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Original Research Article

Health and nutritional status of children enrolled with a charitable trust school in rural service area of a medical college in coastal Karnataka

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ABSTRACT

Background: Healthy children are the base for a healthy nation. Children are quite vulnerable at this growing age and hence are prone to fall victim to many diseases, thus affecting their normal growth and development. School health program was started as a total health care delivery system in our country with a purpose of addressing the health needs of children. This study was carried out in a selected school of rural Mangaluru, Karnataka to assess the health and nutritional status of the children.
Methods: A cross-sectional study was conducted during July and August 2017 among all the school children of a charitable school in a rural area of coastal Karnataka. Data regarding anthropometric measurements, refractory error, medical problems and minor ailments were collected using a predesigned health card. Data was entered in Microsoft excel spreadsheet and analysed using SPSS version 23.
Results: A total of 773 children were examined. Dental caries was the most common illness found in 29.6% of children followed by refractive errors in 10.7% of the children. About 13% were underweight and 2% were overweight for age.
Conclusions: The most common morbidities found were dental caries, pallor, refractory error and anaemia. Overweight was also seen in the children and needs to be addressed. A well implemented school health programme has the potential to provide comprehensive preventive and curative health services to school children.

Keywords: School health, Children, Rural, Health status

INTRODUCTION

School plays an important role in physical, social, mental and emotional development of children. The School Health Programme was launched in 1977 and was brought under National Health Mission in 2007 to address the health needs of school going children and adolescents in the 6-18 year age groups in the Government and Government aided schools. The programme entails biannual health screening and early management of disease, disability and common deficiency and linkages with secondary and tertiary health facilities as required.[1]

Children under 15 years of age comprise 35.3% of the total population of India. The total child population in the age group (5-14 years) is 259.64 million. School health programme has developed from the narrower concept of medical examination of children to the present day broader concept of comprehensive care of the health and wellbeing of school children throughout their school years addressing both physical and mental aspects of their health and providing nutritional support and counselling.[2]

While the health problems of school children vary from one place to another, surveys carried out in India indicate that malnutrition, infectious diseases, intestinal parasites,

diseases of skin, eye and ear vitamin A deficiency, dental caries and upper respiratory tract infection are more prevalent in them. These health problems can seriously affect the learning ability and intellectual growth of school children. Health problems in school children are usually associated with low attendance, early dropout and low educational performance.[3-8] Malnutrition (under nutrition or over nutrition) in childhood is a major risk factor of early development of chronic diseases more so if combined with other adverse lifestyle behaviour.[9,10] Therefore, it is important that these morbidity patterns and nutritional deficiencies are detected and corrected early in life to get a healthy and productive future generation. There is a paucity of published data on these aspects from the school children in a charitable trust school and hence, this study addresses this gap.

Objectives

The present study assessed the health and nutritional status of school children studying in a charitable trust school of the rural service area of a medical college in Mangaluru, Karnataka.

METHODS

A cross sectional study was conducted in a school belonging to a charitable trust under the rural field practice area of a medical college in Mangalore, coastal part of Karnataka during the months of August and September 2017 after obtaining permission from the school authorities. All the 773 students enrolled in the school were included for the study. The children were examined after multiple visits to the school. The school is provided with bi-annual health check-ups and monthly health education visits by the rural health center attached to the department of Community Medicine of the medical college. The school provides the midday meals at a nominal cost to the children.

A structured health card was used to record information regarding name, age, sex, standard in which the student was studying, anthropometric measurements, physical examination/personal hygiene, clinical findings and provisional diagnosis. Health examination (general physical and systemic) of each and every student was performed by qualified MBBS doctors. Treatment for minor ailments was prescribed and drugs were dispensed at the school after explaining the parents of children regarding them. Any child requiring specialized medical care was referred to the medical college hospital.

Measurements and examination

Height was measured using a fixed stadiometer after removing the footwear, in standing and erect position with feet parallel with heel, shoulders and occiput touching the upright rod, head being comfortably erect with the lower border of orbit of the eye in the horizontal plane. Measurement was recorded to the nearest 1 cm.[11]

Weight was recorded using standard weighing scale, after adjusting it to zero. Weight was recorded to the nearest 100 gms.[11] The BMI was calculated as the weight (in kilograms) divided by the square of their height (in meters). World Health Organization BMI for age graphs were used to classify a child as normal, underweight and overweight.[12]

General examination included general appearance of the children, gait, pallor, icterus, cyanosis, clubbing and lymphadenopathy. An ear examination and dental examination were done followed by examination of the respiratory, cardiovascular and gastrointestinal systems. Visual acuity was assessed using Snellens' chart for far vision and Jaegers' chart for near vision.[13]

Operational definitions

- *Pallor*: Colour of the anterior rim of the lower palpebral conjunctiva should be same as that of the posterior pale rim when examined in sunlight.[14]
- *Icterus*: Yellowish discoloration of sclera under sunlight.[14]
- *Cyanosis*: Bluish discoloration of mucous membranes and/or skin.[14]
- *Clubbing*: Bulbous enlargement of the ends of one or more fingers or toes.[14]
- *Lymphadenopathy*: Any abnormally enlarged lymph node, with or without signs of inflammation.[14]
- *Refractory error*: Visual acuity <6/18 and equal to or better than 3/60 in the better eye with best correction was taken as diminution of vision for referral.[13]

Statistical analysis

Data was entered in Microsoft excel spreadsheet and analysed using Statistical Package for Social Sciences (SPSS) version 23 software. Chi square test was used to find any significant association between different variables. $p<0.05$ was considered as statistically significant.

RESULTS

A total of 773 students were examined. Among them, 423 (54.6%) were males and 351 (45.4%) were females. 397 students (51%) were aged 10 years and below.

The most common ailments seen among the school children are as shown in Table 1. Dental caries (29.6%) was most common ailment followed by anaemia (13.3%) and refractive errors (10.7%). Children aged more than 10 years were found to have a significant higher prevalence of anaemia ($p=0.016$) and refractive errors ($p=0.019$).

It was observed in our study that 103 children (13.3%) were underweight (Figure 1).

Table 1: Age wise distribution of common ailments among school children (n=773) of a charitable trust school in rural service area of a medical college, Mangaluru (2017).

Common ailments	<10 years (%)	>10 years (%)	Total (%)	P value*
Dental caries	120 (31.9)	109 (29.0)	229 (29.6)	0.736
Anaemia	40 (10.6)	64 (16.1)	104 (13.3)	0.016
Refractive errors	31 (8.2)	52 (13.1)	83 (10.7)	0.019
Wax in the ears	39 (10.4)	39 (9.8)	78 (10.1)	0.447
Skin ailments	20 (5.3)	34 (8.6)	54 (7.0)	0.051
Upper respiratory infections	19 (5.1)	28 (7.1)	47 (6.1)	0.156
Gastrointestinal ailments	12 (3.2)	22 (5.5)	34 (4.4)	0.078

*p value of <0.05 is considered statistically significant

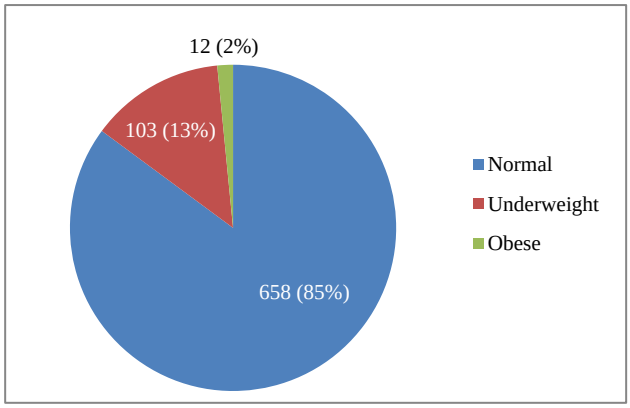

Figure 1: Nutritional status of school children (n=773) as per body mass index (BMI).

DISCUSSION

Poor health can have a detrimental effect on children's performance in school and their success in later life. Children who suffer from poor health are more likely to have more restricted-activity days including missing school than those who do not. School is considered as place for learning where children learn not only subjective knowledge but can also learn life style practices and health seeking behaviour. School Health Program is seen as an important programme for providing preventive, promotive and curative health services to the school children in particular and the population in general.

In the present study (Table 1), dental caries was the most common morbidity, affecting 29.6% of children. This finding is similar to the study by Dambhare et al in Sewagram Maharashtra (35.3%) and Panda et al from Ludhiana who reported that 23.2% suffered from dental caries.[15,16] This finding from our study adds to the fact that there is a need to improve oral health among the school-going children which can be one of the components to stress upon in the health education programmes.

Jain and Jain had reported anaemia in 42% of school children while Panda et al and Dambhare et al reported anaemia (clinical pallor) in 26% and 28.45% respectively, which is higher than the finding of 13.3% from the present study.[15-17] This may be due to better general nutritional status among the children studying in this trust school and the demographics of the children. Anaemia was found significantly higher in the adolescent age group (>10 years) and prevalence was more among girls (19.7%) than boys (8.3%). Emphasis must be given on improving iron and folic acid supplementation to adolescents and girls in particular.

Refractory error in the present study was found in 10.7% of the children whereas Panda et al reported only 5.6% of refractory error.[16] This study also found that refractory error increases with age among school children. This highlights the need for early detection and correction of refractive errors among school children with establishing a referral mechanism for treatment.

The present study showed that 85.1% had normal BMI according to WHO BMI chart for children. This was in total contrast to the study by Navaneethan et al in Tamil Nadu which had reported 83% as underweight and 16% as normal.[18] A comparatively lower prevalence of under nutrition (13.3%) was found in our study than that reported by Kulkarni et al (43.32%) from a study conducted in government schools in rural coastal areas of Karnataka.[19] However, the study had reported similar number of overweight children (3.65%) as in our study (2%). Overweight/Obesity among school children is an emerging problem that needs preventive and educational measures regarding nutritional practices to help prevent morbidities in adult life.

CONCLUSION

According to the present study, dental caries was the most common ailment that has to be managed by proper referral and promoting dental hygiene. Another area of concern is anaemia where nutritional supplementation and nutrition education has a major role to play. Further, the children identified with refractive errors need further specialist consultation. BMI calculation showed that overweight is emerging as a problem of concern that if not addressed, can lead to various lifestyle diseases later

in life. Thus health education regarding diet and life style for school children is the need of the hour.

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