

# Prevalence Of Morbidity And Morbidity Pattern In School Children (5-11 Yrs) In Urban Area Of Meerut

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## Abstract

Objectives: 1. To find out the prevalence of morbidity in primary school children. 2. To study the pattern of morbidity in primary school children (5-11 years) in urban Meerut. Study Design: Cross-sectional. Setting: Govt. Primary Schools of Urban Meerut. Participants: 800 school children (5-11 years). Methodology: Out of a list of all govt. primary schools, 5 were randomly chosen. Students aged 5-11 years were included in the study. Complete data of each child was collected in a pre-designed, pre-tested proforma. Statistical Analysis: percentages and Chi-square test. Result: Out of 800 children (426 boys and 374 girls), 542 children (67.8 %) were found to be suffering from one or more morbid conditions. total of 2532 morbidities were found to be present in 542 sick children accounting for 4.6 morbidities per sick child. Maximum children (93.4%) were having morbidity related to nutritional deficiencies followed by diseases of the oral cavity (92.3%), malnutrition (73.1%), skin diseases (59%), behavioural problems (38.2%) and diseases of blood forming organs (35.8%). Most of the morbidity was due to malnutrition (495/1000). Conclusion: Health is a key factor in school entry, as well as continued participation and attainment in school. Most of the defects and diseases that are seen among the school children are preventable and the health of the child can be preserved and improved, provided that the defect or disease is detected and remedied early by a well organized school health programme.

## INTRODUCTION

Children are not only divine gifts but also the mirror of a nation and hope of the world. They are the countries biggest human investment for development. It is rather unfortunate that even after 60 years of Independence, our country had made little progress in improving the health condition of our school children when compared to the developed countries. Quality of life of school children, by all standards continues to be poor more so in rural areas and urban slums.

The World Health Organization's Expert Committee on School Health Services noted as long as 1950 that "to learn effectively, children need good health".<sup>1</sup> Research indicates that nutritional deficiencies and poor health in primary school age children are among the causes of low school enrolment, high absenteeism, early dropout and poor classroom performance.

The present position with regard to the health and nutritional status of the children in our country is very unsatisfactory. Mortality in this age bracket is low but morbidity and physical defects constitute heavy burden. Extensive surveys

have been carried out in different parts of the country and the findings show that sickness, morbidity and mortality rates in India are among the highest in the world.<sup>2</sup> 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 skin, eye and ear and dental caries.<sup>3</sup> These health problems can make learning difficult and may seriously hamper the educational process and the child's intellectual growth and may also handicap the child for life. Keeping all the se facts in view, a need was felt to carry out a survey of the health status of primary school children in various schools of Meerut city with the following objectives-

1. To find out the overall prevalence of morbidity in primary school children.
2. To study the pattern of morbidity in primary school children (5-11 years) in urban Meerut.

## MATERIAL AND METHODS

The present cross-sectional study was carried out from March 2007 to October 2007 in urban area of Meerut. The study subjects were school going children (5-11 years). For

the purpose of study, the urban area of Meerut district was divided into four zones. A list of all government primary schools was taken and arranged according to the zones. Equal numbers of students were examined from the randomly selected school/ schools from each zone. For calculating the sample size, the prevalence of malnutrition was considered as the most common health problem in primary school age children. Therefore, by taking prevalence of malnutrition as 50% for confidence level 95% with a relative precision of 10%, an optimum sample size for study was obtained by applying the formula  $n = 3.84 pq/SE^2$ . This sample size was doubled in order to cover both boys and girls, & thus a total of 800 students (426 boys and 374 girls) were interviewed and examined. They were interviewed through oral questionnaire method and desired information was collected on pre-designed and pre-tested proforma. A thorough clinical examination was made along with anthropometric measurements which was carried out at school premises in one room made available for this purpose. Different morbidities were classified according to ICD-10 classification<sup>4</sup> The nutritional status of the children was assessed by the quantitative classification given by Nutrition Sub-Committee of Indian Academy of Paediatrics (1972)<sup>5</sup>. For detecting anemia Haemoglobin estimation was done by Sahli's haemoglobinometer. Cut off level of Hb (g/dl) for anaemia in children was taken as 12g/dl.<sup>6</sup> For screening the hearing ability of the children the "Wisper Test"<sup>7</sup> was used. Vision was tested by means of Snellen's chart test<sup>8</sup>.

**RESULTS**

The maximum number of children (23.6%) studied were in the age group of 9 years and minimum (4.3%) in the age group of 5 years. The same was the case in boys and girls distribution (Table 1)

**Figure 1**

Table 1-Age and sex wise distribution of children

Age in years	Boys		Girls		Total	
	No.	Percent	No.	Percent	No.	Percent
5	7	1.6	27	7.2	34	4.3
6	47	11.0	38	10.2	85	10.6
7	61	14.3	45	12.0	106	13.3
8	65	15.3	79	21.1	144	18.0
9	109	25.6	80	21.4	189	23.6
10	80	18.8	52	13.9	132	16.5
11	57	13.4	53	14.2	110	13.8
Total	426	53.3	374	46.8	800	100.0

In all 542 (67.8%) children were found to be suffering with

one or more morbid conditions accounting for the sickness rate of 67.8% children as shown in Table-2.

**Figure 2**

Table 2-Distribution of children according to morbidity

Morbidity	Boys		Girls		Total	
	No.	Percent	No.	Percent	No.	Percent
Present	298	70.0	244	65.2	542	67.8
Absent	128	30.0	130	34.8	258	32.2
Total	426	100.0	374	100.0	800	100.0

$\chi^2=2.02; df=1; P>0.05$

A total of 2532 morbidities were found to be present in 542 sick children accounting for 4.6 morbidities per sick child. Maximum children (93.4%) were having morbidity related to nutritional deficiencies followed by diseases of the oral cavity (92.3%), malnutrition (73.1%), skin diseases (59%), behavioural problems (38.2%) and diseases of blood forming organs (35.8%) (Table 3).

**Figure 3**

Table 3- Distribution of children according to various morbidities (Multiple response)

Code I.C.D.	Diseases	Number	Percentage
A00-B99	Infective and parasitic	81	14.9
D50-D89	Blood forming organs	194	35.8
E40-E46	Malnutrition	396	73.1
E50-E64	Other nutritional deficiencies	506	93.4
F00-F99	Mental and Behavioural problems	207	38.2
H00-H59	Eye	56	10.3
H60-H95	Ear	62	11.4
J00-J99	Respiratory	127	23.4
K00-K14	Diseases of oral cavity	500	92.3
L00-L99	Skin and subcutaneous tissue	320	59.0
M00-M99	Musculoskeletal	2	0.4
N00-N99	Genitourinary	6	1.1
Q10-Q15	Congenital malformations of eye	11	2.0
R00-R09	Symptoms and signs involving the circulatory and respiratory system	2	0.4
R10-R19	Symptoms and signs involving the digestive system	17	3.1
R-59	Enlarged lymph nodes	45	8.3
Base		542	

Table-4 shows the prevalence of various diseases in children. The morbidity was maximum due to malnutrition (495/1000). Next in order were morbidity due Vitamin B deficiency (301.3/1000), nutritional anaemia (242.5/1000), dental caries (227.5/1000), other disorders of the teeth (220/1000), Vitamin C deficiency (186.3/1000), other skin changes like dry skin and petechiae (183.8/1000), nail biting and thumb sucking (153.8/1000), Pediculosis (143.8/1000) and acute upper respiratory infections (140/1000).

**Figure 4**

Table 4- Distribution of children according to types of morbidities

Code	Diseases	Boys	Girls	Total	Prevalence/1000
A00-A09	Intestinal infectious diseases	31	33	64	80.0
A71	Trachoma	7	1	8	10.0
B35-B49	Mycosis	6	2	8	10.0
B82	Intestinal Helminthiasis	9	7	16	20.0
B85	Pediculosis	40	75	115	143.8
B86	Scabies	15	14	29	36.3
B91	Sequelae of poliomyelitis	1	0	1	1.3
D50-D53	Nutritional anaemias	81	113	194	242.5
E40-E46	Malnutrition	208	188	396	495.0
E50	Vitamin A deficiency	24	17	41	51.3
E53	Vitamin B deficiency	140	101	241	301.3
E54	Ascorbic acid def.	86	63	149	186.3
E55	Vitamin D deficiency	30	45	75	93.8
F80	Lalling	22	16	38	47.5
F80.8	Other developmental disorders of speech or language	3	4	7	8.8
F98.5	Stammering	13	12	25	31.3
F98	Enuresis	6	8	14	17.5
F98.8	Nail biting and Thumb sucking	65	58	123	153.8
H10	Conjunctivitis	10	4	14	17.5
H52	Hypermetropia	3	1	4	5.0
H52.1	Myopia	20	10	30	37.5
H65-H75	Diseases of middle ear and mastoid	43	19	62	77.5
J00-J06	Acute upper respiratory infections	63	49	112	140.0
J40-J47	Chronic lower respiratory diseases	8	7	15	18.8
K00.3	Mottled teeth	58	44	102	127.5
K00.4	Enamel hypoplasia	3	7	10	12.5
K02	Dental caries	105	77	182	227.5
K03.2	Erosion of teeth	13	17	30	37.5
K08	Other disorders of teeth and supporting structures	103	73	176	220.0
L02.92	Furunculosis	12	9	21	26.3
M00-M99	Diseases of musculoskeletal system and connective tissue	2	0	2	2.5
N00-N99	Genitourinary	3	3	6	7.5
Q10-Q15	Congenital malformations of eye	7	4	11	13.8
R01	Cardiac murmurs	1	1	2	2.5
R16	Hepatomegaly	4	3	7	8.8
R16.1	Splenomegaly	4	4	8	10.0
R17	Jaundice	2	0	2	2.5
R23	Other skin changes	80	67	147	183.8
R-59	Enlarged lymph nodes	23	22	45	56.3
	Base			800	

**DISCUSSION**

In our study, 67.8% children (70.0% boys and 65.2% girls) were found to be suffering with one or more morbid conditions accounting for the sickness rate of 67.8% children with 4.6 morbidities per sick child. The findings in our study were found to be lower as compared to a similar study conducted in Ludhiana by Panda et al<sup>9</sup> who observed 72.4% children suffering from one or more illnesses of which 71%

were boys and 74.5% were girls. While Ananthkrishnan et al<sup>10</sup> reported morbidity in 97% children with undernutrition (57.6%), anaemia (57.1%), worm infestation (46.4%), riboflavin deficiency (32.9%) and dental caries (27.9%) as the most common causes of morbidity, Hassan et al<sup>11</sup> in a similar study among school children of Aligarh found 82% children suffering from some sickness at the time of examination of which dental problems (25%) and anaemia (24.8%) were found to be the most common causes of morbidity. Similarly Karikatti et al<sup>12</sup> observed 50.42% children suffering from one or the other health problems and the common disorders found were malnutrition (33-79%), dental caries (40.25%) parasitic infestation (40.25%), nutritional deficiencies (20.11%) and respiratory disorders (22.57%). In our study the prevalence of morbidity was maximum due to malnutrition followed by Vitamin B deficiency, nutritional anaemia and dental caries. We noted malnutrition in 49.5% children and these findings are lower than the findings of Panda et al<sup>9</sup> (52.2%), Ananthkrishnan et al<sup>10</sup> (57.6%), Semwal et al<sup>13</sup> (52.6%), and Shakya et al<sup>14</sup> (51%) and almost equal to the findings of Prakash et al<sup>15</sup>. In the present study, anaemia was detected in 37.7% (30.6% in boys and 45.2% in girls) children which is more than that found by Panda et al<sup>9</sup>, Semwal et al<sup>13</sup>, Hassan et al<sup>11</sup> and Chandra et al<sup>16</sup> in their studies (26%, 28.4%, 24.8% and 25.5% respectively) and almost equal to findings (37.48%) of Mullick<sup>7</sup> amongst school children in Jhansi. In all these studies girls were found to be more anaemic than boys which is similar to the findings in the present study. In our study, 22.8% children (13.1% boys and 9.6% girls) were found to be suffering from dental caries which is higher than that observed by Shakya et al<sup>14</sup> (19.8%) and Pandey et al<sup>17</sup> (13.56%) and almost similar to the findings of Panda et al<sup>9</sup> who also reported dental caries in 23.1% children.

**CONCLUSION**

Health is a key factor in school entry, as well as continued participation and attainment in school. Most of the defects and diseases that are seen among the school children are preventable and the health of the child can be preserved and improved, provided that the defect or disease is detected and remedied early by a well organized school health programme.

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