Original article

Nutritional status of primary school children

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Background: Malnutrition is one of the major public health problems in Nepal. The nutritional and morbidity status are indicators of the level of the quality of life of school children. Good health and adequate nutrition promote both physical growth and learning.

Methods: This study is a cross sectional study carried out during the period of August-September, 2006. The study population was the school children of Nursery to class five. One of the Government school is selected at randomly in Bharatpur.

Results: 11.38% of school children were below 80% weight for age i.e. under nutrition. According to Waterlow classification, among total school children, 89.85% were normal, 7.69% of school children were stunted and 3.38% of children were found to be wasted. Skin diseases (21.45%) were common in school children. Dental carries were found in 16.0% of school children followed by history of Worm infestation in 10.77%.

Discussion: The results of our study were quite encouraging when compared with other studies conducted in different parts of Nepal. This may be due to good water supply, better environmental conditions, good facilities for excreta disposal & health care facilities in the study area.

Conclusion: The nutritional status of primary school children in this study were found to be satisfactory when compared with other studies conducted in different parts of Nepal. The health education should be given on control and prevention of different diseases.

Key words: Malnutrition, School children, Wasted, Stunting,

Introduction

Malnutrition is one of the major public health problems in developing countries including Nepal. 28% of the children below 5 years of age are under weight in the developing world. The nutritional status reflects the level and pace of household, community, and national development[1]. Malnutrition is a direct result of insufficient food intake or repeated infectious diseases or combination of both. Malnutrition not only directly affects the children by reducing their physical and mental performance but also makes the situation worse by making the children susceptible to infection.[2]

Protein Energy Malnutrition constitutes a serious threat to the survival of young children in Nepal and is a factor in more than half of all child deaths. Protein Energy Malnutrition is indicated by a child being short and /or thin for its age[3]. The latest figure for Nepal shows that 49% of

children aged under five years are affected by stunting, a sign of chronic malnutrition, and that 38.6% of under five are thin. In addition 12.6% are wasted- an indicator of acute malnutrition.[2]

It is estimated that 625 million children of Primary school age group in the world, out of which 79% were in school and about 70% of children in developing world complete at least four years of schooling[4]. In Nepal 41% of the total population are below 15 years of age[5]. The school children aged 5 to 15 years constitute about 27% of the total population who are exposed to the risk of accident, injuries, infections and malnutrition. 19.6% of total primary school age children are never enrolled in school. 45.4% of children enrolled in primary school dropout without completing grade five.

Hence the present study was under taken to assess the nutritional status of primary school children and find out the morbidity status of children.

Material and Method

This study is a cross sectional study carried out during the period of August-September, 2006. The study universe was the students of class Nursery to fifth standard. One of the Government school, Narayani Secondary School, was selected at randomly in Bharatpur Municipality, Chitwan district of Nepal. A pre-tested questionnaire schedule was used to collect the data. The school children from Nursery to class five were subjected to physical and medical examination along with anthropometric measurements like height in centimeter and weight in kilogram. The Indian Academy of Paediatric (IAP) classification was used to assess the under nutrition and Waterlow classification for detecting stunting and wasting in the children was used.

Results

The total number of primary school children were 345, out of them 325 could be interviewed and examined for the study. Out of which, 50.77% were boys and 49.23% were girls. The ratio of boys to girls was 1.03:1. There was no significant difference in proportion of boys and girls with classes as p-value was more than 0.05. (Table-1)

Fig. 1: Age and sex wise distribution of school children

The maximum number (33.54%) of school children were in the age group of 9 to 10 years. The girls predominated in the age group of 9 to 12 years while in all other age groups boys exceed girls (Fig.1)

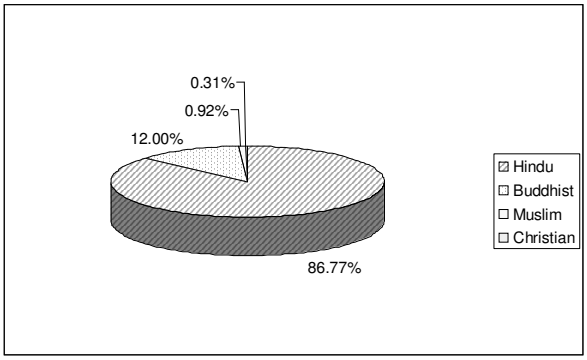

Fig. 2: Religion wise distribution of school children

Table 1: Class and Sex wise distribution of the school children

Class	Boys Number	Percentage	Girls Number	Percentage	Total Number	Percentage
Nursery	22	8.77	12	3.69	34	10.46
1	22	6.77	22	6.77	44	13.54
2	15	4.62	17	5.23	32	9.85
3	35	10.77	31	9.54	66	20.31
4	37	11.38	36	11.06	73	22.46
5	34	10.46	42	12.92	76	23.36
Total	**165**	**50.77**	**160**	**49.23**	**325**	**100**

$\div^2 = 4.59$, D.F.=5, P value > 0.05 , Insignificant

Most of the students (86.77%) were Hindus religion followed by Buddhist (12.0%), Muslim (0.92%) and Christians (0.31%) (Fig. 2)

Table 2. Weight for age as per IAP Classification

Nutritional Status	Weight / Age	Boys	Girls	Total
Normal	>80%	149	139	288
Grade I	70-80%	14	18	32
Grade II	60-70%	2	3	5
Grade III	50-60%	-	-	-
Total		**165**	**160**	**325**

Pooled $\div^2 = 0.9565$, D.F.=1, P value >0.05 , Insignificant

88.61% of the primary school children were found to be within normal weight for age. 11.38% of the primary school children suffered under nutrition (below 80% of weight for age). Among them 9.85% children were found in grade I and 1.54% of the children were found in grade II under nutrition or under weight. There was no child below grade II. There was no significant difference of under nutrition in boys and girls as p-value was more than 0.05. (Table – 2)

Table 3: Weight for Height and Height for Age as per Waterlow Classification

Weight for heightWasting	Height for Age Stunting	
	≥ 90%	**< 90%**
≥ 80%	292 (89.85%) Normal	22 (6.77%) Stunting
< 80%	8 (2.46%) Wasted	3 (0.92%) Wasted and stunted
Total	**300**	**25**

$\div^2 = 6.10$, D.F.=1, P value < 0.05 , Significant

According to Waterlow classification, among total primary school children, 89.85%, 7.69% and 3.38% were normal, stunted and wasted respectively. 0.92% of the children were found both wasted and stunted. There was significant difference in the occurrence of wasting and stunting as p value was less than 0.05.

Table 4. Morbidity Status of School Children (Multiple responses)

Diseases	No. of Children	Percentage
Skin Diseases	70	21.54
Dental carries	52	16.00
Worms Infestation	35	10.77
ARI	32	9.85
Gastrointestinal	28	8.62
Eye related problems	16	4.92

Skin diseases (21.45%) were commonest in school children. Dental carries was found in 16.0% of school children followed by history of Worm infestation (10.77%), Acute Respiratory Infection (9.85%), Gastrointestinal disease (8.62%) and Eye related problems (4.92%).

Discussion

The present study was carried out in one of the government school of Bharatpur Municipality, Chitwan district of Nepal to find out the prevalence of Nutritional status and morbidity pattern of Primary school children. Among total 325 students, the ratio of boys and girls was 1.03:1.This result is consistent with national figure where boys to girls ratio was 1.26 to 1 for Primary school children.[6]

In our study, the maximum number of school children were (33.54%) in the age group 9 to 10 years followed by 29.54% and 22.15% in the age group 11 to 12 and 7 to 8 years respectively. In one of the studies conducted in Bhaktapur district also reported 28.8% of the school children in the age group of 9 to 10 years[7] which is in conformity with our finding.

Majority (86.77%) of the students were Hindu followed by Buddhist (12.0%). These findings are similar to religion wise distribution of population of Nepal where 80.6% of the total population was Hindu and 10.7% of the population was Buddhist[6].

According to IAP classification, 11.38% of school children were found to be in the category of under nutrition in the present study. This figure was quite low than the study conducted in eastern Nepal where it was reported 61%.[8]

The present study revealed 3.38% of the school children were found as wasted. Our finding is in contrast to the results of the studies conducted by Pradhan E et al[9] and Shakya SR et al[8] in Nepal where it was reported to be 10.3% and 11.5% of wasted respectively and consistent to the finding of study conducted in Bhaktapur by Pandey S et al where it was reported 3.4%.[7]

Our study observed 7.69 % of school children as stunted. Similar study conducted in Ecuador reported 1.4% of stunting[10]. The prevalence of stunting of primary school children in Pokhara valley was found 14.9%[11]. The variation in results of our study and studies conducted in other different parts may be due to good water supply, better environmental condition, good facilities for excreta disposal and health care facilities.

The highest prevalence of diseases among students in this study was Skin diseases (21.54%) followed by 16.0% in Dental carries. One of the study conducted in eastern Nepal

reported 20% and 19.8% of the Skin diseases and Dental carries respectively which are in conformity with our findings. The study conducted in Bhaktapur district reported 16.10% of history of Worm infestation which is higher than our finding (10.77%). In our study 9.85% of school children had given history of Acute Respiratory Infection. This result was higher as compare to top ten OPD diseases of Nepal where it was 3.44%[12]. This may be due to inclusion of only primary school children in this study.

Conclusion

The nutritional status of primary school children in this study were found to be satisfactory when compared to the other studies conducted in different parts of Nepal. In the morbidity pattern, skin disease, dental carries and worm infestation were found to be more common in primary school children among the different diseases. This study showed the need for initiation of school health program in the primary schools. The health education should be given, on improving personal hygiene level of the school children, control and prevention of diseases like worm infestation and skin disease.

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References

1. National School Health and Nutrition Strategy, Government of Nepal, Ministry of Health and Population, Kathmandu, Nepal, 2006, 1.
2. Nepal Demographic and Health Survey 2006, Family Health Division, Department of Health Services, Ministry of Health, Government of Nepal, Kathmandu, Nepal.
3. Situation of Children and Women in Nepal 2006, UNICEF, Pulchowk, Kathmandu, Nepal.
4. Editorial, Joint Committee on Health problem in education, Health Appraisal of school children, American Medical Association, 1961:5.
5. Population Reference Bureau, 2007 World Population Data Sheet, Washington, USA.
6. Statistical Pocket Book, His Majesty's Government of Nepal, National Planning Commission, Kathmandu, Nepal, 2002; 5, 15,159.
7. Pandey S, Dudai I and Pradhan A : Health profile of school children in Bhaktapur : Kathmandu University Medical Journal 2005; **3:** 274-280.
8. Shakya SR, Bhandary S and Pokharel PK. Nutritional status and morbidity pattern among governmental primary school children in the eastern Nepal: Kathmandu University Medical Journal 2004; **2:** 307-314
9. Shrestha I and Khatrri JBK, 2003, Health Status of School Children of Pokhara valley, Nepal Journal of Nepal Medical Association, Vol.42, No.147:128-132.
10. Sebastion MS and Senti S. The Health Status of Rural School Children in Amazon Basin of Ecuador. Journal of Tropical Pediatric 1999; **45:** 379-382.
11. Pradhan E,Leclerg Sc, Khatry SK.Child Growth: A Window to child health in the terai, NNIPS Monograph,1991, **1 :** 19-21.
12. Annual Report, Department of Health Services, 2001/ 2002, His Majesty's Government of Nepal, Ministry of Health, Kathmandu : 168.