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Study of School Environmental Conditions & Morbidity Pattern Among School Children

MEDICAL SCIENCE

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ABSTRACT

Background: Education and health are inseparable. Student's health affects not only their cognitive performance in school, but also their ability to attend and stay in school over the years. To ensure attendance of children and to enhance their ability to learn, their health issues need to be addressed continuously. It is in this regard that the public health system of a nation has an important role to play.

Aim: Present study was conducted in school children along with health check up & environmental survey of school to study the morbidity pattern among the students & to study the school environmental condition.

Materials & Methods: Students & school environment of two primary & upper primary schools under field practice area of urban health training centre of Dr.S.C. Govt. Medical College, Nanded were surveyed in collaboration with Pediatric department and Community Medicine department. Every child present in the school during study period was clinically examined & anthropometric measurements such as height & weight were measured. Environmental conditions for the two schools were compared with the minimum standards for sanitation of school & its environment as suggested in India.

Results: Six hundred & twenty four 5- 13 years old school children were surveyed. The Waterloo's classification showed that 21.15% students were with adequate nutritional status while according to IAP classification nutritional status of 41.3% students was normal while only 6 students were suffering from Grade IV malnutrition. 38.46% students had poor personal hygiene in the form of overgrown nails filled with dirt, 31.73% students had poor dental hygiene. 27.88% students were anemic. Most of the environmental conditions in Municipal Corporation School were as per the minimum standards for sanitation of school & its environment. Ventilation & lighting in the class rooms was inadequate in Panchsheel Vidyalaya.

Conclusion: The present study had identified some of the important aspects of morbidity pattern & environmental factors in school environment where there was a scope for improvement.

Introduction:

Developing the human capital of nations especially the intellectual, social, mental, and physical abilities of children and adolescents is fundamental to the improvement of the quality of life of the citizens. Developing human capital is also critical for nations to enjoy political stability and economic growth. Nations that have invested in health and education have tended to experience corresponding economic development.

Furthermore, education and health are inseparable. Student's health affects not only their cognitive performance in school, but also their ability to attend and stay in school over the years. To ensure attendance of our children and to enhance their ability to learn, their health issues need to be addressed continuously. It is in this regard that the public health system of a nation has the potential to reach billions of young pupils worldwide. [1]

Accordingly, in 1909, Sir Sayajirao Gaikwad, King of Baroda, started School Health Programme in Baroda region. It was the first school health program in the Country.[2] In 1946 the Bhore Committee reported that School Health Services were practically not existent in India and where they existed they were in an underdeveloped stage. In 1953, the secondary Education committee emphasized the need for medical examination of students and school feeding programme. [3]

The Govt. of India launched the 'Special School Health Check-up Programme' in the year 1996 in coordination of Department of Health & Family Welfare and Department of Education for school going children of Primary Schools with the following objectives such as detection of health related problems that are commonly occurring amongst primary school children, screening of children for appropriate referral, building of health awareness in the community through primary school children and follow-up arrangements for detailed check-up and treatment of referral cases at Govt. Health Facilities. [4]

As per 2001 census, the children in the age group of 5-14 years constituted 28 percent of the total population.[5] Considering that a large number of children were anemic & about 50 percent suffered from malnutrition and lived in poor hygienic conditions. All these affected the attendance rate and increased dropout and absenteeism from the school. A step to be taken to tackle these issues was considered one of the important Millennium Development Goals (MDG). Therefore it was important to do a comprehensive School Health program for creating awareness and screening of children for ailments, especially in primary & upper primary schools. Investment in this target group of 5-14 years children of primary and upper primary schools would have long term benefit on health habits, better health status i.e. nutrition status, anemia and other ailments which were usually left untreated.

Keeping these facts in mind the present study was conducted keeping the following aim & objectives.

Aim and Objectives:

1. To study the morbidity pattern among the primary & upper primary school children.
2. To study the School Environment with respect to minimum standards for sanitation of school & its environment.

Materials & Methods:

Urban Health training center (UHTC) of Dr. S.C. Govt. Medical College, Nanded covers the population of around 57,000 including 8 slum areas under it. There are 10 different schools including primary & upper primary schools, high schools which are run either by Municipal Corporation or by different private charitable trusts under the field practice area of UHTC.

Out of these 10 schools 2 schools (20% sample) were selected by simple random sampling technique.

Study area
The two selected schools were namely Panchsheel Vidyalaya, Ganesh nagar & Municipal Corporation primary School No.10. Ambedkar Nagar, Nanded.

Study period: July to September 2012 during morning sessions school routine hours.

Study Subjects:
There were 343 students enrolled in *Panchsheel Vidyalaya* which included primary & upper primary school students while Municipal Corporation primary School No.10. had 302 students enrolled with it. All the children present in the class room on the day of health check up were included in the study. Also those students who were absent on the scheduled day but attended the school afterwards within the duration for which the health check up team was working in the school, were also examined & were included in the study.

Permission was obtained for school health check up from the appropriate authority's i. e. Head Mistress of both the schools. Every day children from one class room were decided to be examined. The time table for each class, each division was prepared & the school teacher was requested to announce for the same in each class. The message was communicated to the parents about the same & requested to attend the IEC activity which was scheduled on the last day of health check up activity, in both the schools. The parents were informed & educated about various aspects of heath status of their children including hygiene, appropriate nutrition, immunization & were encouraged to communicate freely with the experts to clear their doubts.

The School Health Check-up was carried out by the team of pediatricians, post graduate students of Dept. of Preventive & Social Medicine, Dr. S.C. Govt. Medical College, Nanded & was accompanied by medical social worker (MSW). Prior to the Health check up camp, the investigators underwent the refreshment training for the period of one week in the department of Pediatrics and Community Medicine, Dr. S.C. Govt. Medical College, Nanded.

The height & weight of the school children was measured using a standardized method. In all the study subjects, weight was measured with wearing garment not more than school uniform, by using dial type weighing balance, with the minimum calibration for 0.5kg. The weighing machine was standardized using a known weight of 0.5kg. Before taking weight of the children, zero adjustment was checked every time.

Height: Height was measured using a flexible measuring tape against the wall without shoes, in standing position with occiput, back & buttocks touching the wall, looking straight forward in horizontal direction to nearer to 1cm was measured.

Each child was examined for personal hygiene by examining the nails, nutritional status was assessed using anthropometric measurements in the form of weight & Height. Oral cavity, ear nose throat was examined. Eyes were examined for any signs of vitamin A deficiency. Anaemia was assessed by examining the mucosal surface for pallor. Distant vision for each eye was assessed for each child. Child was looked for any signs of malnutrition. Systemic examination was done as well. In case of any abnormality or illness the child was referred to the civil hospital by giving a referral letter about him to the class teacher.

In line with the objectives of the study, quantitative research techniques were used to generate information on the important indicators.

During the study school environment was also observed to assess whether the schools were as per the minimum standards for sanitation of school & its environment as suggested in India.[5,6] The predesigned, pretested close ended questionnaire was utilized for the same which included various aspects about healthful school environment including location, site, structure, class room, furniture, doors & windows, colour, lighting, eating facilities & lavatory. The surface area of the classroom & that of the doors & windows was measured using the carpenter's measuring tape. The ratio of door & windows surface area to the total surface area for each classroom was calculated. At the same time per capita floor space was also calculated for each classroom.

The observations were statistically analyzed & interpreted.

Results & Discussion:
There were total 645 students enrolled in both the schools. But 21 students were chronically absent & hence they were excluded from the study. Thus only 624 students from both the schools were included in the study & their data was analyzed.

The study subjects were from the age group 5 to 13 years. The mean age of the study subjects was 8.69 years with S.D. ±2.13.

The maximum subjects i.e. 162 (25.96%) were from first standard followed by 126 (19.23%) subjects were from 3rd standard class.

As per the Waterlow's classification 21.15% students are with adequate nutritional status while 9.45% are stunted & wasted. 65.38% students are showing stunted growth. More proportion of male students are stunted (67.85), wasted (29.47%), both stunted & wasted (17.85%) than female students. This difference was statistically significant.

According to IAP classification, nutritional status of 41.3% students was normal while only 6 students were suffering from Grade IV malnutrition.

38.46% students had poor personal hygiene in the form of overgrown nails filled with dirt, 31.73% students had poor dental hygiene. 27.88% students were anaemic.

The study subjects were from the age group 5 to 13 years. The mean age of the study subjects was 8.69 years with S.D. ±2.13. The maximum subjects i.e. 162 (25.96%) were from first standard followed by 126 (19.23%) subjects were from 3rd standard class.

As per Waterlow's classification[7] nutritional status of 21.15% students including 27.16% female students & 16.07% male students was normal. A total of 65.38% students including 62.5% female student & 67.85% male students had stunted growth. 22.11% students including 29.47% male students & 8.3% female students had wasting. 9.45% students were both wasted & stunted. The difference between the nutritional status of male & female students was statistically significant. In a study conducted by As per the study by Adand et al [8] in school children of North India prevalence of stunting was 38.5%.In a study by G.K.Medhi[9] et al in school children of Tea garden workers prevalence of stunting was 53.6% which was nearby to this study finding. According to Bose Kuashik et al[10] the prevalence of adolescent school children in Paschim Medinipur was more in boys (41.8%) as compare to girls (25.2%) which was similar to the present study finding. As per Bisai et al[11] the overall prevalence of stunting in children of Lodha was 26.1% while that of wasting was 19.4% which was much lower than the present study findings.

As per IAP classification 41.34% students including 45.83% female students & 37.5% male students were with adequate nutrition, followed by 31.73% students comprising of 33.92% male & 29.16% female students were suffering from Grade II malnutrition only 0.96% i.e only 6 students were suffering from Grade IV malnutrition.

Personal hygiene in 38.46% students was poor. Poor dental hygiene with dental carries was the most common morbidity found, in 31.73% students. 27.88% students 30.35% boys & 25% girls were anaemic. As per the study among the school children in north India by Anand K et al[5] the prevalence of anaemia was 39.6%. In the study by Pravin Chandra et al[12] in the school children of Dharwad, the prevalence of anaemia was 25.51% & worm infestation was 6.1%. In our study 13.46% students gave history suggestive of worm infestation. Only 5.76% students had signs of vitamin A deficiency.

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School environment was only partially satisfactory in both the schools as Per capita floor space for each student was not ≥ 10 sq. ft in each school, rest of the environmental condition in Municipal corporation school was satisfactory but in Panchsheel Vidyalaya , there was no furniture in the form of desks was available for students in the class room, ventilation & lighting in the class rooms was inadequate, there was no separate lavatory for boys & girls.

Conclusion:

There were total 645 students enrolled in the schools, out of which 21 were chronically absent. 624 students were regularly attending the school. The attendance at the schools was good. As per Waterlow's classification only one fifth of the total students were normal while 10% of the students had both wasting as well as stunting of growth. Male students were significantly more affected than the female students. As per IAP classification 40% students had normal weight for age. Poor hygiene & morbidities were more common in one third of the students. Thus there was a scope for improvement in hygiene & nutritional status of these students & thus to improve morbidities among them.

There was a scope for improvement of school environment by improving lighting & ventilation in the classrooms of Panchsheel Vidyalaya. Also separate lavatory facility for male & female students was needed in Panchsheel Vidyalaya. Most of the environmental conditions in Municipal Corporation School were as per the minimum standards for sanitation of school & its environment.

Table 1. Age and sex wise distribution of the students:

Age in yrs	Male (%)	Female (%)	Total (%)
5	30 (8.92%)	0	30 (4.8%)
6	66 (19.65%)	42 (14.58%)	108 (17.3%)
7	36(10.71%)	30 (10.41%)	66 (10.57%)
8	42 (12.5%)	36 (12.5%)	78 (12.5%)
9	36 (10.71%)	60 (20.83%)	96 (15.38%)
10	66 (19.65%)	48 (16.66%)	114 (18.26%)
11	42 (12.5%)	36 (12.5%)	78 (12.5%)
12	12 (3.57%)	12 (4.16%)	24 (3.84%)
13	06 (1.78%)	24 (%)	30 (4.8%)
Total	56 (100%)	48 (100%)	104(100%)

Table.2 Waterlow's classification for the nutritional status of students.

No.	Waterlow's classification	Female (%)	Male (%)	Total (%)
1	Normal	78 (27%)	54(16.07%)	132 (21.15%)
2	Stunted	180 (62.5%)	228 (67.85%)	408 (65.38%)
3	wasted	24 (8.3%)	114 (29.47%)	138 (22.11%)
4	Wasted & stunted	06 (2.08%)	60 (17.85%)	66 (9.45%)
Total		288 (100%)	336 (100%)	624 (100%)

d.f. = 3 χ^2 = 15.32 p < 0.01

Table.3 Nutritional status as per IAP classification.

Grade of Malnutrition	Male (%)	Female (%)	Total (%)
Normal	126 (37.5%)	132 (45.83%)	258 (41.34%)
Gr.I (Weight < 80%)	60 (17.85%)	30 (10.41%)	90 (14.42%)
Gr.II (Weight < 70%)	114 (33.92%)	84 (29.16%)	198 (31.73%)
Gr.III (Weight < 60%)	30 (8.92%)	42 (14.58%)	72 (11.53%)
Gr.IV (Weight < 50%)	06 (1.78%)	0	06 (0.96%)
Total	336 (100%)	288 (100%)	6244 (100%)

d.f. = 4 χ^2 = 3.17 p > 0.05

Table.4 Morbidity pattern among the students

No.	Morbidity	Male(%)	Female(%)	Total(%)
1.	Poor Dental Hygiene	120 (35.71%)	78 (27.08%)	198 (31.73%)
2.	Poor personal Hygiene	150 (44.64%)	90 (31.25%)	240 (38.46%)
3.	Anaemia (pale mucosa)	102 (30.35%)	72 (25%)	174 (27.88%)
4.	History suggestive of worm infestation	42 (12.5%)	42 (14.58%)	84 (13.46%)
5.	URTI	36 (10.71%)	36 (12.5%)	72 (11.53%)
6.	Ear discharge	0	36 (12.5%)	36 (5.76%)
7.	Skin infection	18 (5.35%)	18 (5.35%)	36 (5.76%)
8.	Signs of vitamin A deficiency	24 (7.14%)	12 (4.16%)	36 (5.76%)
9.	Hair changes suggestive of PEM	18 (5.35%)	24(8.33%)	42 (6.73%)
10	Other	18 (5.35%)	24 (8.33%)	42 (6.73%)

Table.5 Observations about school Environment

No.	Observations	Panachsheel Vidyalaya	Municipal corporation school
1.	Proper approachable road to the school, but away from busy places	Yes	yes
2.	School premises properly fenced.	Yes	yes
3.	Playground available for the school	Yes	yes
4.	One class room accommodates < 40 students	Yes	yes
5.	Per capita floor space for each student ≥ 10 sq. ft	No	No
6.	Minus type desks available for students	No	Yes
7.	Cross ventilation present in the class room	No	yes
8.	Door & window area ≥ 25% of floor surface area	No	yes
9.	Ventilators ≥ 2% of floor surface area	No	yes
10.	White color for the walls of the class room	Yes	Yes
11.	Lighting of the class rooms: adequate	No	Yes
12.	Direction of light in the class room	Front	Left
13.	Water supply	Yes	Yes
14.	Lavatory: separate arrangement for boys & girls	No	Yes

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