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HEALTH STATUS OF PRIMARY SCHOOL CHILDREN: A COMMUNITY BASED CROSS SECTIONAL STUDY IN RURAL AREAS OF KAMRUP DISTRICT, ASSAM

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ABSTRACT: BACKGROUND: Children are the wealth of any nation as they constitute one of the important segments of the population. School is important for cognitive, creative and social development of children. The primary school children group is non-earning, depended to family and easily accessible for the health assessment, care and education through teachers, books etc. **OBJECTIVES:** a) to assess the morbidity pattern amongst primary school children b) To assess the association between morbidity pattern and socioeconomic status of the school children. **METHODOLOGY:** A community based cross sectional study was under taken amongst the primary school children in Boko-Bongaon block of Kamrup district, Assam from August 2012 to July 2013 with the help of a predesigned and pretested proforma, clinical examination, anthropometric measurement and laboratory investigation. Statistical analysis used: Data was analyzed in Microsoft excel and by using chi-square test and proportions. **RESULTS:** 228 (57%) school children were suffering from one or more morbidities. The leading cause of morbidities were anaemia (70%), under nutrition(31.25%), worm infestation (29%), vitamin (vitamin B complex and vitamin C) deficiency disorder (29.75 %), skin disorder (24.25%), dental carries (23.75%), ocular disorder (13%) etc. 139 (34.75%) of school children were suffering from at least one episode of fever in the last 4 weeks followed by ARI 127 (31.75%). There is strong association between socioeconomic status and morbidities amongst the children and it is highly significant. **CONCLUSION:** In this study, Prevalence of diseases is found to be clubbed in the lower socioeconomic group. Health education and proper awareness to parents or guardians regarding prevention and treatment of common health problems and to improve personal hygiene of the children is necessary.
KEYWORDS: primary school children, morbidity, anaemia, ARI.

INTRODUCTION: Children are the wealth of any nation as they constitute one of the important segments of the population. United Nations educational scientific and cultural organization (UNESCO) since 1972, for the purpose of statistics consider 6-11 years as primary school age and 12-17 years as secondary school age. The foundation of good health and sound mind is laid during the school age period. During the school period children undergo rapid change in their physical, mental, emotional, social health and behaviour. During this dynamic situation the need for health guidance is maximum.[1]

School health is an important branch of community health. Poor nutritional status of school children is responsible for adverse effects on scholastic performance. Survey carried out in India indicate that major health problems faced by school children in India are anaemia, malnutrition, infectious diseases, intestinal parasitosis, dental carries and diseases of skin, ear and eyes.[2]

The world health organization's expert committee on school health services noted as long as 1950 that "to learn effectively, children need good health". School age is the active growing phase of childhood. Primary school age is a dynamic period of physical growth as well as of mental

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development of the child. Research indicates that health problems due to miserable nutritional status in primary school-age children are among the most common causes of low school enrolment, high absenteeism, early dropout and unsatisfactory classroom performance.[3]

The present study was undertaken to assess the morbidity pattern amongst the primary school children and their relationship with socioeconomic status in rural areas of Kamrup district, Assam.

METHODOLOGY: The study was under taken amongst the Primary school children in the age group of 6–11 years during the period August 2012 to July 2013 in Boko-Bongaon block of Kamrup district, Assam. This study was a Community based cross sectional study.

INCLUSION CRITERIA: all children from class 1 to 5 in the age group of 6- 11years attending school.

EXCLUSION CRITERIA:
   a) Children those are absent in the class during the study period.
   b) Children those having age more than 11 years and less than 6 years.

To estimate the sample size, assumption is made that prevalence of any said morbidity among the school children group at a given point of time is 50%, because it shall yield the largest value of "n", when the level of precision "L" is fixed.[4] Based on the above assumption prevalence of any morbidity among primary school children is taken to be 50% with a relative error of 10% and using the formula n= $4pq/L^2$, the sample size for this study comes out to be 400(n=400).

Schools are taken as a primary sampling unit in the study. From Boko- Bongaon block office, the lists of primary schools are collected out of which 20 schools are selected randomly to get the desired sample size of school children. Each school comprises children from class 1 to class 5. Then 4 children from each class were selected randomly from the class register and all total 20 children were selected from each school to get the required number of samples. In each school all the children meeting the inclusion criteria were included only in the study. If the selected child was absent on the day, and then the child next to him was selected for the study according to the school register.

25% (100) sub sample was selected for stool examination out of the total 400 school children during the study period. Out of total 400 school children, only 10% (40) sub sample were selected for blood Hb% estimation.

For data collection, a pre designed pre tested semi structured Pro forma was used. Stature meter was used to measure the height and Electronic weighing scale (bathroom type) was used to measure the weight of the children during the survey period. Hemocheck colour scale was used for estimation of Hb% and Snellen's chart was used for testing visual acuity amongst the sample group. General clinical examination was done for assessing any illness, any deficiency signs whether School records were used for sample selection and estimation of age.

Before commencing the field work, necessary approval for conducting the study by the Institutional Ethics Committee of Gauhati Medical College & Hospitals has been obtained.

The interview was conducted in the selected schools among the selected children. The children were interviewed and examined regarding their morbidity status. House to house visits of the selected school children was done in order to find information regarding morbidity history in the past 4weeks, demographic characteristics and socioeconomic status by using the Performa.

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Socioeconomic status was assessed by using B.G Prasad's Socio Economic Status Classification for October 2012.

STATISTICS: Data collected was entered in Microsoft Office Excel and analysed there. Descriptive statistics were done for different study variables. Chi-square test was used for analysis of categorical variables. Criteria of significance used in the study was p <0.05.

RESULTS: Amongst the school children, 228 (57%) children were suffering from one or more morbidities. [Table 1]

Amongst the children, 135(56.7%) of male children were suffering from diseases whereas 93(57.4%) female children were suffering from some form of disease. But this association is statistically insignificant. [Table 2]

Out of 400 school children it was found that majority 34.75% of school children were suffering from fever in the last 4 weeks followed by ARI (31.75%). 29.75 % school children were suffering from various signs of vitamin deficiency disorder* followed by 23.75% with dental carries. 24.25% of the school children had suffered various skin disorder where as 9.75% had lymphadenopathy. Out of total 40 school children, it was found that 70% of them had various grade of anaemia out of which only 3.6% had severe anaemia. Out of 100 sub sample for stool examination, it was found that 29 of them had worm infestation. [Table 3]

Out of total 400 school children, 125(31.25%) were found to be undernourished. 273 (68.25%) children were normal (BMI 5th -85th percentile) whereas only 2 (0.5%) children were overweight. [Table 4]

65.8% children in the age group of 6-7 years suffered from various morbidities followed by 63.8% in 7-8 years age group and 55.3% in 8-9 years of age group. However there is no significant association between morbidities and the age group in this study. (p>0.05) [Table 5]

68.2% morbidity was found amongst the children belonging to class V socioeconomic status followed by 63.4% amongst class IV socioeconomic status. There is a strong association between socioeconomic status and morbidities amongst the children and it is highly significant. (p<0.05) [Table 6]

DISCUSSION: The present study was undertaken to assess the morbidity status and health seeking behaviour of a representative group of school children in rural areas of Boko-Bongaon block, Kamrup district Assam. The study was mainly based on interview by using predesigned pretested Proforma, anthropometric measurements, clinical and laboratory examinations.

In the present study it was found that 228 (57%) children were suffering from one or more morbidities. It was also found that 135(56.7%) of male children were suffering from diseases whereas 93(57.4%) female children were suffering from any form of disease. But this association is statistically insignificant.

In one study conducted amongst the school children by Rakesh Kakkar et al in Doiwala Block, Dehradun; it was found that clinical anaemia was higher in Girls (46.7%) as compared to Boys (34.1%). Worm infestation was higher in boys (65.1%) as compared to Girls (57.3%). Dental Caries (53.1%) and dermatitis (16.3%) were more in boys. [5]

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In this present study morbidity pattern amongst the school children has been assessed and it was found that majority 139 (34.75%) of school children were suffering from fever in the last 4 weeks followed by ARI 127 (31.75%). Amongst the children, 118 (29.75 %) were suffering from various signs of vitamin deficiency disorder (signs of vitamin B deficiency such as angular stomatitis etc. and vitamin B deficiency) followed by 95 (23.75%) having dental carries.

Out of total 400 school children, 125(31.25%) were found to be undernourished. 273 (68.25%) children were normal (BMI 5th -85th percentile) whereas only 2 (0.5%) children were overweight.

A study conducted in Wardha amongst tribal school children by Dongre et al showed that the most common morbidities amongst them were Diarrhoea, fever, upper respiratory tract infections (URTIs) (56.6%), followed by head lice (42.8%), scabies (36.6%), multiple boils (8.9%) and dental carries (8.3%).[6]

In another study conducted in south Kolkata by S Deb et al, it was found that 76% of the boys and 74% of the girls were suffering from one or more morbidities. For boys, the most common morbidity was clinically detected pallor (55.34%), followed by under nutrition (40.78%) and worm infestation (39.81%). The most common morbidity for girls was clinically detected pallor (51.85%), followed by caries in teeth (33.34%) and worm infestation (29.63%).[7]

In one study done amongst children in an observation home by Garg et al, 36.7% of the boys were found to be malnourished. Skin disease was the commonest morbidity (31.7%), followed by diseases of the oral cavity (16.1%), acute respiratory infections (8.6%) and diseases of the ear (9.9%).[8]

In another study amongst children in slums of Bareilly, U.P by Srivastava et al, the most common illness found was anaemia with prevalence of 37.5% followed by dental carries (18.5%), throat infection (14.9%), refractive error (7.8%), skin disorder (2.9%) and Vitamin A def. disorder 3.4%.[1]

In another study conducted amongst the school children in the costal rural areas of Tamilnadu by Gupta et al, it was found that during the survey common complaint was upper respiratory tract infection 40% (531) followed by fever 33.40% (445). Vitamin a deficiency were common 5.2% (70) among school children followed by Vitamin C deficiency 4.6% (62) and Vitamin B deficiency 4.4% (59). Most common problem among students were dental caries 44.3% (591) followed by respiratory and ear problems 23.40% (312) and 17.90% (239) respectively. 8.80% of students had refractive error in the time of survey.[9]

CONCLUSION: The leading cause of morbidities amongst the school children were anaemia, ARI, vitamin B complex deficiency, worm infestation, dental carries, skin disorder, ocular disorder, lymphadenopathy and scabies. Prevalence of diseases is found to be clubbed in the lower socioeconomic group. There was significant association between socioeconomic status and BMI of the school children.

So proper Education and creation of awareness amongst the school children and their families particularly the mothers about the causes and ill effects of the various morbidities is essential and should be done on priority basis. Emphasis should be given to school children regarding prevailing morbidities amongst them by class teachers. Since socioeconomic factors are seen to play a decisive role in the health status of the school children, community based approach to meet the

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nutritional needs of the children, facilities for proper housing and other government facilities for the rural people should be made available.

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Morbidity	No. of school children	%
Present	228	57
Absent	172	43
Total	**400**	**100**
Table 1: Distribution of the no. of school children suffering morbidity		

Sex		Children with morbidity	Children without morbidity	Total
Male	No	135	103	238
	%	56.7	43.3	100
Female	No	93	69	162
	%	57.4	42.6	100
Table 2: Association of morbidity among the school children and their sex				

χ^2= 0.01844, d.f=1, p value= 0.8920 and insignificant at 5% level.

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Type of Morbidity	No.	%	Total
Anaemia	28	70	40
Dental carries	95	23.75	400
Fever in last 4 weeks	139	34.75	400
ARI in last 4 weeks	127	31.75	400
Signs of vitamin deficiency*	118	29.5	400
Skin disorder	97	24.25	400
Diarrhoea in last 4 weeks	22	5.5	400
Pediculosis	18	4.5	400
Worm infestation	29	29	100
ENT disorder	9	2.25	400
Lymphadenopathy	39	9.75	400
Scabies	21	5.25	400
Eye disorder	52	13	400
Inflamed gums	17	4.25	400
Abdominal pain	28	7	400
Table 3: distribution of various morbidities among the school children			

(* signs of vitamin deficiency include signs of vitamin B deficiency such as angular stomatitis, cheliosis etc and any signs of vitamin C deficiency)

Age (years)	<5th percentile (underweight)	5th -85th percentile (normal)	>85th percentile (overweight)	Total
6-7	25	54	0	79
7-8	18	65	0	83
8-9	36	29	0	65
9-10	29	48	1	78
10-11	17	77	1	95
No.	125	273	2	400
%	31.25	68.25	0.5	100
Table 4: Distribution of school children according to their nutritional status (BMI)				

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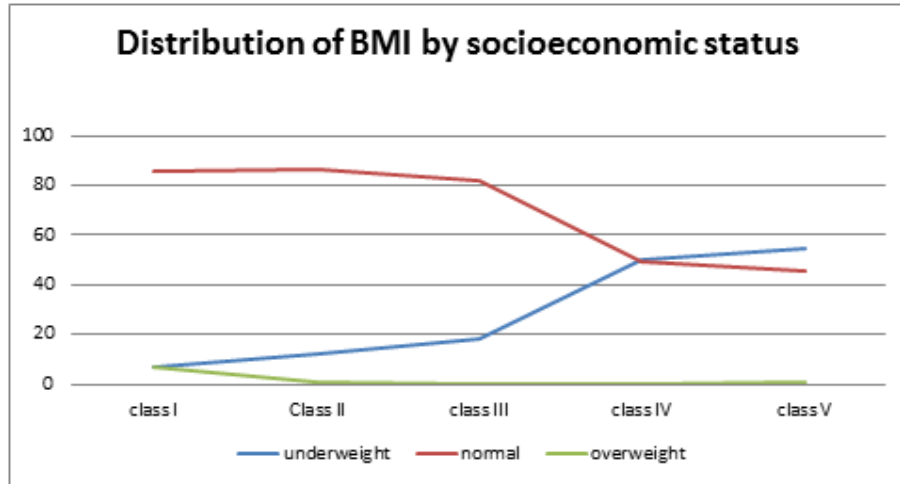
Fig. 1

Age of the children in years		6-7	7-8	8-9	9-10	10-11
Morbidity present	No.	52	53	36	38	49
	%	65.8	63.8	55.3	48.7	51.5
Morbidity absent	No.	27	30	29	40	46
	%	34.2	36.2	44.7	51.3	48.5
Total	No.	79	83	65	78	95
	%	100	100	100	100	100
Table 5: Distribution of school children according to their morbidity status across age groups						

χ^2= 7.492, d.f= 4, p=0.1121 and is insignificant at 5% level of significance.

Socioeconomic status	Children with morbidity		Children without morbidity		Total	%
	No.	%	No.	%		
Class I	2	16.67	12	83.33	14	100
Class II	51	56	40	44	91	100
Class III	78	61	50	50	128	100
Class IV	92	63.4	53	36.6	145	100
Class V	15	68.2	7	31.8	22	100
Table 6: Association of morbidity amongst the school children and their socioeconomic status						

χ^2= 14.064, d.f= 4, p= 0.0071; significant at 5% level of significance.

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