Do gender differences exist in health status of rural school children of Central India?

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ABSTRACT The morbidity pattern and nutritional profile was evaluated in 735 (413 boys and 322 girls) rural school children. All children underwent detailed clinical examination including hemoglobin estimation and immunization status. On analysis of data, study findings revealed the better immunization status of male students as compared to female students. Also, the prevalence of co morbidities like anaemia, gross malnutrition, vitamin A deficiency disorders (conjunctival xerosis, bitots spots), vitamin B complex deficiency disorders (cheilosis, stomatitis), scabies, otitis media, myopia, conjunctivitis, squint, diarrhea and worm infestations were significantly more common in female children than male children. The present study findings indicate that rural girls experienced greater crisis in terms of significant morbidities than their boys' counterparts. So there is an urgent need for interventional measures so as to prevent common morbidities and promote the health of children particularly females in rural settings.

Introduction

Children are vital to the nation's present and its future. Healthy children are more likely to become healthy adults. The earlier a child's health needs are identified and met, the better it is for the child and family. When health conditions are identified and treated early, the impact of many disabilities can be reduced. In recent years, there has been an increased focus on issues that affect children and on improving their health. Children have begun to be recognized not only for who they are today but for their future roles in creating families, community, society and shaping the future of nation.[1, 2]

Nineteen per cent of world's children live in India. India is a home to more than one billion people, of which 42 per cent are children. Moreover India has the highest proportion of undernourished children in the world. It has been observed that malnutrition and other morbid conditions are more common in female children than male children. This is mainly attributed to negligence towards female children in terms of provision of balanced food and adequate health care facilities. [3] Specifically, trends in many aspects of children's health status cannot be determined, largely because of inadequacies of available data. There are disproportionately higher rates of morbidities in poor rural communities but studies exploring children's health-related behaviors that may assist in designing effective interventions particularly in rural areas of central India are limited. With this background, we performed a cross sectional survey to assess the gender differences in health status of rural school children.

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. 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.

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. 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.[4] In addition, detail immunization history of the students was inquired and verified from their immunization cards.

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 [5, 6] Visual acuity was assessed with the help of Snellen's chart.[7]

For statistical analysis, between-group comparisons were conducted by chi square 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.

Results:

Table 1 shows the sociodemographic characteristics of study

subjects. It was observed that 418 (56.9%) of children belonged to nuclear family, whereas 227 (30.9%) of children belonged to joint family. Only 90 (12.2%) children were from extended family. Moreover, proportions of female students were more as compared to male students in nuclear and joint families. As far as socioeconomic status of study subjects is concerned, more numbers of children were from low socio-economic status (class III, IV) with preponderance among female students.

The immunization status of students is shown in Table 2. It was found that 221 (53.5%) of male students were fully immunized as compared to 93 (28.9%) of female students. On applying chi square test, the difference between fully immunized male and female students was found to be statistically significant (p<0.0001). Whereas 103 (24.9%) of male students and 90 (12.2%) of female students were partially immunized. However the difference between them was not found to be statistically significant (p>0.05).

Considering the different morbid conditions and differences in male and female students, it was noted that nutritional deficiency disorders were the commonest conditions found in school children. Morbidities like anaemia, gross malnourishment, conjunctival xerosis, bitot's spots, cheilosis, refractory error like myopia and worm infestations were found to be significantly more in female students as compared to female students (p<0.05). Whereas other morbid conditions like stomatitis, scabies, otitis media, conjunctivitis, squint and diarrhea were also more common in females although the difference was not found to be statistically significant (p>0.05). Other morbidities (glossitis, enlarged tonsils and pharyngitis) were found to be more common in males. The findings are summarized in Table 3.

Discussion:
We evaluated the morbidity pattern and nutritional profile in 735 (413 boys and 322 girls) rural school children. In this study, most of students were from nuclear family and belonged to middle socio-economic class with an average family size of 6.57. In our study, 61.9% students were fully immunized and female students were significantly less immunized than male students. Gulati N et al (1990)[8], in their study, revealed that 70% children were fully immunized.

Regarding nutritional disorders, we found high prevalence of anaemia (80.8%) and gross malnourishment (32%) with preponderance among female students. These findings are similar to the study carried out by Shanti A et al (2001)[9] who reported anaemia in 57.1% and under nutrition in 56.6% children. Panda P et al (2000)[10] had found anaemia in 51.5% of children and that to more in girls.

Given the observed levels of malnutrition, it takes up a system for early identification of children hospitalized with nutritional risk in order to provide adequate and timely support and prevent malnutrition. Efforts should be made to strengthen and expand school and community-based programs that promote inexpensive, though effective, practices to prevent the spread of infectious diseases. Initiatives aimed at improving the nutritional status of school children are also needed. Preventive interventions are needed to reach the most rural children with an emphasis on families where parents are single, are unemployed, have a lower income, and lower educational attainment. It is now being increasingly recognized that proper understanding of the community's view point of any health problem contributes significantly towards formulating and implementing strategies that improve their health. Therefore, qualitative research methods, which bring out the community's perception of any issue, should form an integral part of investigation of morbidity.

Conclusions
The present study findings indicate that rural girls experienced greater crisis in terms of significant morbidities than

their boys' counterparts. So there is an urgent need for interventional measures so as to prevent common morbidities and promote the health of mainly female children.

Table 1: Demographic and other characteristic of study subjects

Type of family	Male students 413 (56.2)	Female students 322 (43.8)	Total (N = 735)
Nuclear	210 (50.8)	208 (64.6)	418 (56.9)
Joint	100 (24.2)	127 (39.4)	227 (30.9)
Extended	65 (15.7)	25 (7.8)	90 (12.2)
Socioeconomic status			
Class I	3 (0.7)	1 (0.3)	04 (0.5)
Class II	53 (12.8)	45 (14.0)	98 (13.3)
Class III	200 (48.4)	304 (94.4)	504 (68.6)
Class IV	60 (14.5)	56 (17.4)	116 (15.8)
Class V	4 (1.0)	9 (2.8)	13 (1.8)

Figures in parentheses indicate percentages.

Table 2: Immunization status of students

Immunization Status	Male students 413 (56.2)	Female students 322 (43.8)	Total 735 (100)	χ^2 df 1 p value
Fully immunized	221 (53.5)	93 (28.9)	314 (42.7)	44.8 <0.0001
Partially immunized	103 (24.9)	90 (12.2)	193 (26.3)	0.8 >0.05
Total	324 (78.5)	183 (56.8)	507 (69.0)	

Figures in parentheses indicate percentages. df: degrees of freedom

Table 3: Distribution of morbidity pattern in students

Morbid condition	Male 413 (56.2)	Female 322 (43.8)	Total 735 (100)	χ^2 df p value
Nutritional Disorder				
Anaemia	204 (49.4)	300 (93.2)	594 (80.8)	160.9 <0.0001
Gross malnourishment	105 (25.4)	130 (40.4)	235 (32.0)	18.6 <0.0001
Vitamin A deficiency				
Conjuctival xerosis	16 (3.9)	80 (24.8)	96 (13.1)	70.1 <0.0001
Bitots spots	8 (1.9)	16 (5.0)	24 (3.3)	4.6 <0.05
Vitamin B complex Deficiency				
Cheilosis	40 (9.7)	59 (18.3)	99 (13.5)	11.6 <0.001
Glossitis	29 (7.0)	20 (6.2)	49 (6.7)	0.2 >0.05
Stomatitis	11 (2.7)	13 (4.0)	24 (3.3)	1.1 >0.05
Skin Infection				
Scabies	20 (4.8)	21 (6.5)	41 (5.6)	0.9 >0.05
Throat Infection				
Enlarged tonsils	48 (11.6)	36 (11.2)	84 (11.4)	0.03 >0.05
Pharyngitis	30 (7.3)	18 (5.6)	48 (6.5)	0.8 >0.05
Disorder of Ear				
Otitis media	12 (2.9)	11 (3.4)	23 (3.1)	0.2 >0.05
Disorder of Eyes				

Myopia	30 (7.3)	58 (18.0)	88 (12.0)	19.8 <0.0001
Conjunctivitis	12 (2.9)	12 (3.7)	24 (3.3)	0.38 >0.05
Squint	2 (0.5)	4 (1.2)	06 (0.8)	1.2 >0.05
Intestinal Infection				
Diarrhoea	6 (1.5)	11(3.4)	17 (2.3)	3.08 >0.05
Worm Infestation	25 (6.1)	34 (10.6)	59 (8.0)	4.9 <0.05

Figures in parentheses indicate percentages. df: degrees of freedom

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