Original Research Article

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Prevalence of anaemia and visual impairment among primary school children of Ahmedabad City, Gujarat: a cross sectional study

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ABSTRACT

Background: Nutritional Anemia and visual impairment among school age children are recognized as public health problem worldwide. The objective of the study was to prevalence of anemia and visual impairment among school going adolescents of Ahmedabad city, Gujarat.

Methods: This cross-sectional study was carried during period from January 2012 to March 2012. 4 schools were selected by purposive sampling. After taking the permission from principals of schools and informed written consent of the parents of the children, 421 children from these schools of Ahmedabad city were examined for anemia and visual impairment. The data was collected by predesigned, pretested performa and analyzed using Epi Info.

Results: Out of total 421 children 205 (48.7%) were female. Mean age of the study children was 7.9 ± 1.06 years. The prevalence of anemia in children in present study was 61.9 % (261 children). The prevalence of anemia in female (134, 62.9%) was higher than males (130, 60.1%). Moderate to severe visual impairment and blindness was 7.2% in girls and 10.5% in boys respectively and the gender difference was not statistically significant. Though 38 (8.9%) children had moderate to severe visual impairment to blindness only 10 (2.3%) children were wearing spectacles.

Conclusions: High prevalence of anemia and visual impairment among these children needs great attention and health education.

Keywords: Anemia, Primary, School children, School health, Visual impairment

INTRODUCTION

A 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. Schools are sacred because they provide an environment, for learning skills, and for development of intelligence that can be utilized by students to achieve their goals in life. It is also observed that to learn effectively, children need

good health. Health is key factor in school entry, as well as continued participation and attainment in school.1

The school is also potentially a location for contracting infections or diseases. Finally, childhood health behavior habits such as diet and physical activity are influenced by the school setting and often track into adulthood1. The common morbidities found in school age children are nutritional deficiencies, dental, visual and hearing problems, respiratory infections, skin conditions, loco motor disabilities and congenital heart and other

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problems. The fact is that the most of these conditions are preventable or avoidable and curable especially in early stages by promotion of hygienic practices among school children through proper health education by teachers, who are the first contacts.²

World Health Organization estimates that around two billion people are anemic with approximately 50% of all anemias attributable to iron deficiency. India is among the countries with highest prevalence of anemia and visual deficiency among school children.³ This study is a humble effort to throw light on prevalence of Anemia and visual impairments among children of primary school.

METHODS

This cross-sectional study was carried during period from January 2012 to March 2012. 4 schools were selected by purposive sampling. After taking the permission of principals of schools and informed written consent of the parents of children, 421 children from these schools of Ahmedabad city were examined using Pre-designed, pretested, semi-structured WHO standard with ICMR modifications questionnaire for nutritional deficiencies. Performa contained general information, anthropometry and general health check-up of the children. The modification included deletion of columns irrelevant to the present study and addition of some columns to record other health abnormalities specially which are common in children. Data were analyzed using Epi info. Parameters such as rate, ratio and percentages were calculated. In order to have valid interpretation of rates, 95% confidence intervals (CI) were calculated. To test the significance of the difference among the statistical parameters in different subsets of population, suitable statistical tests were applied.

RESULTS

Out of total 421 children 205 (48.7%) were female. Mean age of the study children was 7.9 ± 1.06 years. Maximum numbers of the children were in the age group of 5-7 years (60.4%). Mean age of female and male children was 7.8 ± 1.29 years and 7.9 ± 1.32 years respectively.

Table 1: Gender wise distribution of children according age groups.

Age groups (in years)	Female	Male	Total
5-7	131 (31.1)	123 (29.2)	254(60.4)
8-10	74 (17.5)	93 (22.0)	167 (39.6)
Total	205 (48.7)	216 (51.3)	421(100)

Figures given in parentheses are percentages.

The prevalence of anaemia in children in present study was 61.9 % (261 children). The prevalence of anaemia in female (134, 62.9%) was higher than males (130,60.1%). Possible reasons for IDA include poor consumption of DGLV, and less absorption of iron (Table 2).

Table 2: Distribution of children according to signs of Iron deficiency.

Signs	Gender Female Male 216		Total
	205 (100)	(100)	421 (100)
Pallor of tongue	134 (65.3)	123 (56.9)	257 (61.0)
Pallor of conjunctiva	129 (62.9)	126 (58.3)	255 (60.5)
Pallor of nail	131 (63.9)	130 (60.1)	261 (61.9)

Moderate to severe visual impairment and blindness was 7.2% in girls and 10.5% in boys respectively and the gender difference was not statistically significant. Though 38 (8.9%) children had moderate to severe visual impairment to blindness only 10 (2.3%) children were wearing spectacles. (Table 3).

Table 3: Gender wise distribution of children according to their vision.

Visual impairment and category	Gender Female 205 (100)	Male 216 (100)	Total 421 (100)
Mild or no visual impairment Category 0	189	192	381
	(92.1)	(88.8)	(90.4)
Moderate visual impairment Category 1	11	17	28
	(5.3)	(7.8)	(6.65)
Severe visual impairment Category 2	4	6	10
	(1.9)	(2.7)	(2.3)
Blindness Category 3	1 (0.4)	1 (0.4)	2 (0.4)

Chi-square: 1.35; degrees of freedom: 2; p=0.5076

DISCUSSION

In Thakor N et al age of the study children (total 867) ranged from 5-19 years. Mean age was 13.80 ± 1.96 years. Out of 867, 434 (49.9%) were boys and 433 (50.1%) were girls. The study revealed that 46.7% girls were suffering from anaemia compare to 37.3% of boys. 122 (12.9%) children had visual impairment.¹

In Nayak S et al the mean age of children was 15.8 ± 1.96 years. Out of 841, 432 (51.4%) were boys and 409 (48.6%) were girls. The study revealed that 67.0% girls were suffering from anemia compare to 58.7% of boys. 117 (13.9%) adolescents had visual impairment.²

In Srinivasan K et al 61.4% children were in the age group of 10-14 years, 84.3% children had one or more morbid conditions, prevalence of anemia in children was

79.6 and 4.4% children had defective vision.⁴ In Panda P et al 59.5% are boys and 40.5% are girls, prevalence of anemia in boys was 22.9% and in girls was 30.5%, 5.6% children had refractive errors.⁵

In Deb S et al, prevalence of anemia in boys was 55.34% and in girls was 51.85%. In Osei A et al 3 6.7% children were found anemic in primary school age group. In Chandna S et al children had night blindness in 35.9%, prevalence of anemia in children was 34%.

In Rema N et al prevalence of anaemia in boys was 44.08% and in girls was 52.2 1%, prevalence of vitamin A deficiency in boys was 5.65% and in girls was 8.64%. In India 6-7% children aged 10-14 years have problem with their eye sight. As per DLHS (2007-2008), prevalence of anaemia in adolescent girls is 72.6%.

However, study done in single city of Gujarat limits us to generalize the results. There is definitely a need for well-planned, large-scale studies to get accurate prevalence of anaemia and visual impairment in primary school children.

CONCLUSION

High prevalence of anemia and visual impairment among these children needs great attention and health education.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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