A Cross Sectional Study of Morbidity Pattern among Children Attending Primary Schools in Vijayawada.

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Abstract

Background: Morbidity in children is a major public health concern as this adversely affects their physical and mental growth. Moreover, poor health along with poor nutrition and disability can be barriers to attending school and to learning. Poor health and malnutrition may impair both the growth and cognitive development of primary school children. There is growing evidence of considerable burden of morbidity and mortality due to infectious diseases and malnutrition in school children.

Methods: The cross sectional study was done among the children of 8 Elementary schools in Vijayawada among students of age group 6 - 11 years. 664 students were included. A Child was subjected for thorough clinical examination in good day-light. Examination included thorough clinical scrutiny including anthropometric measurements and assessment of morbidity pattern.

Results: Majority of the children belongs to the age group of 6-7 years (35.5%), followed by 8-9 years (33.0%) and 10-11 years (31.5%). Girls constituted 60.2% of the study population and boys constitute 39.8% of the study population. Majority of the girls are in 8-9 age group and boys in 6-7 age group. Obesity was found in 8(1.2%) children. Severe stunting was found in 15(2.3%) children. Severe underweight was found in 14(2.5%) children. The most common morbidities among the study population were Dental caries present in 32.5% children, defective vision in both eyes 28.5% children, Diarrhea was reported in 24.7% children in the last three months, Acute respiratory infections in 21.5% children in the last three months, ear wax in 20.9% children, dandruff in hair in 19.0% children, tonsil enlargement in 11.9% children & pale conjunctiva in 10.1% children. Most of the children (81.8%) had one or the other morbidity.

Conclusions: Morbidity was more among lower age group, boys, Muslim religion, Nuclear family, illiterate fathers, literate mothers, upper lower class of socio-economic status, children who passed worms in stool and children with poor personal hygiene.

Keywords: Health, Morbidity, School, Children

Introduction

"Health is inextricably linked to educational achievements, quality of life, and economic productivity. By acquiring health - related knowledge, values, skills, and practices, children can be empowered to pursue a healthy life and to work as agents of change for the health of their communities"[1].

"Children" are the wealth of any nation as they constitute one of the important segments of the population. 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[2] School is a key location for educating children about health, hygiene and nutrition, and for putting in place interventions to promote the health of children. At the same time, poor health, poor nutrition and disability can be barriers to attending school and to learning[3] School health is an important branch of community health. Poor nutritional status of school children is responsible for

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adverse effects on scholastic performance. Several surveys carried out in India indicate that major health problems faced by school children in India are anemia, malnutrition, infectious diseases, intestinal parasitosis, dental carries and diseases of skin, ear and eyes[4]

School going children constitute a large pool of this age group[5] Morbidity in children is a major public health concern as this adversely affects their physical and mental growth. Moreover, poor health along with poor nutrition and disability can be barriers to attending school and to learning. Poor health and malnutrition may impair both the growth and cognitive development of primary school children. There is growing evidence of considerable burden of morbidity and mortality due to infectious diseases and malnutrition in school children[6]

The findings of the surveys that have been carried out in different parts of the country show that sickness and morbidity rates in India are among the highest in the world[7] This study was conducted among primary school children to find out the prevalence of existing morbidity pattern of these school children including the nutritional status of primary school children (6-11 years) in Vijayawada city as none of the study of this kind has been conducted in Vijayawada city till now.

MATERIAL AND METHODS

A Cross-Sectional Study was conducted on the children of 8 Elementary schools out of the total 75 Elementary schools present in Vijayawada urban area, Krishna District, Andhra Pradesh State, run by Municipal Corporation of Vijayawada for a duration of 2 years. All students of age group 6 - 11 years from 8 Elementary schools comprise the study population.

Inclusion Criteria: All children from class 1 to 5 in the age group of 6- 11years attending school.

Exclusion Criteria: Children and parents who are not willing to participate in the study.

Sampling Procedure: Systematic random sampling was used to select the schools. Sampling is done in the following steps:

- There are 75 Elementary schools in Vijayawada urban covered under Vijayawada Municipal Corporation. The List of schools is obtained from the District Educational Officer through Municipal Commissioner of Vijayawada and was arranged in a numerical order from 1 to 75.
- 1/10th or 10% of the total number of schools i.e., 7.5 rounded to 8 schools were selected.
- The sampling interval is = N / n; Where, N = total schools = 75; n = 1/10th or 10% of the total schools i.e., 7.5 rounded to 8 schools

  Sampling interval = N / n = 75 / 8 =9.37 rounded to 9.

  Next a random number was taken using the currency note method. This number was 7. Therefore, the first school for the study was taken as the seventh school in the school's list. For the selection of the subsequent schools, the sampling fraction is added to the random number, i.e.

  7 + 9 = 16th school in the school's list was taken as the second school for the study.

  16 + 9 = 25th school in the school's list was taken as the third school for the study.

  25 + 9 = 34th school in the school's list was taken as the fourth school for the study and so on.
- The schools selected were shown below (Table 1).

Table 1: List of primary schools selected for the study

S. No	Identification pictogram	Name of the school	Total students examined
1.		VMC Ele. school, Gunadala	49
2.		VMC Ele. school, Machavaram	60
3.		GDETMC Ele. school, Patamata	76
4.		BSRKMC Ele. school, Mogalrajapuram	90
5.		SKSRMC Ele. school, Bhavanipuram	129
6.		ADMC Ele. school, Kothapet	89
7.		Prasanthi MC Ele. school, Satyanarayanapuram	64
8.		RGMC Ele. school, Rajeev Nagar	107
Total			664

Sample Size: All the school children of the selected schools and whose parents/guardians were willing to allow their children to participate in the study i.e., 664 students from 8 Elementary schools in Vijayawada, Krishna district are selected.

Tools Used:

- Pre-designed, pre-tested, semi-structured questionnaire (Annexure I)
- Portable weighing machine, wall mounted height measuring scale, Kit containing paediatric stethoscope, measuring tape, pen torch, tuning fork (256 Hz), snellen's chart etc.

Method of Data Collection:

Ethical committee clearance was obtained from the institution before starting the study. Initially the purpose of the study was explained to the school principals and permission was taken for conducting the study in their respective schools. Informed consent from the parents/guardian of the children was taken.

A Pre-designed, pre-tested, semi-structured questionnaire was used to collect information regarding student's name, age, gender, date of birth; their parents name, caste, religion and address with phone numbers from the school admission records.

A Child was subjected for thorough clinical examination in good day-light. Examination included thorough clinical scrutiny including anthropometric measurements and assessment of morbidity pattern. Clinical examination was done to identify the existing morbidity pattern. The clinical signs looked for in this age-group were*:* Bitot's spots, conjunctival xerosis, anaemia, parotid enlargement, angular cheilosis, caries, hepatomegaly and splenomegaly etc.

General Physical Examination includes examination of pulse rate, respiratory rate, and elucidation of presence or absence of pallor, cyanosis, icterus, oedema, and lymphadenopathy. Assessment of personal hygiene was done by 10 point scale, and depending up-on the scores different grading was done as Good (>8) Moderate (6-8) and Poor (<5).

Statistical analysis: Data entry and statistical analysis was performed with the help of epi-info software, Microsoft excel 2007 and SPSS version 15.0, while categorical variables are presented as number and percentages. Chi-square test is used to compare differences in categorical variables. The statistical significance level was fixed at $p<0.05$.

Results And Observations

Table 2: Age and gender wise distribution of children (n=664)

Age Group (In Years)	Girls (n = 400)		Boys (n = 264)		All children (n = 664)	
	No.	%	No.	%	No.	%
6-7	137	20.6	99	14.9	236	35.5
8-9	144	21.7	75	11.3	219	33.0
10-11	119	17.9	90	13.6	209	31.5
Total	400	60.2	264	39.8	664	100

Out of 664 children in the study group, majority, i.e., 551 (83.0%) are Hindus, followed by Christians 70 (10.5%), and Muslims 43 (6.5%). Majority i.e., 331 (49.8%) belonged to BC category, followed by SC category 181 (27.3%), OC category (19.9%) and ST category (3.0%). Most (88.1%) of the children belong to nuclear type of family, while 11.0% belong to Joint family and 0.9% belong to extended type of family. Majority of the children were belonging to family size of 4 to 5 in 61.6%, followed by family size of 3 in 30.4% children and family size of >6 in 8.0% respectively (Table 2).

In context to the literacy status of parents, 212 (31.9%) fathers and 352 (53.0%) mothers were illiterates. Further among fathers, it was observed that 180 (27.1%) had completed Middle school education, 155 (23.3%) had completed Primary school education, 90 (13.6%) had completed High school Education, 25 (3.8%) had completed their education in college and 2 (0.3%) had completed their Graduation. Among mothers, 202 (30.4%) had completed primary education, 99 (14.9%) had completed Middle school education, 10 (1.5%) had completed High school Education and 1 (0.2%) had completed their education in college.

In context to the occupation of parents, among fathers it was observed that majority were unskilled workers (63.6%) followed by semi-skilled workers (22.3%), skilled workers (6.0%), unemployed (4.2%) and clerical/shop owner/farmer (3.9%). Among mothers it was observed that majority were unemployed (70.3%) followed by unskilled workers (21.5%), semi-skilled workers (5.9%), skilled workers (1.7%), and clerical/ shop owner/farmer (0.6%).

Majority of the children were belonging to class IV or upper lower class (44.4%) and class III or lower middle class (30.6%), followed by class V or lower class (19.4%) and class II or upper middle class (5.6%).

Fig 1: Distribution of children according to the BMI-for-age

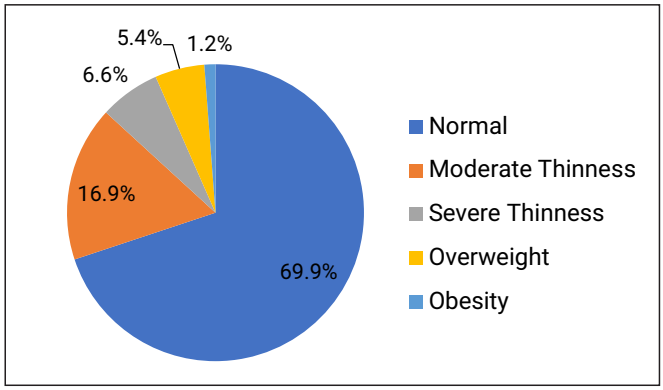
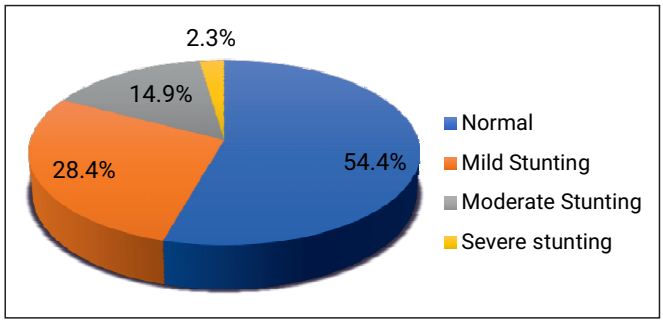


Fig 2: Distribution of children according to the height-for-age



**Weight-for-age can be calculated only upto age of 10 years, so children from 6-10 years are only included while calculating weight-for-age i.e., only 563 students[12]. (Figure 3)

Fig 3: Distribution of children according to the weight-for-age

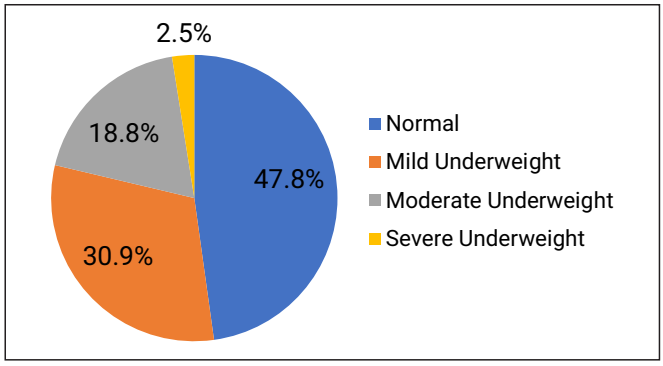


Table 3: Prevalence of thinness and gender wise distribution of school children

Thinness (<-2SD)	Girls (n = 400)		Boys (n = 264)		All children (n = 664)	
	No.	%	No.	%	No.	%
Yes	93	23.2	63	23.9	156	23.5
No	307	76.8	201	76.1	508	76.5
Total	400	100	264	100	664	100

Chi-Square Value- 0.033, df= 1, P value- 0.463

Table 4: Prevalence of stunting and gender wise distribution of school children

Underweight (<-2SD)	Girls (n = 352)		Boys (n = 211)		All children (n = 563)	
	No.	%	No.	%	No.	%
Yes	76	21.6	44	20.9	120	21.3
No	276	78.4	167	79.1	443	78.7
Total	352	100	211	100	563	100

Chi-Square Value- 0.043, df= 1, P value- 0.462

Prevalence of malnutrition: Since the operational definition states that the WHO recommends acute malnutrition among children and adolescents (5-19 years) can be assessed by calculating BMI, and then adjusting for age to generate BMI-for-age[45]. Hence thinness {BMI-for-age [<-2SD]} was used for finding the prevalence of malnutrition. That includes all the children with moderate and severe thinness consisting of 156 children. Hence the prevalence of malnutrition among the surveyed primary school children is 23.5%.

Table 6: Gender wise distribution of personal hygiene among school children (n=664)

Personal Hygiene (scoring)	Girls (n = 400)		Boys (n = 264)		All children (n = 664)	
	No.	%	No.	%	No.	%
Good (>8)	278	69.5	186	70.5	464	69.9
Moderate (6-7)	82	20.5	51	19.3	133	20.0
Poor (<5)	40	10.0	27	10.2	67	10.1
Total	400	100	264	100	664	100

Chi-Square Value- 0.140, df= 2, P value- 0.932.

Table 5: Hand washing practices among school children (n=664)

Hand washing practices (n=664)	Gender		Chi square value	P value
	Girls (n=400)	Boys (n=264)		
Use of soap for hand washing at school before eating				
Yes	5	9	3.592	0.054
No	395	255		
Use of soap for hand washing at school after eating				
Yes	8	9	1.266	0.190
No	392	255		

Use of soap for hand washing at home before eating				
Yes	54	35	0.008	0.513
No	346	229		
Use of soap for hand washing at home after eating				
Yes	77	48	0.119	0.406
No	323	216		
Hand washing after toilet				
Yes	136	84	0.342	0.309
No	264	180		

Table 6: Prevalence of various morbidity conditions of school children***

Morbidity Condition	No. (Out of 664)	%
Hair conditions		
Dyspigmented hair	33	5.0
Thin and sparse hair	12	1.8
Easily pluckable hair	12	1.8
Dandruff in hair	126	19.0
Eye conditions		
Pale Conjunctiva	67	10.1
Bitots spots on conjunctiva	8	1.2
Pterygium	3	0.5
Corneal xerosis	17	2.6
Difficulty in seeing night vision	10	1.5
Squint	8	1.2
Stye left eye	4	0.6
Lacrimation from both eyes	2	0.3
Defective vision (both eyes)	189	28.5
Defective vision (right eye)	22	3.3
Defective vision (left eye)	46	6.9
Right eye no vision	2	0.3
Gland & LN enlargement		
Parotid enlargement	8	1.2
Thyroid enlargement	4	0.6
Cervical LN enlargement	21	3.2
Tonsil enlargement	79	11.9
Oral cavity conditions		
Angular stomatitis	47	7.1
Oral candidiasis	2	0.3
Pale and atrophied tongue	34	5.1
Red and swollen tongue	1	0.2
Fissured tongue	3	0.5
Coating on tongue	60	9.0
Glossitis	2	0.3
Caries	216	32.5
Missing tooth	28	4.2
Protruded tooth	42	6.3
Coating on teeth	35	5.3
Swollen gums	55	8.3
Bleeding gums	38	5.7
Ear conditions		
Ear discharge	42	6.3
Ear pain	45	6.8
Defective hearing	12	1.8
Ear wax	139	20.9
Itching in the ear	28	4.2
Foreign body inside ear	6	0.9
Ear discharge	1	0.2
Nasal conditions		
Deviated nasal septum	12	1.8
Nasal congestion	11	1.7
Nasal obstruction	9	1.4
Loss of smell	6	0.9
Rhinitis	6	0.9
Nasal discharge	2	0.3
Epistaxis	2	0.3
Skin conditions		
Depigmentation of Face	22	3.3
Scaling of skin	66	9.9
Cracking of skin	21	3.2
Follicular hyperkeratosis of skin	8	1.2
Hyperpigmented skin	7	1.1
Scabies signs	4	0.6
Tinea	2	0.3
Vitiligo	2	0.3
Impetigo	1	0.2
Nail conditions		
Pallor nails	30	4.5
Koilonychia	10	1.5
Transverse ridging on nails	11	1.7
Clubbing	6	0.9
Systemic conditions and other problems		
Pedal edema	2	0.3
Visible signs of wasting	39	5.9

Hepatomegaly	10	1.5
Psychomotor change	9	1.4
Mental confusion	4	0.6
Wheeze	5	0.8
Lordosis	2	0.3
CTEV	2	0.3
Lump on left cheek	1	0.2
Syndactyl	2	0.3
Knock knees	10	1.5
Bow legs	2	0.3
Diarrhea in the past 3 months	164	24.7
Acute respiratory tract infections in the past 3 months	143	21.5

***Note: More than one morbidity condition is present in some students. Hence the overall percentage will not be equal to 100%.

Table 7: Distribution of school children according to the prevalence of overall morbidity

Morbidity	Frequency	Percentage
Present	543	81.8
Absent	121	18.2
Total	664	100

Discussion:

In this study, out of 664 study population, 35.5% were between 6 to 7 years of age. This is in contrast to study conducted by Sunil Pal Singh C et al[8], in which majority of school children belong to 10-11 years of age (25.5%).

In the present study, out of 664 study population, girls (60.2%) were more in number than boys (39.8%). In other study conducted by Alim F et al[9], similar findings were observed with 54% of girls and 46% of boys. In other study conducted by Rakesh kakkar et al[10], female students were proportionately higher

Table 8: Morbidity pattern of school children and its association with socio-demographic factors

		Morbidity		Total	P Value
		Absent	Present		
		No.(%)	No.(%)	No.(%)	
Age category (in yrs)	6-7	37(15.7)	199(84.3)	236(100)	0.274
	8-9	39(17.8)	180(82.2)	219(100)	
	10-11	45(21.5)	164(78.5)	209(100)	
Gender	Girls	78(19.5)	322(80.5)	400(100)	0.172
	Boys	43(16.3)	221(83.7)	264(100)	
Religion	Hindu	108(19.6)	443(80.4)	551(100)	0.04
	Muslim	2(4.7)	41(95.3)	43(100)	
	Christian	11(15.7)	59(84.3)	70(100)	
Type of Family	Nuclear Family	101(17.3)	484(82.7)	585(100)	0.19
	Joint Family	18(24.7)	55(75.3)	73(100)	
	Extended Family	2(33.3)	4(66.7)	6(100)	
Socio-economic classification	Upper middle	7(18.9)	30(81.1)	37(100)	0.57
	Lower middle	42(20.7)	161(79.3)	203(100)	
	Upper lower	47(15.9)	248(84.1)	295(100)	
	Lower class	25(19.4)	104(80.6)	129(100)	
Fathers Education	Illiterates	36(17.0)	176(83.0)	212(100)	0.325
	Literates	85(18.8)	367(81.2)	452(100)	
Mothers Education	Illiterates	65(18.5)	287(81.5)	352(100)	0.472
	Literates	56(17.9)	256(82.1)	312(100)	

(55.1%) as compared to males (44.9%) which are similar to the present study. This difference could be due to the equal importance given to female literacy in the present study area.

In the present study majority of the study subjects are Hindus (83.0%). Christians constitute 10.5% and Muslims constitute 6.5%. This is similar to study conducted by Mandal S et al[11], in which maximum (81.7%) children were Hindus. This study is also similar to the study conducted by Sunil Pal Singh C et al[8], in which maximum (59.7%) children were Hindus.

In this study, most of the school children were belonging to nuclear type of family (88.1%). This is similar to study conducted by Hasan I et al[12], in which maximum (55.4%) children belonged to nuclear family.

In this study most of the fathers of school children were literates (68.1%). Most of the mothers of school children were illiterates (53.0%). This may be because of low female literacy at that time in the study area. This is in contrast to study conducted by Sunil Pal Singh C et al[8], in which most of the mothers of school children were literates (80.3%). The number of children who had illiterate mothers were more as compared to children having illiterate fathers.

In this study most of the fathers of school children were unskilled workers (63.6%) and were semi-skilled workers (22.3%). This finding is similar to a study conducted by Sunil Pal Singh C et al[8], in which most of the fathers of school children were unskilled workers (46.6%).Majority of the mothers of school children were unemployed (70.3%). This is in contrast to study conducted by Sunil Pal Singh C et al[8], in which most of the mothers of school children were semiskilled workers (47.3%).

Most of the children were belonging to class IV or upper lower class (44.4%) and were belonging to class III or lower middle (30.6%). This is similar to study conducted by Mandal S et al[11], in which majority 40.8% of the children were belonging to class IV or upper lower class. This is in contrast to study conducted by Hasan I et al[12], in which Majority 47.60% of the children were belonging to class 3 or lower middle class.

In the present study, the prevalence of malnutrition among the surveyed primary school children is 23.5%. This finding is similar to a study conducted by Joshi HS et al[13], in schools of Western Nepal, 26% of the students were found to be undernourished. This finding is in contrast with the study conducted by Hasan I et al[12], in 2010 in Bangalore in which prevalence of malnutrition was 52%. This finding is in contrast to a study conducted by Neelu S et al[14], in 2007 in urban primary school children in Meerut, India found that 49.5% were found to be malnourished. This finding is in contrast to a study conducted by Phani Madhavi KV et al[15], in which almost 59.88% of school children were suffering with malnutrition. This finding is in contrast to a study conducted by Saluja N et al[16], in which morbidity is maximum due to malnutrition (49.5%).

In the present study, the prevalence of underweight is 21.3%. It is more among girls (63.3%) than boys (36.7%). Moderate underweight is found in 18.8% of children and severe underweight is found in 2.5% of children. In a study carried out by Mandal S et al[11], prevalence of underweight was 25%. In a study conducted by Sunil Pal Singh C et al[8], prevalence of underweight was 28.9%. In a study carried out by Mian RMA et al[17], prevalence of underweight was 29.5%. In a study conducted by Osei A et al[18], underweight was present in 60.9% of school children. In a study conducted by Hasan I et al[12], prevalence of underweight in the studied school children is 58.20%. In a study conducted by Mukherjee R et al[19], in Army School at Pune, the prevalence of underweight was very less (9.87%).

In the present study, the prevalence of stunting is 17.2%. It is more among girls (64.0%) than boys (36.0%). Moderate stunting is found in 14.9% of children. Severe stunting is found in 2.3% of children. In a study carried out by Chowdhury SD et al[20], prevalence of stunting was 17.9%. In a study conducted by Mondal et al[21], prevalence of stunting and severe stunting were 19.0% and 4.0% respectively. In a study conducted by Joshi HS et al[13], in schools of Western Nepal, 13% of the students were stunted. In a study conducted by Mukherjee R et al[19], in Army School at Pune, the prevalence of stunting was 13.81%. In a study conducted by Neelu S et al[14],in urban primary school children in Meerut, stunting was seen in 43.8% children.

In the present study, the prevalence of thinness is 23.5%. It is more among girls (59.6%) than boys (40.4%). Moderate thinness is found in 16.9% of children. Severe thinness is found in 6.6% of children. In a study conducted by Osei A et al[18], thinness was present in 12.2% of school children. In a study carried out by Mandal S et al[11], prevalence of thinness was 63.9%. In the present study, 69.9% children had good personal hygiene, 20% children had moderate personal hygiene and 10.1% had poor personal hygiene. In a study done by Rani V, et al[22], 55.5% children had good personal hygiene while 9.94% children had fair personal hygiene and poor personal hygiene was seen in 34.5% children.

In the present study, 81.8% of children were found to have one or more morbid conditions. In a study conducted by Srinivasan K et al[23], 84.3% of children were found to have one or more morbid conditions. In a study conducted by Giri VC et al[24], 34.7% of the school children were found to have one or the other morbidity. In a study done by Sharma U et al[25], morbidity came out to be 77.9%. In a study done by Kaushik Talukdar et al[2], 57% of school children were suffering from one or more morbidities. In a study done by Rani V, et al[22], 41.52% children reported more than one morbidity. In a study done by Shinde M et al[26], 58.72% children were found to be suffering with one or more morbidity. In a study done by Saluja N et al[16], 67.8% children were found to be suffering with one or more morbidity.

In this study, the most common morbidity was dental caries with a prevalence of 32.5%. In a study done by Shinde M et al[26], maximum children (31.83%) were having morbidity associated with oral cavity including dental carries. In a study done by Srinivasan K et al[23], dental caries was found to be 23.5%. In a study done by AkreCharuhas V et al[27], 26.9% of the study population were having dental caries. In a study done by Kaushik Talukdar et al[2], dental carries was found to be 23.75%. In a study done by Das P et al[8], the dental caries (29.9%) was the commonest clinical features among all health problems of the primary school children.

In the present study, the prevalence of defective vision in both the eyes is found to be 28.5%, followed by defective vision in only left eye in 6.9% and in only right eye in 3.3%.In a study done by Srinivasan K et al[23], defective vision was present in 4.4% of the study population. In a study done by Shinde M et al[26], defective vision was present in 0.58% of the study population. In a study conducted by Nigudgi et al[28], defective vision was present in 2.41% of the study population.

In the present study, signs of anaemia such as pale conjunctiva, pallor in nails, koilonychia and pallor tongue were found in 10.1%, 4.5%, 1.5% and 5.1% of children respectively. In a study done by Srinivasan K et al[23], the prevalence of anaemia was 8.5%.In a study conducted by Nigudgi et al[28], anaemia was detected among 8.18% of the children. In a study done by AkreCharuhas V et al[27], the predominant morbidity was found to be anaemia in 80.8% of the students. In a study done by Rakesh kakkar et al[10], anaemia was found in 42.1% children. In a study done by Kaushik Talukdar et al[2], the leading cause of morbidity was anaemia (70%). The study done by Saluja N et al[16], anaemia was found in 24.25% children.

In the present study last three months medical history reported by parents at the time of interview revealed that 24.7% of children were suffering from diarrhea. In a study done by AkreCharuhas V et al[27], 2.3% students had diarrhoea. In a study done by Tanu Shree Singh et al[29], last 1-month medical history reported by the parents at the time of interview revealed that 32% of children were suffering from diarrhea. In a study done by Singh SP et al[30], 14.44% of children were suffering from diarrhea. In a study conducted by Giri VC et al[24], 5.8% of children were suffering from acute diarrhoeal diseases.

In the present study last three months medical history reported by parents at the time of interview revealed that 21.5% of children were suffering from upper respiratory tract infections. In a study conducted by Giri VC et al[24], the prevalence of acute respiratory infections was the highest (25.5%). In a study done by Rani V, et al[22], 4.67% children had upper respiratory tract infections. The study done by Saluja N et al[16], acute upper respiratory infections was found in 14%. In a study done by Mhaske MS et al[31], upper respiratory infections was found in 38.2%. In a study done by Shinde M et al[26], upper respiratory infections was found in 3.77%.

In the present study prevalence of ear wax is 20.9%. In a study done by AkreCharuhas V et al[27], wax in ear was observed in 12.4%.In a study done by Rani V, et al[22], wax in the ear is present in 33.92%. In a study done by Mhaske MS et al[31], the major morbidity observed was ear wax (29.9%).

In the present study prevalence of tonsillitis is 11.9%. In a study done by AkreCharuhas V et al[27], 11.4% were having enlarged tonsils.In a study done by Das P et al[8], Enlarged tonsils were observed among 10.4% of children. In Panda P et al[6], prevalence of tonsillitis was 14.4%.In a study conducted by Phani Madhavi KV et al[15], Among the school children about 7.65% had tonsillitis.

In the present study Signs of vitamin A deficiency such as Bitot's spots, follicular hyperkeratosis, cracked skin were seen in 1.2%, 1.2% and 3.2% of children respectively and blurring of vision during night was reported by 1.5% of children.In a study done by Chauhan N et al[32], at Ahmedabad on vitamin A defiiency, 2.1% cases of bitot spots were found. In another study at west Bengal by Arlappa N et al[33], 0.6% prevalence of bitot spots was seen among children.InChandna S et al[34], Bitot's spots are present in 14.2%.

In the present study signs of vitamin B12 deficiency such as pale and atrophied tongue, and hyperpigmented skin were found in 5.1% and 1.1% of

children respectively.In a study done by AkreCharuhas V et al[27], vitamin B complex deficiency was observed in 19.3% students.In a study done by Kaushik Talukdar et al[2], vitamin (vitamin B complex and vitamin C) deficiency disorder was seen in 29.75% children. The study done by Saluja N et al[16], morbidity due to Vitamin B deficiency is seen in 30.13% children. In a study done by Das P et al[8], about 20.7% of the children showed clinical manifestations of vitamin B complex deficiency.In a study conducted by Sunil Pal Singh et al[35], 26.7% were suffering from Vitamin B deficiency.

In the present study signs of vitamin C deficiency such as swollen and bleeding gums were found in 8.3% and 5.7% of children respectively.In the study done by Saluja N et al[16], vitamin C deficiency was seen in 18.63% children.In a study conducted by Sunil Pal Singh et al[35], 13.6% were suffering from Vitamin C deficiency.

In the present study signs of vitamin D deficiency such as knock knees and bowed legs were found in 1.5% and 0.3% of children respectively. In a study conducted by Sunil Pal Singh et al[35], vitamin D deficiency was found in 2.7% children.

Conclusion

The present study shows that morbidity is more among lower age group, boys, Muslim religion, nuclear family, illiterate fathers, literate mothers, upper lower class of socio-economic status, children who passed worms in stool and children with poor personal hygiene.

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