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Original Research Article

Health profile of school children of two schools in Palghar district, western Maharashtra, India

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ABSTRACT

Background: Healthy childhood is basis for healthy and productive adult life. Mortality in school age children is low but morbidity and physical defects constitute major problems. With this background the present comparative study was conducted to explore the nutritional and morbidity patterns among government run primary school children and private school children in Palghar district, Maharashtra.
Methods: A descriptive cross-sectional study was conducted during March 2018 in both government school and other private school. Total 400 children studying in class 1 to 4 were included. A pre-designed and pretested questionnaire was used during the interview and clinical examination was carried out to study nutritional status and morbidity pattern among the school children.
Results: Out of 400 children, 61 (15.25%) were underweight, 82 (20.5%) were stunted, and 8 (2.0%) were obese. Dental caries was commonest morbidity (55.25%). Two study subjects (1.0%) had suspect cardiac problems.
Conclusions: Under-nutrition and morbidities are prevalent in present study. Periodic complete health evaluation should be planned for early diagnosis of nutritional and morbid health problems.

Keywords: Primary school, Health profile, Nutritional status, Morbidity

INTRODUCTION

Healthy childhood is the basis for healthy and productive adult life. School is a place where apart from formal education children also learn behavioral, lifestyle and moral values.[1] Malnutrition a public health problem increases the vulnerability of child to a variety of diseases in later life.[2] Majority of available health services, including school health services are delivered through a network of primary health care centers. The school health programme has low priority among national health programmes.[3] The medical and health related facilities are very rarely available to the people in tribal area.[4] Extensive surveys have been carried out in different parts of the country and the finding shows that sickness and morbidity rates in Indian schools are among the highest in the world.[5] Poor health and sickness absenteeism may result in school dropouts. The dropout rate is more among the female children as compared to male children. Palghar district is predominantly tribal district which has recently witnessed tribal child malnutrition.[6] With this background the present comparative study was conducted to explore the nutritional status, morbidity pattern among government school and another private school in tribal district of Palghar, Western Maharashtra, India.

METHODS

A cross-sectional study was conducted during the period of March 2018 to April 2018, amongst 400 primary school children (Government school=200 and private school=200) of Palghar district, Western Maharashtra. The school were situated in the catchment area of rural health unit of a medical college. A multistage stratified

random sampling method was used to select the school. In first stage, the schools were divided into two strata, government schools and private schools. Out of each stratum one private and one government school were selected randomly. Written permission was taken from the school authorities prior to the beginning of study. Children enrolled in class 1-4 were included. Convenient sampling was used and all children present on the day of school visit were included in the study. Instrument used for interview was predesigned questionnaire, to collect data on socio-demographic details, clinical history and physical examination for provisional diagnosis. Visual acuity was measured using Snellen's chart, anthropometric measurements and physical examination was performed in the room made available in the school premise. Height was measured to the nearest 0.5cm. Weighing scale was used to measure weight to the nearest 1 kg. BMI was calculated using the formula Body mass index = (Weight in kg/Height in metre).[2]

Grade of malnutrition was done using WHO reference tables as mentioned below:[3]

- *WHO 'Z' score chart:* They were used to categorize: weight for age (WAZ), height for age (HAZ) and BMI for age. Scores were categorized into <–3 SD, –2 to –3 SD, normal and >2 SD.
- *Weight for age:* According to WHO 2007 Z score charts: WAZ <–3 SD (standard deviation) implies severe underweight, –2 to –3 SD implies mild to moderate underweight and >-2 SD implies normal/ healthy status.
- *Height for age:* In case of HAZ, <-3 SD implies severe stunting, –2 to –3 SD implies mild to moderate stunting and >–2 SD implies normal status.
- *BMI for age:* In case of BMI: <–3 SD implies severe thinness –2 to –3 SD implies mild to moderate thinness, –2 SD was normal and >2 SD implies obesity.

Data analysis

Data was entered and analysed with Microsoft excel spread sheet. WHO Anthro-plus software was also used. Chi square test was used as test of significance. For all statistical test applied, $p<0.05$ was considered as statistically significant.

RESULTS

It was observed from Table 1 that, 81 (40.5%) and 99 (49.5%) children belonged to below poverty line (yellow ration card) government and private school respectively. Similarly, 119 (59.5%) and 101 (50.5%) children belonged to above poverty line from government and private school respectively. In government school children 184 (92%) of belonged to nuclear family and 16 (8%) belonged to joint family, while 148 (74%) children in private school belonged to nuclear family, 51 (25.5%) belonged to joint family.

Table 1: Socio-demographic profile of the study population (n=200).

Socio-demographic profile	Government school N (%)	Private school N (%)	X^2- value P value
Gender			
Male	096 (48)	096 (48)	X^2=0.002 p>0.99
Female	104 (52)	104 (52)	
Age group (in years)			
6 to 7	099 (49.5)	092 (46.0)	X^2 =0.92 p=0.63
8 to 9	090 (45.0)	093(46.5)	
10 to 11	011 (05.5)	015 (07.5)	
Type of family			
Nuclear family	184 (92.0)	148 (74.0)	X^2=22.96 p<0.05
Joint family	016 (08.0)	051 (25.5)	
Three generation family	000 (0.0)	001 (0.5)	
Economic status (ration card)			
Yellow	081 (40.5)	099 (49.5)	X^2=3.23 p>0.05
Kesri	119 (59.5)	101 (50.5)	
White	000 (0.0)	000 (0.0)	

It was seen from Table 2 that according to WHO Z scores, the overall prevalence rate of mild to moderate underweight children was 61 (15.2%) severe underweight was 34 (8.5%). The prevalence rate of mild to moderate underweight was significantly higher among private school children 36 (18%) compared to 25 (12.5%) among government school children. Similarly, prevalence of severe underweight children was higher among private school children 24 (12%) compared to government school children 10 (5.0%) Prevalence rate of stunting was higher among private school children 17 (8.5%) as compared to 6 (3.0%) among government school children. 17 (8.5%) government school children were mild to moderate thin compared to 30 (15%) of private

school children, while 11 (5.5%) private school children were severely stunted compared to only 4 (2.0%)of government school children. The prevalence of obesity was also higher among private school children 7 (3.5%) as compared to 1 (0.5%) among government school children.

Table 2: Nutritional status of two school children as per the WHO criteria.

Nutritional status	Govt. school Male No. (%)	Private school Male No. (%)	Total (%)	Govt. school Female No. (%)	Private school Female No. (%)	Total (%)
Weight for age (underweight) #						
Normal	085 (81.7)	073 (70.2)	158 (76.0)	80 (83.3)	67 (69.8)	147 (76.6)
Mild to moderate under weight	013 (12.5)	019 (18.3)	032 (15.4)	12 (12.5)	17 (17.7)	029 (15.1)
Severe under weight	006 (05.8)	012 (11.5)	018 (08.6)	04 (04.2)	12 (12.5)	016 (08.3)
Total	104 (100.0)	104 (100.0)	208 (100.0)	96 (100.0)	96 (100.0)	192 (100.0)
Height for age (stunting) @						
Normal	84 (80.8)	83 (79.8)	167 (80.3)	76 (79.2)	75 (78.1)	151 (78.6)
Mild to moderate stunting	19 (18.3)	14 (13.5)	033(15.9)	15 (15.6)	11(11.5)	026 (13.5)
Severe stunting	01 (00.9)	07 (06.7)	008 (03.8)	05 (05.2)	10 (10.4)	015 (07.8)
Total	104 (100.0)	104 (100.0)	208 (100.0)	96 (100.0)	96 (100.0)	192 (100.0)
BMI for age (thinness) *						
Normal	89 (85.6)	72 (69.2)	161 (77.4)	89 (92.7)	80 (83.3)	169 (88.0)
Mild to moderate thinness	12 (11.5)	19 (18.3)	031 (14.9)	05 (05.2)	11 (11.5)	016 (08.3)
Severe thinness	03 (02.9)	08 (07.7)	011 (05.3)	01 (01.0)	03 (03.1)	004 (02.1)
Obese	00 (00.0)	05 (04.8)	005 (02.40)	01 (01.0)	02 (02.1)	003 (01.6)
Total	104 (100.0)	104 (100.0)	208 (100.0)	96 (100.0)	96 (100.0)	192 (100.0)

X^2 value=9.797, df=2, p<0.0074; @ X^2 value=6.646, df-=2, p<0.036; *X^2 value=13.41, df=3, p<0.003.

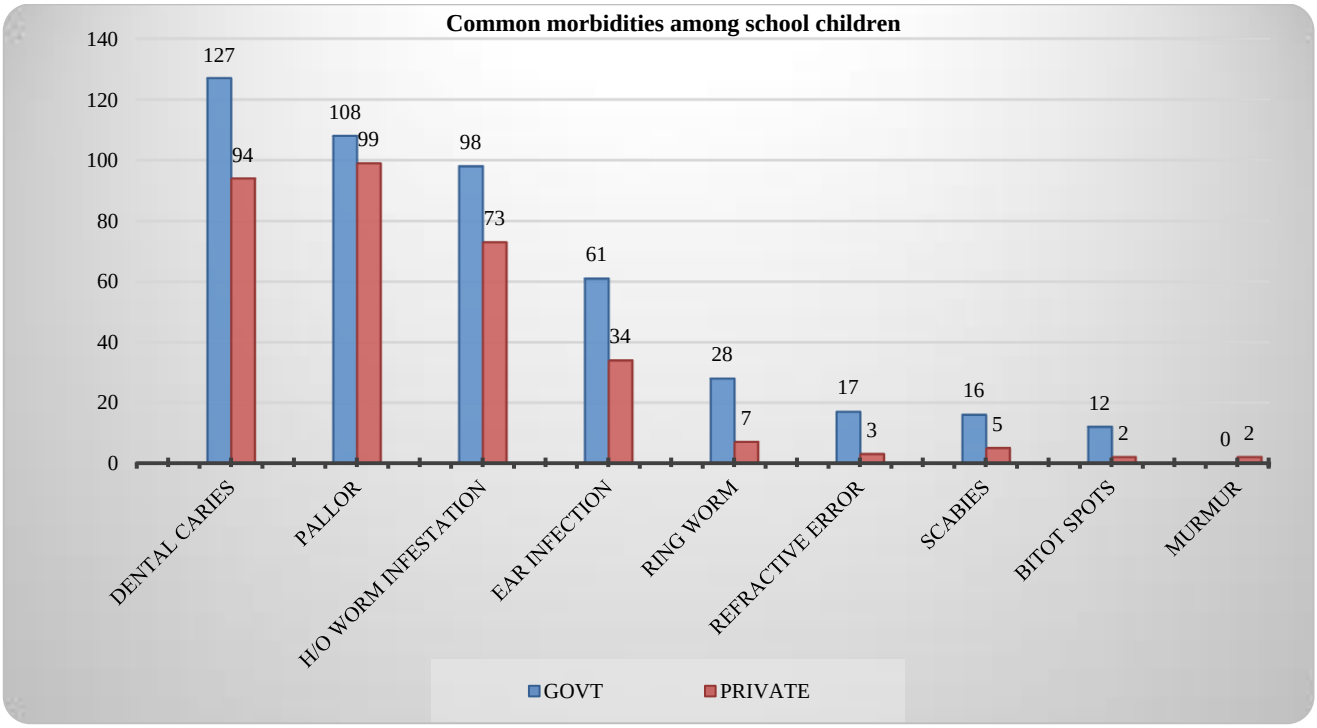

Figure 1: Morbidity pattern amongst two school.

As seen from Figure 1 that the prevalence of ring-worm was 28 (14.0%) among government school children while in private school children it was 7 (3.5%). Refractive error among government school children was 17 (8.5%) and among private school children it is 3 (1.5%). Scabies

was found among 16 (8.0%) of government school children compared to 5 (2.5%) among private school children. Bitot's spots were found in 12 (6.0%) of government school children and 2 (1.0%) in private school children. Cardiac murmur was found in 2 private school children (1.0%). Most common morbidity found was dental caries 127 (63.5%) among government school children and 94 (46.0%) among private school children followed by pallor 108 (54.0%) among government school children compared to 99 (49.5%) among private school children. Ninety eight (49.0%) of government school children had history of worm infestation compared to 73 (36.5%) children of private school. Ear infection was as high as 61 (30.5%) among government school children as compared to 34 (17.0%) among children of private school.

DISCUSSION

As per National family household survey NFHS-4 (2015-16), the prevalence of underweight, stunting and severe wasting in Maharashtra state among under five children was 40.0%, 38.4% and 9.4% respectively.[8] Similarly for Thane district the prevalence of underweight, stunting and severe wasting among children less than 5 years was 32.0%, 31.8% and 6.4% respectively. The prevalence of underweight and stunting in our study was 15.2%, 20.5% respectively. This could be due to smaller sample size and older children i.e. above 5 years in our study. In study by Abraham et al in Pondicherry, the prevalence of stunting was 10.4%, including 0.1% of severely stunted children.[1] Our study findings were similar to the findings in studies by Ashok et al and Saraswathi et al among children aged 13-17 years in Mysore city.[2,9] A study done by Pise et al in Mumbai city revealed that the 8.9% of stunting and 14.4% of wasting among children.[10]

In present study, malnutrition was equally distributed among girls and boys. However, a study in urban area of Guntur on school children showed that malnutrition was significantly more in boys when compared with girls.[11] There is a significant finding of malnutrition being higher in private school as compared to government school suggesting that focus should be given to private schools as they are not covered under national flagship programmes.

In present study, Dental caries was 127 (63.0%) and 94 (46.0%) in government and private school respectively followed by pallor 108 (54.0%) and 99 (49.5%). Similarly a study done by Pise et al in Mumbai city revealed that higher prevalence of dental caries (44.4%) was noticed among study subjects though almost equally distributed in both gender.[10] The overall prevalence of anemia was 75.1% with 16.3% severe, 28.4% moderate and 30.4% mild anemia. Girls were affected more than boys (84.4% vs 62.7%). Another study conducted in Solapur, Maharashtra by Rajput et al the commonest morbidity found was dental caries (55.1%) followed by Pallor (15.6%) and cardiac murmur was found in 0.3% school children. A total of 15.5% children were thin (low BMI for age). Similar findings were also seen in another study by Gokhale et al in tribal area.[5]

CONCLUSION

Key finding of the study are children suffer from more than one form of malnutrition, more among private school than government school. Periodic screening for health problems should be planned in collaboration with school authorities. Thus, considering the poor nutritional status and related morbidities an intervention focusing health education efforts based on local epidemiology and behavioral practices is needed. This study also highlighted the need for health education of children with regard to personal hygiene and common diseases along with provision of necessary materials like soaps and oils etc., under supervision by institutional staff will go a long way in controlling these infections.

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