Research Paper

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Assessment of Health Profile of Rural School Children in Central India

Medical Science

KEYWORDS : School children, health status, morbidity, rural.

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ABSTRACT

A clinical survey of was 735 school going children was carried out in rural areas of central India to assess their health status. Every student was subjected to thorough general, systemic examination and hemoglobin estimation. Anthropometric measurements revealed that the weight and height of boys in the age group of 10-11 and 16-17 years was significantly less than ICMR standards whereas the weight and height of girls in the age group of 12 to 17 years was significantly less than ICMR standards (P>0.05). The co morbidities found in rural school children were anaemia (80.8%), gross malnutrition (32%), Deficiency of Vitamin A (13.1%) and Vitamin B complex (19.3%)], skin infections (32.1%), teeth disorder (30.1%), Lymphadenopathy (24.8%), throat infections (18.1%), ear disorders (16.3%), eye disorders (16.1%) and intestinal infections (10.3%). Thus our results highlight a need for intervention health programs aimed at preventing common morbidities and promoting the health of school children.

Introduction

Children are a nation's most vital and important resource because it is they who are poised to take over from their parents to advance a country's future development. Healthy children are the assets of a country. The future of the society depends on the quality of life of the children.[1] School age children (5-15 years) have not received as much attention from health providers or 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.[2,3] Rural children are more likely than urban children to be uninsured, putting them more at risk of developing various health problems due to poor access to medical care, delays in necessary treatment and inadequate immunization.[1] Moreover poor nutritional status of children in India is in a state of silent emergency and thereby demands greater priority than ever before. Under nutrition is a major public health problem worldwide, particularly in developing countries (Onis et. al.).[4] The health and nutritional status of children is therefore critical to the development and well being of the nation.

The school going age is dynamic period of physical growth and development, when children undergo mental, emotional and social changes. The health status of school children varies from one place to another also varies in urban, rural and tribal areas. School age children constitute 25% of the world's population i.e. Approximately one-fifth of Indian population comprises of school age children.[5]

School health is an important branch of community health. According to modern concept school health service is economical and powerful means of raising community health and more important in future generation. Poor nutritional status of school children is responsible for adverse effects on scholastic performance. Survey carried out in India indicate that major health problems faced by school children in India are anaemia, malnutrition, infectious diseases, intestinal parasitosis, dental carries and diseases of skin ,ear and eyes. Morbidity in India among the school going children is considered to be one of the highest in the world. That's why the knowledge of morbidity and mortality pattern in pediatric age group from different parts of our country is essential, because planning program should geared to obtain the maximum possible development of child health and thereby the healthy nation. Next to Egypt, India has the highest incidence of blindness in the world particularly in the younger age group. It is reality that the health and nutritional status of Indian children especially young children are far from satisfactory.[5]

By virtue of their large number, the children in rural areas are entitled to a large share of health care. By and large as a group, school children are easily accessible for health check up. Hence an attempt has been made to evaluate the health profile of school children in rural areas of central India by detecting the physical defects and diseases and by estimating the anthropometric measurements.

Material and Methods:

A cross sectional study was carried out among the rural school children of Sevanand High School, Mahadula village, Koradi road district Nagpur for a period of one year. The school is situated 16 km away from Indira Gandhi Government Medical College, Nagpur.

Study area

There are 6 census town in the Nagpur district (census town is that town where ¾ of the male working population was engaged in non agriculture pursuits, if the density of population is expected to reach the figure of 400 sq. km and minimum population for that area is 5000). Out of which Mahadula has maximum population of schedule caste and schedule tribe as per census (2001). There were three schools in the Mahadula village, out of which one was selected randomly i.e. Sevanand High School, Mahadula, Nagpur Permission was obtained from headmaster of the school. A meeting was held before the start of the study by calling the teachers and parents of the children. The purpose of the study in detail was explained to them and also assured co-operation to conduct the study. There were 739 students in 5th to 10th class. There were 4 students who were absent since long period, they were excluded from study. Hence 735 students were included in the study.

Data collection

School was visited thrice a week. During each visit near about 7 to 8 students were covered. A rapport was established with the

students and teachers. For each student detail information regarding socio-demographic factors was obtained as per the predesigned proforma. Students who were not present during the first visit were covered in subsequent visit. After obtaining general information every student was subjected to thorough clinical examination and investigation. Every student was enquired about presenting complaints. Also, detail clinical and systemic examination was done. Anthropometric measurements like weight and height were taken as per standard technique.[6]

Every student was subjected to haemoglobin estimation. For this purpose ,1ml venous blood was taken from every study subject by taking all aseptic precaution . Haemoglobin was estimated by Sahli's Haemoglobinimeter method [7, 8] Visual acuity was assessed with the help of Snellen's chart.[9]

Statistical analysis

Percentage, mean and standard deviation was calculated. For statistical analysis, between-group comparisons were conducted by student t test. Epi Info statistical package programme version 6.0 updated 2009 was used to analyze the data. Statistical significance was assessed at a type I error rate of 0.05.

Health Education

Poster and flip chart were used to educate student of each class separately regarding morbidities. Those students who were anemic, their parents were called at school and imparted health education and counseled.

Results:

Total number of screened students were 735, out which 413 (56.2%) were male and 322 (43.8%) were female. Mean weight and height of boys in different age groups were compared with those of Indian council of medical research (ICMR) figures for Maharashtra (2002)[10] as shown in Table 1. On comparison it was observed that mean weight was less in the age group of 10-11 years and 16-17 years and the difference was found to be statistically significant (P< 0.05). While in rest of age groups mean weight was less than ICMR standards but the difference was not statistically significant (P>0.05)**.** As far as height is concerned, it was observed that Mean height was significantly less among all age groups except 13-14 years and 17-18 years.

Similarly, mean weight and height of girls in different age groups were compared with those of ICMR figures for Maharashtra (2002).[10] On comparison, it was observed that mean weight was significantly less in all age group except of 11-12 years (P< 0.05). Mean height was significantly less among all age groups except 10-11years and 17-18 years (Table 2).

The distribution of morbidity pattern in students is shown in Table 3. In present study, the predominant morbidity was found to be anaemia in 594 (80.8%) students. Vitamin B complex deficiency was observed in 142 (19.3%) students and vitamin A deficiency in 96 (13.1%) students. The other morbidities seen were skin disorder constituted 236 (32.1%) students out of which 155 (21.1%) had pyoderma, while scabies and pediculosis capitis was observed in 41 (5.6%) and 26 (3.5%) respectively. Only 14 (1.9%) had fungal infection. Teeth Disorder found in 227 (30.1%) students. Out of which 198 (26.9%) and 29 (3.9%) were having dental caries and fluorosis respectively. Lymphadenopathy was present in 182 (24.8%). Out of which 114 (15.5%) had cervical lymphadenopathy. Throat infection was found in 132 (18%) students out of which 84 (11.4%) were having enlarged tonsils and 48 (6.6%) had pharyngitis. Disorder of ear was found in 120 (16.3%). Out of which 23 (3.1%) had otitis media, wax in ear was observed in 91 (12.4%) and otitis externa was present in 0.8%. Disorder of eye was found in 118 (16.1%) students out of which 88 (12%) diminished vision (Myopia) and conjunctivitis had observed in 24 (3.3%) students.

Intestinal Infection was observed in 76 (10.3%) students, out of which 17 (2.3%), 59 (8.0%) students had diarrhoea and worm infestation respectively. Regarding, cardiovascular disorders, it was found that 7 (0.95%) students were having rheumatic heart disease. They were taking penicillin injection regularly. Congenital Anomalies found were unilateral undescended testis 4 (0.5%); poly dactily 4 (0.5%), flat foot 6 (0.8%) and tallipesequino varus 2 (0.3%).

Discussion

The current project describes the assessment of health and nutritional status rural children. This is an important contribution to the literature in that previous studies have not reported on the specific health problems in rural school children of central India.

In this study, the mean weight and height of boys and girls in different age groups were compared with figures of ICMR for Maharashtra (2002).[10] Anthropometric measurements revealed that the weight and height of boys in the age group of 10-11 and 16-17 years was significantly less than ICMR standards whereas the weight and height of girls in the age group of 12 to 17 years was significantly less than ICMR standards (P>0.05). Also, the commonest co morbidities found in rural school children were anaemia (80.8%), gross malnutrition (32%), micronutrient deficiencies [Vitamin A (13.1%) and Vitamin B complex (19.3%)], skin infections (32.1%), teeth disorder (30.1%), lymphadenopathy (24.8%), throat infections (18.1%), ear disorders (16.3%), eye disorders (16.1%) and intestinal infections (10.3%). These findings conform to the findings of other studies done by Panda P et al (2000)[11], Bhupinder Singh et al (1985)[12] and Purohit et al (1982).[13]

The high prevalence of anaemia (80.8%) found in school students in present study Unlike other studies carried out by Shanti A et al (2001)[14] who reported anaemia in 57.1% and under nutrition in 56.67% children. Verma K et al (1998)[15] found 51.5% prevalence of anaemia in their study. Panda P et al (2000)[57] stated that wasting and stunting in school children was 52.2%.

Taking into consideration Vitamin B complex and Vitamin A deficiencies Rao NP et al (1984)[16], in their study, detected vitamin B deficiency in 17.5% and vitamin A deficiency in 16.4% children. Bhandari et al (1975)[17] had found vitamin A deficiency in 9.6% children.

Sharma NK (1986)[18] had found 14.3% skin infection, Bhavsar BS et al (1985)[19] had revealed skin infection in 16.7% children in their study. Joshi PL et al (1987)[20] had found dental carries in 19.07%. Khanna A et al (1995)[21] had found 16.9% prevalence of respiratory diseases in children. Sobita PM et al (1998)[23] found 23% prevalence of ear disorders.

Although the current study is a valuable contribution to the early literature on health and nutritional status of rural children, much future research is needed so as to give idea regarding qualitative measurement techniques among rural children by conducting focus groups or structured interviews. Addressing these issues will lead to important information that can in turn be used to modify existing interventions to meet the needs of children. It may therefore be mentioned that the objective and subjective studies need to continue on various health parameters including anthropometry, nutrition and hygiene amongst school children. Moreover, a comprehensive programme to improve nutritional status is recommended as part of a well funded school health programme.

Thus our results highlight a need for intervention health programs aimed at preventing common morbidities and promoting the health of school children. It is crucial that a comprehensive primary health care programme for these communities that includes periodic de-worming, nutrition supplement, improved household economy, education, sanitation status and personal hygiene are taken into consideration to improve the nutritional status of these children.

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Table 1: Age-wise distribution of mean weight and mean height of boys

Age Group (yrs)	Weight (kg)					Height (cm)		
	Present Study		ICMR			Present Study	ICMR	
	n	Mean ± SD	n	Mean ± SD	*P value	Mean ± SD	Mean ± SD	*P value
10-11	61	20.30 ± 2.69	94	22.3 ± 3.0	<0.05	127.32 ± 3.74	129.4 ± 5.4	<0.05
11-12	60	24.20 ± 3.69	78	25.0 ± 4.1	>0.05	129.30 ± 3.76	133.2 ± 5.6	<0.05
12-13	58	26.40 ± 3.89	68	26.6 ± 4.3	>0.05	134.23 ± 4.13	138.7 ± 7.0	<0.05
13-14	72	29.10 ± 4.67	58	29.90 ± 6.0	>0.05	141.22 ± 4.67	142.3 ± 8.5	>0.05
14-15	52	31.8 ± 3.85	59	32.7 ± 5.5	>0.05	144.1 ± 4.23	147.5 ± 8.3	<0.05
15-16	46	35.4 ± 4.10	55	36.4 ± 7.7	>0.05	147.5 ± 4.08	154.0 ± 9.0	<0.05
16-17	44	39.0 ± 4.81	36	41.7 ± 6.6	<0.05	155.6 ± 3.97	158.4 ± 8.2	<0.05
17-18	20	40.60 ± 4.29	32	41.9 ±10.2	>0.05	156.2 ± 3.78	159.7 ± 10.0	>0.05

P value derived from student t test

Table 2: Age-wise distribution of mean weight and mean height of girls

Age Group (yrs)	Weight (kg)					Height (cm)		
	Present Study		ICMR			Present Study	ICMR	
	n	Mean ± SD	n	Mean ± SD	*P value	Mean ± SD	Mean ± SD	*P value
10-11	50	18.2 ± 3.2	104	21.8 ± 2.8	<0.05	126.8 ± 3.96	128.3 ± 5.2	>0.05
11-12	53	23.4 ± 3.78	69	24.4 ± 4.2	>0.05	130.4 ± 3.89	133.5 ± 6.0	<0.05
12-13	44	26.7± 4.12	98	28.4 ± 4.7	<0.05	133.8 ± 3.88	139.0 ± 7.1	<0.05
13-14	55	27.9 ± 3.98	79	31.7 ± 6.0	<0.05	137.7 ± 4.19	143.2 ± 7.5	<0.05
14-15	48	32.8 ± 3.91	61	36.8 ± 6.1	<0.05	143.8 ± 3.97	149.1 ± 6.0	<0.05
15-16	32	34.6 ± 3.98	54	38.5 ± 5.1	<0.05	146.1 ± 3.74	149.9 ± 5.6	<0.05
16-17	22	36.8 ± 3.74	59	40.3 ± 5.2	<0.05	146.0 ± 4.30	151.5 ± 5.6	<0.05
17-18	13	38.2 ± 4.01	55	41.5 ± 5.6	<0.05	150.2 ± 4.23	151.6 ± 5.5	>0.05

P value derived from student t test

Table 3: Distribution of morbidity pattern in students

ICD -10	Morbid condition	Number of students (N= 735)
	Nutritional Disorder	
D 52-53	Anaemia	594 (80.8)
E 43	Grossly malnourished	235 (32)
	Vitamin A deficiency	96 (13.1)
E50.0	Conjuctival xerosis	96 (13.1)
E50.1	Bitots spots	24 (3.3)
	Vitamin B complex Deficiency	142 (19.3)
K 13.1	Cheilosis	99 (13.5)
K 14.0	Glossitis	49 (6.7)
K 12.0	Stomatitis	24 (3.3)
	Skin Infection	236 (32.1)
L08.0	Pyoderma	155 (21.1)
B86	Scabies	41 (5.6)
B85.0	Pediculosis capitis	26 (3.5)
B36.9	Fungal infection	14 (1.9)
	Teeth Disorder	227 (30.1)
K02	Caries	198 (26.9)
K03	Flurosis	29 (3.9)
	Lymphadenopathy	182 (24.8)
R69	Cervical	114 (15.5)
R59	Submandibular	28 (3.8)
R59	Axillary	30 (4.1)
R59	Inguinal	10 (1.4)
R59	Parotid	05 (0.7)
	Throat Infection	132 (18)
J0.3	Enlarged tonsils	84 (11.4)
J0.1	Pharyngitis	48 (6.6)
	Disorder of Ear	120 (16.3)
H61.2	Wax in ear	91 (12.4)
H66.0	Otitis media	23 (3.1)
H60	Otitis externa	06 (0.8)
	Disorder of Eyes	118 (16.1)
H52.1	Myopia	88 (12)
H13	Conjuctivitis	24 (3.3)
H55	Squint	06 (0.8)
	Intestinal Infection	76 (10.3)
A09	Diarrhoea	17 (2.3)
B83.9	Worm Infestation	59 (8.0)
	Cardiovascular System	07 (0.9)
I08	Rheumatic Heart Disease	07 (0.9)
	Central Nervous System	01 (0.1)
G51.9	Facial palsy	01 (0.1)
	Congenital anomaly	16 (2.2)
Q53.0	Undescended Testis	04 (0.5)

Q69.9	Polydactily	04 (0.5)
Q66.5	Flat foot	06 (0.8)
Q66.0	Talipes Equinovarus	02 (0.3)

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