RESEARCH ARTICLE

MORBIDITY PROFILE, IMMUNIZATION STATUS AND PREVALENCE OF ANAEMIA AMONG CHILDREN OF RESIDENTIAL SCHOOLS OF GANDHINAGAR DISTRICT, GUJARAT

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ABSTRACT

Background: The school is also potentially a location for contracting infections or diseases. Finally, childhood health behaviour habits such as diet and physical activity are influenced by the school setting and often track into adulthood.

Aims & Objectives: (1) To study morbidity profile of children of residential schools; (2) To study the immunization status of children of residential schools; (3) To know the prevalence of anaemia among children of residential schools.

Materials and Methods: The study was a cross sectional study. After taking the permission of principal of resident schools and consent of the parents of children, 867 children from 8 residential schools were interviewed and examined during February-March 2011. A self-administered questionnaire was used for data collection.

Results: Age of the study children (total 867) ranged from 5-19 years. (Mean age=13.80 ±1.96 years). Out of 867, 434 (49.9%) were boys and 433 (50.1%) were girls. 303 (34.9%) children were fully immunized and 193 (22.3%) were partially immunized. The number of unimmunized children was 371 (42.8%). 333 (38.4%) children [Females: 158 (36.4%); Males: 175 (40.3%)] had past history of illness like jaundice, measles or chickenpox and tuberculosis. Wax in ears was present in 816 (94.1%) children while 192 (22.14%) children had one or more morbid conditions. The prevalence of anaemia in children in present study was 42%. [Females= 202 (46.7%); Males=162 (37.3%); $p<0.05$].

Conclusion: Prevalence of high morbidity and anaemia among these children needs great attention and health education. Poor immunization status of these children needs great health education of their parents.

Key Words: Anaemia; Immunization Status; Morbidity; Prevalence; Residential School; School Children

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.[1] 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.

The school is also potentially a location for contracting infections or diseases. Finally, childhood health behaviour habits such as diet, substance addiction and physical activity are influenced by the school setting and often track into adulthood.[1] 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 1st contacts.[2]

Some parents think it is simply impossible to allow the child to stay away from home from an early age, while there are others who believe that residential schools instil a sense of responsibility and discipline in children, which is a great benefit for their overall development. There are positive as well as negative effects of residential school on children.[3] This study is a humble effort to throw light on morbidity profile, Immunization status and prevalence of anaemia among children of residential schools.

Objectives of the study were, (1) To study morbidity profile of children of residential schools; (2) To study the immunization status of children of residential schools; (3) To know the prevalence of anaemia among children of residential schools.

Materials and Methods

The study was a cross sectional study. Eight (8) residential schools were selected by purposive sampling. After taking the permission of principal of resident schools and informed written consent of the parents of

children, 867 children from 8 residential schools were interviewed and examined during February-March 2011. A self-administered questionnaire was used for data collection.

Past illness was confined to seven vaccine preventable diseases which are covered under Universal Immunization Programme, i.e. Tuberculosis, Polio-myelitis, Diphtheria, Pertusis, Tetanus, Measles and Hepatitis B.

Immunization: Immunization data were collected only in respect of BCG, Polio, DPT, Measles and Hepatitis B vaccines. Vaccination information were obtained from the parents. BCG vaccination was confirmed from the presence of the scars.

Immunization status: The children who had received 1 dose of BCG, 3 dose of OPV, 3 dose of DPT and 1 dose of Measles vaccine by the age of 1 year were considered as fully immunized. A child, who had not received any of these vaccines in any dose, was considered as non-immunized and remaining children were considered as partially immunized.

Statistical Analysis

Data were analyzed using SPSS version 17 (trial version). 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. They included chi-square test, Z- test and unpaired t test.

Results

Age of the study children ranges from 5-19 years. Mean age of the study children was 13.80 ± 1.96 years. Maximum numbers of the children were in the age group of 10-14 years (58%). Mean age of female and male children was 13.78 ± 1.89 years and 13.82 ± 2.02 years respectively. Out of total (867), 48 (5.5%) children were in 5-9 years (primary school) age group, whereas 819 (94.5%) belonged to 10-19 years (adolescent) age group. (Table 1)

Education status of head of the family is important in promotion of health of their children as education determines the awareness of health needs and also provides access to health campaigns conducted through print media.

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

Age Groups	Female	Male	Total
5-9	23 (2.7)	25 (2.8)	48 (5.5)
10-14	271 (31.3)	232 (26.7)	503 (58.0)
15-19	139 (16.1)	177 (20.4)	316 (36.5)
Total	433 (49.9)	434 (50.1)	867 (100)

Figures given in parentheses are percentages

Table-2: Distribution of children according to education status of head of the family and caste

Education of HOF	No. of children
Illiterate	66 (7.6)
Primary	250 (28.8)
Secondary	255 (29.4)
Higher Secondary	131 (15.1)
Graduate	120 (13.8)
Post Graduate	45 (5.2)
Total	867 (100)

Figures given in parentheses are percentages

Table-3: Gender wise distribution of children according to history of past illness

Disease (s)	Gender		
	Female	Male	Total
Jaundice	10 (6.3)	30 (17.1)	40 (12.0)
Measles or Chickenpox	129 (81.6)	125 (71.4)	254 (76.3)
Measles or Chickenpox + Jaundice *	14 (8.9)	18 (10.3)	32 (9.6)
Measles or Chickenpox + Jaundice + Tuberculosis *	3 (1.9)	0 (0.0)	3 (0.9)
Tuberculosis	2 (1.3)	2 (1.1)	4 (1.2)
Total	158 (100)	175 (100)	333 (100)

Figures given in parentheses are percentages

Table-4: Gender wise distribution of children according to their morbid conditions

Morbid conditions	Gender		Total (n=867)
	Female (n=433)	Male (n=434)	
Wax in ears	402 (92.8)	414 (95.4)	816 (94.1)
Cough and cold	29 (6.7)	36 (8.3)	65 (7.5)
Headache	17 (3.9)	16 (3.7)	33 (3.8)
Pus draining from ear	22 (5.1)	9 (2.1)	31 (3.6)
Fever	14 (3.2)	14 (3.2)	28 (3.2)
Mild enlarged liver	0 (0.0)	15 (3.5)	15 (1.7)
Enlarged Lymphnodes	5 (1.2)	8 (1.8)	13 (1.5)
Tonsillitis	5 (1.2)	2 (0.5)	7 (0.8)

Figures given in parentheses are percentages

Table-5: Distribution of children according to their immunization status and educational status of the head of the family

Education status of HOF	Immunization status of children			Total
	Fully Immunized	Partially Immunized*	Unimm-unized	
Illiterate to secondary	124 (21.7)	153 (26.8)	294 (51.5)	571 (100)
Higher secondary to post Graduate	179 (60.5)	40 (13.5)	77 (26.0)	296 (100)
Total	303 (34.9)	193 (22.3)	371 (42.8)	867 (100)

*Figures given in parentheses are percentages; *128 children who had not received any vaccine except TT at the age of 10 years which was given at school are considered as partially immunized; χ^2: 128.80; DF: 2; p<0.0001*

Table-6: Prevalence of anaemia

Signs	Gender		Total
	Female	Male	
Pallor of tongue	174 (40.2)	144 (33.2)	318 (36.7)
Pallor of conjunctiva	172 (39.7)	133 (30.6)	305 (35.2)
Pallor of nail	173 (40.0)	154 (35.5)	327 (37.7)
Koilonychia	1 (0.2)	2 (0.5)	3 (0.3)
Total conditions	520	433	953

Figures given in parentheses are percentages

Out of 867 children 749 (86.4%) children had father as a head of the family, 63 (7.3%) children had grandfather as a head of the family, remaining 50 (5.8%) and 5 (0.6%) had grandmother and mother as a head of family respectively. Literacy rate of the head of the family in this study was 92.4%. (Table 2)

History of past illness of children was recorded on the basis of recall of parents. This data is based on the parents' information and they were not able to distinguish illness between measles and chickenpox so, accurate data on individual illness was difficult to obtain. Out of 867 children 333 (38.4%) children had past history of illnesses like jaundice (mostly due to hepatitis A), measles or chickenpox and tuberculosis and out of 333 children 158 (47.4%) were females and 175 (52.6%) were males. (Table 3)

Table 4 shows the various morbid conditions which was prevalent in children at the time of study. Wax in ears was present in 816 (94.1%) children while 192 (22.14%) children had one or more morbid conditions.

Immunization of children during their infancy and early childhood against major communicable diseases is probably the most cost effective tool in promoting child's health and reducing the morbidity and mortality load in children in years to come. As the education of head of family increases number of fully immunized children increases and number of unimmunized children decreases and it is statistically highly significant. ($p < 0.01$) (Table 5)

The prevalence of anaemia in children in present study was 42 % (364 children). The prevalence of anaemia in female (202, 46.7%) was significantly higher than males (162, 37.3%). Possible reasons for anaemia include poor consumption of dark green leafy vegetable, increased demand during adolescence & menstrual loss. (Table 6)

Discussion

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 and prevalence of anaemia in children was 79.6 %.[4] In Soumya Deb et al 76% of boys and 74% of girls were suffering from one or more morbidities, prevalence of anaemia in boys was 55.34% and in girls was 51.85%.[5] In Dongre A R et al wax in ears was present in 10.3% of children.[6] In Chandna S. et al prevalence of anaemia in children was 34%.[7] In Rema N et al prevalence of anaemia in boys was 44.08% and in girls was 52.21%.[8] In Panda P et al 59.5% are boys and 40.5% are girls. Prevalence of anaemia in boys was 22.9% and in girls was 30.5%.[9] In Osei A et al 36.7% children were found anaemic in primary school age group.[10] As per DLHS (2002-2004), prevalence of anaemia in adolescent girls is 72.6%.[11]

Conclusion

- In view of the high prevalence of morbidity among children, periodic medical examination by appointed physician and treatment facilities should be organized and morbidity of children in hostels monitored systematically thrice in a year. Paediatrician and gynaecologist can be called on annual basis for detailed health check-up.
- Parents of the pupil should be present during the school health check-up.
- There should be school health education program with the active involvement of school teachers to improve personal hygiene in school children and to reduce related morbidities along with provision of necessary materials like soaps and oils etc., under supervision by hostel staff will go a long way in controlling these infections.
- As a high prevalence of anaemia, there should be regular iron and folic acid supplementation along with food fortification.
- Inclusion of more foodstuffs especially fruits, vegetables, milk and milk products in daily diet of residential school children is recommended for improving their nutritional status.
- Nutrition counselling, health education and systematic training to people who are planning and realising nutrition in boarding schools by doctors, teachers and health workers should be given to decrease the effect of ignorance and faulty practices.
- There is definitely a need for well-planned, large-scale studies using standardized methodologies to estimate the prevalence of iron deficiency, anemia and other micronutrient deficiencies. When planning these studies it is necessary to ensure that importance is given to accurate evaluation of socio economic status and representation of the different regions of India.

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