.1
URTI	12	9	5	8	34	19.4
Malnutrition	14	8	9	8	39	22.2
Angular stomatitis	3	5	7	6	21	12.0
Dental caries	11	15	9	3	38	21.7
Eye Problem	13	7	13	8	41	23.4
Headache	1	3	6	5	14	8.0

- Most common morbidity found was skin diseases (25.7%) followed by anaemia (24.0) followed by malnutrition (22.2%) then dental caries (21.7%) followed by URTI (19.4%).

Table 4: Distribution of students according to Basal Metabolic Index

BMI according to WHO classification				
Class	<3rd percentile	3rd-84th percentile	85th-94th percentile	95th percentile
I students	26	28	32	13
II students	34	32	32	20
III students	32	29	33	19
IV students	28	27	29	9
Total	120	116	126	61

Out of 423 students 61 (14.69%) were overweight (BMI was >95th percentile for normal) whereas 120 (28.91%) were underweight (BMI was <3rd percentile for normal) 242 (58.31%) students were normal.

Table 5: Distribution of Students According To Referrals

Class	Skin	Ophthalmology	ENT	Dental	Total
I	1	12	1	14	28
II	1	9	0	15	25
III	0	15	0	8	23
IV	0	10	3	7	20
Total	2	46	4	44	96

Discussion

- Out of 450 students of the school, 27 were absent so total examined students were 423. 248 (53.33%) had absolutely no abnormality; 175 (38.88%) had one or more morbidity.
- Most common morbidity found was skin diseases (25.7%) followed by anaemia (24.0%) followed by malnutrition (22.2%) then dental caries (21.7%) followed by URTI (19.4%).
- Out of 423 students 60 (14.69%) were overweight (BMI was >95th percentile for normal) whereas 120 (28.91%) were underweight (BMI was <3rd percentile for normal) 242 (58.31%) students were normal.
- It is advised that the teachers should follow up the students who were referred to higher centers.

In this study the prevalence of total morbidity was 38.8%. This prevalence was less than in a study by Kaushik *et al.* who found 85.3% [10]. Sharma *et al.* in his study found prevalence of morbidity as 77.9% and Saluja *et al.* found 67.8% [17-18]. Rani *et al.* who found morbidity prevalence 41.52% and Shinde *et al.* found 54.83% in their study [9, 19]. Most common morbidity found in the current study was skin diseases (25.7%) followed by anemia (24.0%). A study by Nigudgi *et al.* found anaemia prevalence to be 8.18% & study by Rani *et al.* found anemia prevalence to be 26.9%, Kulkarni *et al.* found 15.8% children were anemic, Kaushik *et al.* found 56.9% children had nutritional deficiencies and Shinde *et al.* found 15.69% children had anemia in their study [8, 9, 10, 16]. In current study respiratory infections was common with 19.4% prevalence, this prevalence was less compared to 42.78% found in a study by JP Singh *et al.* [15] while Sayed *et al.*, Kulkarni *et al.*, and Shinde *et al.* found 12.11%, 14.3%, and 3.77% prevalence of URTI respectively [13, 16, 19]. The present study found 23.4% study subjects had eye diseases, this prevalence was more than 10.41% in a study by Kulkarni *et al.* and12% in a study by Deshpande *et al.* [10, 11] Ear discharge was present in 5.1% of children in current study which was more than 2.6% in a study by Sayed *et al.* and Sharma *et al.* 5.59% [13, 17]. In this study 5.96% of children had dental caries which was less in prevalence compared to 31.86% in study by Kulkarni *et al.*, 24.86% in study by Sharma *et al.* and 22.8% in study by Saluja *et al.* [10, 17, 18] The prevalence of angular stomatitis was low in this study compared to 27.5% in a study by Kaushik *et al.* [16] The present study found 4.2% children had lymphadenopathy which was slightly lower than findings of Sharma *et al.* who found it 5% [17]. In this study the prevalence of skin infections was 1.4% which is low compared to 11.4% in study by Kaushik *et al.* and 6.53% in study by Sharma *et al.* [16-17].

Conclusion

Schools play a critical role in promoting the health and safety of young people and helping them establish lifelong healthy behavior patterns. Establishing healthy behaviors during childhood is easier and more effective health to improve each child's cognitive, physical, social, and emotional development. In the present study the diseases of the oral cavity and anemia were the most common among school children. There is felt need to intervene in term of prevention of diseases through improvement in personal hygiene and nutritional status of children through school health program. Most of the morbidities observed among the school children can be prevented and the health of the child can be enhanced by timely intervention. The school health program is proper means to diagnose and managed the health at its own level. The prevalence of disease in the school going children under study were found to be high, more so in females than males. Malnutrition and anemia make the children more susceptible to infection and causes early fatigue. Refractive errors and hearing defects reduces attention span. This directly affects the academic performance of the children.

Following recommendations have been made

1) Medical check-up of students at the time of admission.
2) Periodic medical check-up.
3) Establishment of well-knit school health services.
4) School health survey to know the morbidity pattern among students.

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