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"Morbidity profile of children [6-11 years] attending Municipal Corporation Primary Schools in Visakhapatnam city, Andhra Pradesh"

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Abstract:
Research Question: *What is the morbidity profile in primary school children and is there any relation of their illness with socioeconomic determinants.*
Methodology: A *cross sectional study carried out in six randomly selected Municipal Corporation Primary schools in Visakhapatnam city. Study population were children aged 6-11 years enrolled in class 2 to class 5. A sample of 1029 children who attended the school on the day of study were included**.*** *Study tools include questionnaire for obtaining information on socio-demographic data, education and income of their parents, h/o of episodes of illness and anthropometric parameters. Data was analysed using SPSS.*
Results: *A total number of 901 out of 1029 children (87.56%) had one or more illness. The most prevalent conditions were anaemia (50.15 %) followed by worm infestation and dental caries (37.12 % and 29.54%) respectively. About one third were underweight (33.3%). Conditions such as underweight, anemia and worm infestation had significant relation with socio economic status. Morbidity was significantly high among children of illiterate mothers.*
Conclusion: *The overall proportion of children suffering from various illnesses is high especially in lower socioeconomic strata. Improvement of living conditions and providing adequate facilities in school, regular health check up including health education will address some of the issues.*
Keywords: *Morbidity, Primary school children, Visakhapatnam*

I. Introduction

Twenty eight percent of the population in India comprises of children aged 0-14 years. The 6-11 yrs age group ie the primary school children constitute a large part of it. As they begin attending to school, they get exposed to several risk factors, which may in turn have effect on their health and nutritional status. These children, especially those residing in urban slums, are more vulnerable because of overcrowding, inadequate ventilation, lack of sanitation, etc. While the health problems of school children may vary from one place to another, surveys carried out in India indicate that the main emphasis will fall on 1.Malnutrition 2.Infectious diseases 3.Intestinal parasites 4.Diseases of skin eye and ear 5.Dental caries. [1]

Inspite of several initiatives, these primary school children have not received as much attention from health providers and planners as compared to infants and under fives through various National health programmes [e g: ICDS, RCH programmes].[2] There is a dearth of information on the health status of primary school age children from developing countries, particularly at the community level [3,4]. Hence an attempt was made to study the morbidity profile of children [6-11 years] attending Municipal Corporation primary schools in Visakhapatnam city, Andhra Pradesh state and its relation to factors such as socio economic status and education of the parents.

II. Methodology

This is a cross sectional study carried out from 1.6.2012 to 1.9.2012. [3 months] This study was conducted with a sample frame consisting of six randomly selected Municipal Corporation Primary schools in Visakhapatnam city, Andhra Pradesh. One thousand and twenty nine children aged 6-11 years, from those enrolled in class 2 to class 5 in these primary schools and attended the school on the day of study were included. Handicapped children [e.g. Poliomyelitis] and children with serious systemic diseases [e.g. congenital heart diseases etc.] were not included in the study. Study tools include questionnaire for obtaining information on socio-demographic data, education and income of their parents, h/o of episodes of illness and anthropometric parameters. Data regarding the date of birth of the child, education, h/o of parents' literacy status and income was obtained from the school records. Educational and Economic status was categorized using the Modified Kuppu Swamy classification for urban families. Examination was done under natural illumination for any

specific signs. Each child was weighed using the electronic weighing scale to the nearest 0.5 kilograms and the height was measured to the nearest 0.1 centimetre with a tape that was attached to the wall. Anemia was diagnosed by palpebral conjunctiva and palmar pallor and was confirmed by hemoglobin estimation by Sahli-Hellige acid hematin method. Hemoglobin less than 11gms/dl was taken as the cut-off point for the diagnosis of anaemia. Statistical analysis : Data was organised and analysed using SPSS package.

III. Results

The number of children enrolled in this study were 1029. Among these, there were 562 boys (54.62%) and 467 girls (45.38%). There were 47 children from the lower socioeconomic strata (4.56%), 665 children (64.62%) from the upper lower and 317 children (30.8%) from lower middle strata.

Table 1 shows that a total number of 901 children (87.56%) had one or more illness in the present study. The most prevalent condition were anaemia (50.15 %) followed by worm infestation and dental caries (37.12 % and 29.54%) respectively. About one third of the study population were underweight (33.3%). Prevalence of other conditions such as Vitamin A deficiency was found to be 6.22%, Vitamin B deficiency as 8.87%, Skin infection including pyoderma, Scabies, Tinea 13.41%, eye infection 1.94%, ear infection 2.62%, respiratory infection 16.81% and that of dental caries was 29.54%. Table 2 shows that 90 % children whose mothers were illiterates were having some illness as compared to 67 % of those whose mothers were educated beyond high school.

In the present study the prevalence of malnutrition is 33.53% (345 out of 1029). 315 (30.61%) of children were under weight and 30 (2.91%) were severely under weight. In lower socioeconomic strata, 51.06% of children were under weight and 17.02% were severely under weight. In upper lower socioeconomic strata, 36.54% of children were under weight and only 3.31% children were severely under weight. In lower middle socioeconomic strata only 15.14% of children were under weight and no child is severely under weight. This difference in prevalence of malnutrition in different socioeconomic strata is statistically significant ($P<0.001$).

Prevalence of anemia was found to be 50.15%. It is found that similar percentages of both boys and girls were suffering from anemia (47% and 53%) respectively. Table no 4 shows that majority (68%) of the students having anemia were from lower socio economic group where as it was 51.13% and 45.43% in children from upper lower and lower middle strata. This difference between socioeconomic status and anemia was found to be statistically significant ($P<0.02$).

Worm infestation and Dental caries were another two important morbid conditions found among the primary school children in this study. The prevalence of worm infestations was present in 57.45% of children belonging to lower socioeconomic status (Table no 5) and 34.07 of children belonging to lower middle socioeconomic status. This difference in prevalence of worm infestation in different socio economic strata is statistically significant ($P<0.01$). Also significant association is found between H/o worm infestation and anaemia, as table no 6 shows that 78.8% of those having worm infestation were anaemic.

IV. Discussion

A total number of 901 children (87.56%) had one or more illness in the present study. This is little more than that reported by Saluja et al (67.8 %) and Deb et al (70%) [5,6]. However the spectrum of morbidity seen in this cross sectional study was almost similar to that reported in other studies [3,5,6,7]

In present study, morbidity is found to be significantly higher among children from lower socioeconomic status. Also a significant relation has been found between mothers' literacy status and morbidity among the children. Children of illiterate mothers were having increased morbidity as compared to those of educated mothers. This difference in morbidity status of children in relation with mother's literacy status is statistically significant ($P<0.001$). Gender wise distribution shows that morbidity among boys is higher as compared to girls . This finding is similar to that reported by Mhaske et al [7].

In the present study prevalence of malnutrition (underweight) is 33.53% of which 30.61% were under weight and 2.91% were severely under weight which means the rest one third of the students were normally nourished. This is similar to study by Deb et al in South Kolkata who reported that 54% of boys and 74% girls were normally nourished[6]. However study by Saluja et al has reported very high morbidity related to nutritional deficiency (93.4%) and malnutrition (73%) [5]. When analysed in relation with socioeconomic determinant in the present study, it shows that's about half (51.06%) of the children belonging to lower socio economic group were underweight and 17.02% were severely under weight. There was a significant difference in the weight of the children belonging to different socio economic strata. Children from lower middle and upper lower socioeconomic strata were better in their weights as compared to other.

Anemia was found to be most common morbidity among the primary school children (50.15%). It is observed that not only girls but also boys were having low haemoglobin status which is almost 50% in each group, and this needs to be addressed with early intervention. Similar finding is also reported by Deb et al, but a study by Das et al in north Kolkata has reported prevalence of anaemia as 22%. Anemia in the lower

socioeconomic strata was significantly higher that other classes. Although anemia may be due to various factors, one common contributing factor is worm infestation, which is again one of the common illnesses among children. In this study, the prevalence of worm infestation was found to be 37.12% which is similar to that reported by Das et al as 39.4% [8] .

Oral health and hygiene is very important particularly in this age as it may affect the nutritional status as well as cognitive development of the child. Prevalence of Dental caries in the study population was found to be 29.54% and was almost same in both boys and girls. This was at par with 27.9% and 29.9% as reported by Anantha Krishnan et al and Das et al respectively [3,8]. Mhaske et al reported higher percentage of children with dental caries (65.1%) [7]. Spectrum of conditions included under disease of Oral cavity were as high as 92.3% as reported by Saluja et al [5]. This suggests an urgent need to educate the parents about improving oral health among their children.

Prevalence of respiratory conditions, which included upper respiratory tract infections, Bronchial asthma and epistaxis, was found to be 16.81% . Results obtained by other studies by Saluja et al (23.3%) and Mhaske et al (38.2%) show slight variation [5,7]. This can be attributed to the poor infrastructure and sanitary facilities in government schools and increasing number of enrollments leading to over crowded classrooms without provision for proper cross ventilation. Also malnutrition being an underlying factor , primary school children are more vulnerable to respiratory infections. Overcrowding may also contribute to increase skin and eye infections. Skin infections including pyoderma, Scabies and Tinea was found in 13.41% children in this study similar to findings by Mhaske et al (12%) and Anantha Krishnan et al (8.7%). However higher degree of skin infections (59%) was reported by Saluja et al in their study. Prevalence of eye infection and ear infection in the present study was 1.94% and 2.62% which is similar to that reported Anantha Krishnan et al (2.7%). [3,5,7]

V. Conclusion

The overall proportion of children suffering from various illnesses is high especially in lower socioeconomic strata. As majority of them are slum dwellers, improvement of living conditions as well as providing adequate facilities in school such as, infrastructure, drinking water and sanitation, regular health check up including health education by strengthening the school health program will address some of the issues.

VI. Figures And Tables

Table I : Morbidity profile of study population (N=1029)

S.No	Morbidity	Present	%
1	Underweight	345	33.53
2	Anemia	516	50.15
3	Worm infestation	382	37.12
4	Vitamin A deficiency	64	6.22
5	Vitamin B deficiency	81	7.87
6	Skin Infection	138	13.41
7	Eye Infection	20	1.94
8	Ear Infection	27	2.62
9	Dental caries	304	29.54
10	Respiratory condition	173	16.81

Table No 2 Morbidity among the study population in relation to Gender and Mothers' literacy.

Mother's Literacy Status	Morbidity				
	Present (%)		Absent (%)		Total
High School education and above	57	67.06	28	32.94	85
Primary education	182	84.65	33	15.35	215
Illiterate	662	90.80	67	9.19	729
Gender					
Boys	502	89.32	60	10.68	562
Girls	399	85.43	68	14.56	467
Total	901		128		1029

Table 3: Distribution of study population as per their nutritional status and socio economic status.

S.E Status	No. of Children	Nutritional status					
		Underweight		Severe Under weight		Normal	
		No.	%	No	%	No.	%
Lower	47	24	51.06	8	17.02	15	31.91
Upper Lower	665	243	36.54	22	3.31	400	60.15
Lower Middle	317	48	15.14			269	84.86
Total	1029	315		30		684	

{Chi square test =60 df =2, P< 0.001}(For the Chi-square test, underweight and severe under weight were grouped

Table 4 : Distribution of children as per gender, socioeconomic status of children and anaemia

SES	Anemia				Total
	Present	(%)	Absent (%)		
Lower	32	68.09	15	31.91	47
Upper lower	340	51.13	325	48.87	665
Lower middle	144	45.43	173	54.57	317
{Chi square test =9.12 df =2 , P< 0.02}					
Sex	Anemia				
	Present	(%)	absent	(%)	
Boys	268	47.68	294	52.31	562
Girls	248	53.10	219	46.89	467
Total	516		513		1029
{Chi square test =2.99 df =1 , P> 0.05}					

Table 5 Distribution of children according to worm infestation and Socioeconomic status

SES	Worm Infestation				Total
	Present		Absent		
	No	%	No	%	
Lower	27	57.45	20	42.55	47
Upper lower	247	37.14	418	62.86	665
Lower middle	108	34.07	209	65.93	317

{ Chi square test =9.57 df =2 , P< 0.01}

Table 6 Distribution of children according to worm infestation and Anaemia

Worm Infestation	Anemia				Total
	Present		Absent		
	No	%	No	%	
Present	299	78.28	83	21.72	382
Absent	217	33.53	430	66.47	647
Total	516		513		1029

{Chi square test =192.25 df =1 , P< 0.0001}

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