

## COMPARATIVE STUDY OF HEALTH STATUS OF PRIMARY SCHOOL CHILDREN IN RURAL AND URBAN AREA OF KARIMNAGAR DISTRICT (ANDHRA PRADESH) INDIA

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### ABSTRACT

Under five years children are targeted for priority care under various maternal and child health programmes, but this age group (5-15 years) remain neglected. School health services provide an ideal platform to detect the health problems early and treat them. Early detection of the morbidities through regular survey helps in prompt treatment and prevention of serious complications.

### MATERIAL AND METHODS

The current descriptive, cross-sectional observational study was conducted in Pratima Institute of Medical Science, Karimnagar, Andhra Pradesh, India, during study period from November 2011 to October 2012 in selected government primary schools from urban and rural areas of Karimnagar Districts. The total sample size was 820. Verbal informed consent was obtained from parents. Standard operational definitions were formulated (formulated) made to assess health status. Data were analysed using chi-square test (Qualitative test).

### RESULTS

Out of the total study subjects, females were more than males. Overall, majority belonged to lower socio-economic status (63.90%). About half of subjects (49.75%) were practicing handwashing before food. Around 38.29% were practicing handwashing after defecation in urban and rural area (42.19% and 34.39% respectively). Common presenting symptoms among the study subjects were common cold (34.26%), toothache (33.17%), headache (27.31%), pallor (39.14%), and diminished vision 13.29%. Pyorrhoea was the common dental health problems (13.04%).

### CONCLUSIONS

Morbidities and under nutrition were the key findings of the present study along with poor personal hygiene especially in rural areas.

### KEYWORDS

School Children, Health Status, Hygiene, Urban, Rural.

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### INTRODUCTION

Children are not only divine gifts, but also the future of a nation and hope of the world. They are the country's biggest human investment for development. So far, our country has made little progress in improving the health condition of our school children when compared to the developed countries. It is estimated that every child in India has some sign of ill health.<sup>[1]</sup> School age children have not received as much attention from health providers/planners as the under-fives. In an international workshop at Kentucky, USA in 1994, it was agreed that there was a dearth of information on the health status of school age children from developing countries particularly at the community level. Under five years children are targeted for priority care under various maternal and child health programmes, but these age groups (5-15 years) remain

neglected.<sup>[2]</sup> Early detection of the morbidities through regular survey helps in prompt treatment and prevention of serious complications. After independence, several steps were taken for the improvement of the health situation and well-being of the children. India is home to the largest number of children in the world, larger than China.<sup>[3]</sup> The population of children in the age group 0-14 for India in 2010 was estimated as 374 million as compared to 269 million in China. In India, about 1.83 million children die annually before completing their fifth birthday-most of them due to preventable causes.<sup>[4]</sup> 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>[5]</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 (Consider reframing). Keeping all these facts in view, a need was felt to carry out a survey of the health status of primary school children. School age is a critical time in the development of a human being and the school setting provides a strategic point of entry for improving children's health, self-esteem, life skills, and behaviour. School children are also one of the most accessible groups for treatment and healthcare can be integrated efficiently with education programmes. School

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health services provide an ideal platform to detect the health problems early and treat them.<sup>[6]</sup> With the above background, the present study was planned to assess the health status of primary schools children at Karimnagar District (Andhra Pradesh), India.

### MATERIAL AND METHODS

The current cross-sectional observational study was conducted in Pratima Institute of Medical Science, Karimnagar (Andhra Pradesh), India, during period from November 2011 to October 2012. Selected government primary schools from urban and rural areas of Karimnagar Districts were considered for the study. Predesigned and pretested proforma was used for data collection. A total sample of 820 students was selected for the final study by using following formula  $n=4pq/d^2$ .

Where n is the sample size, p is the prevalence, q is (1-p), and d is precision.

The calculated sample size was 384. Five percent was added to this to account for nonresponse bringing the total to 404, which was rounded off to 410. The number was doubled to enable an urban rural comparison bringing the total sample size to 820. Simple random sampling was used for selection of desired sample size. Ethical consideration was obtained from institutional ethical committee.

### Inclusion Criteria

1. Children enrolled in registers of government primary schools in Karimnagar District.
2. Children in the age group of 6 to 11 years.
3. Children who were present in at least two visits and willing to participate in study.

### Exclusion Criteria

1. Children who were unreachable in spite of two school visits.
2. Children and parents who were unwilling to give consent or co-operate for the interview.

### METHODOLOGY

List of government schools was obtained from the District Education Office of Karimnagar District. There were 45 schools in the urban area and 81 schools in rural areas of Karimnagar District. To work out equal number of children from both area, school selected in urban area were twice of the figure selected in rural area. All children in these schools were selected for the study and 820 children were included in the final analysis. Purpose of study was explained to teachers and children and their parents. Teachers were asked to inform the parent to be present on day of examination at school. Verbal informed consent was obtained from parents. Children were interviewed using predesigned pretested proforma and clinically examined with the assistance of teachers. Family and socioeconomic history was obtained from parents. Every student was subjected to a thorough physical and systemic examination including a careful clinical history. The physical appearance and signs of morbidities and deficiencies was noted by the investigator using a checklist for signs of various diseases. Standard operational definitions were used to assess

health status. A brief health education session was delivered to the teachers and students and their parents. Data were analysed using Epi Info (Version 7) software and statistical measures were obtained using chi-square test. P value <0.05 was considered as statistically significant.

### RESULTS

Out of the total study subjects, females were more than males (51.09% and 48.90% respectively), whereas in rural area females were 54.39% and in urban area males were 52.19%. Majority of the subjects were in the 10-11 years age group (35.24%). In rural area, older children 10-11 years were in majority (39.75%) whereas in urban area majority belongs to 8-9 years of age group (37.07%). Majority lower socioeconomic status (63.90%). Similar findings were observed in both rural and urban area. Majority belong to low socioeconomic status 61.28% and 66.58% respectively. Majority of the subjects (52.68%) residing in joint family. Joint family concept was practised in rural area 55.85% whereas nuclear concept was predominant in urban area 50.48%. Majority of subjects (72.92%) were belonging to second birth order. Similar trend was observed in both rural and urban area 77.31% and 68.53% respectively. (Table 1).

About half of subjects (49.75%) were practicing handwashing before food. This practice was almost similar in both urban and rural area 49.26% and 50.24% respectively. Only 38.29% were practicing handwashing after defecation. In urban and rural area, 42.19% and 34.39% respectively. Overall hygiene practices related to tooth brushing was 47.43% [More in urban (51.70%) than rural area (43.17%)]. Daily bathing practice was markedly high 90.60% (Urban 93.17% and rural 88.04%). (Table 2).

Mixed diet practice (Predominantly veg) was 77.80% (77.07% in rural and 78.53% in urban). Overall, 75.97% subjects were consuming meal 3 times a day. Similar trend were observed both in rural and urban area (84.63% and 67.31% respectively). A significant proportion 79.87% were using mid-day meal. Proportion was more in rural 83.56% than urban area 76.09% respectively. (Table 3).

Common presenting symptoms among the study subjects were common cold (34.26%), toothache (33.17%), headache (27.31%), cough (26.82%), pallor (39.14%), and diminished vision 13.29%. Among dermatological signs, pyoderma followed by scabies and taeniasis were the predominant (More in rural area than urban area). Nasal discharge, tonsillitis, and wax were the common ENT problems 27.92%, 21.58%, and 19.51%, respectively (More in rural than urban area) (Table-4, 5).

Pyorrhoea was the common dental health problems (13.04%). Dental caries was prevailing in rural area whereas pyorrhoea among urban area 21.21% and 21.21%, respectively. Respiratory problems (4.75%) were more than cardiac problems (1.58%). Prevalence of respiratory problems was more in rural (5.60%) than urban (3.90%). Overall, vitamin D deficiency was most common (5.48%) (Predominant in rural) whereas in urban area vitamin C deficiency was the major problems (6.09%). (Table 6).

Variable	Urban	Rural	Total
<b>Gender</b>			
Male	214(52.19)	187(45.60)	401(48.90)
Female	196(47.80)	223(54.39)	419(51.09)
<b>Age (In years)</b>			
6-7	132(32.19)	140(34.14)	272(33.17)
8-9	152(37.07)	107(26.09)	259(31.58)
10-11	126(30.73)	163(39.75)	289(35.24)
<b>SES</b>			
Upper	54(13.17)	26(6.34)	80(9.75)
Middle	83(20.24)	133(32.43)	216(26.34)
Lower	273(66.58)	251(61.21)	524(63.90)
<b>Type of Family</b>			
Joint	203(49.51)	229(55.85)	432(52.68)
Nuclear	207(50.48)	181(44.14)	388(47.31)
<b>Birth Order</b>			
1	61(14.87)	42(10.24)	103(12.56)
2	281(68.53)	317(77.31)	598(72.92)
3	68(16.58)	51(12.43)	119(14.51)

**Table 1: Demographic Profile of Study Population**

Hygiene Status	Rural	Urban	Total
<b>Handwashing before Food</b>			
Yes	206(50.24)	202(49.26)	408(49.75)
No	204(49.75)	208(50.73)	412(50.24)
<b>Handwashing after Defecation</b>			
Yes	141(34.39)	173(42.19)	314(38.29)
No	269(65.60)	237(66.58)	506(61.70)
<b>Tooth brushing</b>			
Yes	177(43.17)	212(51.70)	389(47.43)
No	233(56.82)	198(48.29)	431(52.56)
<b>Daily Bathing</b>			
Yes	361(88.04)	382(93.17)	743(90.60)
No	49(11.95)	28(6.82)	77(9.39)

**Table 2: Distribution as per Personal Hygiene Status**

Dietary Status	Rural	Urban	Total
<b>Type of Diet</b>			
Vegetarian	88(21.46)	94(22.92)	182(22.19)
Mixed	322(78.53)	316(77.07)	638(77.80)
<b>Frequency of Meal/Day</b>			
2	51(12.43)	45(10.97)	96(11.70)
3	347(84.63)	276(67.31)	623(75.97)
4	12(2.92)	89(21.70)	101(12.31)
<b>Consuming Mid-Day Meal</b>			
Yes	343(83.56)	312(76.09)	655(79.87)
No	67(16.34)	98(23.90)	165(20.12)

**Table 3: Distribution as per Dietary Status**

Symptoms	Rural	Urban	Total
Fever	64(47.76)	70(52.23)	134(16.34)
Throat Pain	108(63.15)	63(36.84)	171(20.85)
Cough	104(47.27)	116(52.72)	220(26.82)
Breathing Difficulty	90(48.91)	94(51.08)	184(22.43)
Ear Discharge	107(56.91)	81(43.08)	188(22.92)
Rash	52(46.84)	59(53.15)	111(13.53)
Abdominal Pain	91(59.09)	63(40.90)	154(18.78)
Loose Motion	97(55.74)	77(44.25)	174(21.21)
Common Cold	159(56.58)	122(43.41)	281(34.26)
Toothache	146(53.67)	126(46.32)	272(33.17)

Headache	109(48.66)	115(51.33)	224(27.31)
Passage of Worm	95(62.09)	58(37.90)	153(18.65)

**Table 4: Symptoms-Wise Distribution Based on Previous History**

Eye Sign	Present		Total (n=820)	Chi-square, d.f., P value
	Rural (n=410)	Urban (n=410)	Present	
Redness	40(9.75)	7(1.70)	47(5.73)	20.426,4, <0.001 [Highly Significant]
Discharge	46(11.21)	13(3.17)	59(7.91)	
Vision Loss	58(14.14)	51(12.43)	109(13.29)	
Vit. A Deficiency	5(1.21)	3(0.73)	8(0.97)	
Pallor	197(48.04)	124(30.24)	321(39.14)	
<b>Dermatological Sign</b>				
Hair Sign	25(6.09)	6(1.46)	31(3.78)	13.927, 6, <0.05 [Significant]
Scabies	59(14.39)	34(8.29)	93(11.34)	
Taeniasis	63(15.36)	13(3.17)	76(9.26)	
Hypopigmented Patch	32(7.80)	13(3.17)	45(5.48)	
Eczema	21(5.12)	14(3.41)	35(4.26)	
Rash	56(13.65)	18(4.39)	74(9.02)	
Pyoderma	98(23.90)	28(6.82)	126(15.36)	
<b>ENT</b>				
Discharge	59(14.39)	34(8.29)	93(11.34)	20.925,6, <0.001 [Highly Significant]
Wax	102(24.87)	58(14.14)	160(19.51)	
Parotid Enlargement	2(0.48)	0	2(0.24)	
Nasal Discharge/Congestion	145(35.36)	84(20.48)	229(27.92)	
Deviated Nasal Septum	95(23.17)	51(12.43)	146(17.80)	
Tonsillitis	131(31.95)	46(11.21)	177(21.58)	
Pharyngitis	51(12.43)	6(1.46)	57(6.95)	

**Table 5: Distribution Based on Clinical Examination**

Dental and Gingival	Present		Total (n=820)	Chi-square, d.f., p value
	Rural (n=410)	Urban (n=410)	Present	
Dental Caries	87(21.21)	26(6.34)	113(13.78)	78.575,2, <0.001 [Highly Significant]
Pyorrhoea	20(4.87)	87(21.21)	107(13.04)	
Gingivitis	25(6.09)	13(3.17)	38(4.63)	
<b>Cardiorespiratory</b>				
Respiratory	23(5.60)	16(3.90)	39(4.75)	0.65, 1, >0.05
Cardiovascular	6(1.46)	7(1.70)	13(1.58)	
<b>Vitamin Deficiency</b>				
Vit. B	19(4.63)	24(5.85)	43(5.24)	8.97, 2, <0.01 [Significant]
Vit. C	19(4.63)	25(6.09)	44(5.36)	
Vit. D	32(7.80)	13(3.17)	45(5.48)	

**Table 6: Distribution as per Dental and Gingival and Vitamin Disorder**

**DISCUSSION**

Many previous studies have been conducted with comparable findings to the present study. In the current study, most common personal hygiene-related problems were handwashing after defecation (61.71%), before food (50.25%), and tooth brushing (52.57%). While Kalaiselvan G et al<sup>[7]</sup> shows untrimmed and dirty nails were the most common personal hygiene-related problem in their study.

Daily bathing practice was markedly high 90.60% in the current study.

The most common presenting symptoms were common cold 34.26%, toothache 33.17%, headache 27.31%, and cough 26.82%. Pallor followed by vision loss were 39.14% and 13.29% respectively whereas Panda et al<sup>[8]</sup> shows the problem of anaemia was present in overall 26%, which is lower than the finding of the current study. Another study by Bhandari et al<sup>[9]</sup> shows pediculosis (26.2 per cent), dental caries (18.1 per cent) and waxy ear (17.1 per cent) were the common health problems. Shakya S R et al<sup>[10]</sup> observed parasitic infestation of 65.8% and anaemia of 58%, skin diseases (20%), dental caries (19.8%), and lymphadenopathy (10.5%).

In the present study, vitamin D deficiency was most common (5.48%), predominant in rural, whereas in urban area, vitamin C deficiency was the major problems (6.09%). While Aspatwar AP et al<sup>[11]</sup> observed 4.8% of the children were suffering from one or the other signs of vitamin A deficiency in their study.

### CONCLUSIONS

Morbidities and under nutrition were the key findings of the present study along with poor personal hygiene especially in rural areas.

### Strength

In the present study, the variables were compared among urban and rural setting, which was done in a very limited number of previous studies.

Findings of the present study will provide baseline data for further research and also helpful for health planners in priority setting and resource allocation.

### LIMITATIONS

Because of limited resources, children found sick during study could not be treated at the same time, but such children were referred to nearest health facility for management.

Further studies in the similar context can be undertaken on large scale to get more valid results.

### RECOMMENDATIONS

Hence, emphasis on primordial and primary preventive measures like health education should be given for this section of students. In this respect, not only parents, but school teachers should be trained adequately. Health education, personal hygiene education, and nutrition education maybe made as a part of school curriculum apart from regular education activities.

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