

Effect of Malnutrition on Schedule Caste School Going Children in Rural Area of Darbhanga District in Bihar

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Abstract - Malnutrition is one of the largest public health problems in developing countries. India contributes 1/3rd of total malnourished children in the world, with prevalence as high as 29.4%. Chronic malnutrition experienced during early life inhibits growth, retards mental development; reduce motivation and energy level, causing reduction in educational attainments. Malnutrition among schedule caste school going children is an important concern for the health authorities in India. Distribution of various types of risk factors and its influence on nutrition status of children in a given set up should be analyzed for planning the control measures. Strengthening public health interventions for mild malnutrition cases and vulnerable groups, effective implementation and evaluation of the strategies at regional level, research on overweight, obesity and its etiological factors and steps for improving socioeconomic development are the prerequisites for tackling malnutrition among schedule caste school going children in India.

Key words: Malnutrition, Schedule caste, School going, children.

INTRODUCTION

Malnutrition among schedule caste school going children is a major public health problem in India. This is reflected by the fact that the prevalence of under-weight children in India is among the highest in the world, and is nearly double that of Sub-Saharan Africa. It is also observed that the malnutrition problem in India is a concentrated phenomenon that is a relatively small number of states, districts, and villages account for a large share of the malnutrition burden only 5 states and 50% of villages account for about 80% of the malnutrition burden. Each year approximately 2.3 million deaths among schedule caste school going children in developing countries are associated with malnutrition, which is about 41% of the total deaths in this age group. The study concluded that the prevalence of mild under-weight deserves greater attention as a useful signal of changing public health conditions among schedule caste school going school children of rural area of Darbhanga district in Bihar. Therefore, it is important for the health system to detect malnutrition at an early stage for planning and implementing timely interventions at the community level.

Malnutrition is one of the largest public health problems in developing country like India. India constitutes one third of the total malnourished children in the world. According to National family health survey-4, 35.7 % of children under 5 years of age are underweight, 38.4 % are stunted and 21.0 % are wasted in 2015-2016. Health and nutrition in early stages of human life determine, to a great extent, the physical and mental wellbeing of a person. Nutritional deficiency in childhood can make a child more prone for infectious diseases like pneumonia and tuberculosis. Chronic malnutrition experienced during early life inhibits growth, retards mental development; re-duce motivation and energy level, causing a reduction of educational attainments. Understanding the nature of the causal relationship between health and education is important to determine the exact relation between them. In India, government has taken steps to combat malnutrition among school children, by providing them one nutritious meal at school called 'mid-day meal'.

Millennium Development Goal 1 aims to halve, between 1990 and 2015, the proportion of people who suffer from hunger as measured by the prevalence of underweight among schedule caste school going children. The burden of under-nutrition among schedule caste school going children has not changed much even though various intervention programs are in operation in India. Current changing dietary patterns are also affecting the nutrition status of schedule caste school going children resulting in increased prevalence of adult non-communicable diseases such as obesity, diabetes, hypertension and coronary heart disease. The need of the hour is to examine the burden of under nutrition and obesity, study it's determining factors and assess the effectiveness of the various approaches to combat malnutrition among schedule caste school going children.

Determinants

There are various risk factors that showed an association with under-nutrition among schedule caste school going children. Bihar study found that significantly higher proportion of malnutrition among female children compared to the males were among the higher birth order and those belonging to families with lower per capita income. It was found that there was a significant rural-urban as well as gender difference in growth and nutritional status of schedule caste school going children. Furthermore, food consumption was found to be lower among girls compared to boys.

It is known that place of residence, household wealth, birth weight, age of child, awareness regarding diarrhea disease and acute respiratory tract infection control, maternal education, schedule caste school going children and source of drinking water were strong predictors of child nutritional status in Rural Bihar. The risk of infection was more consistently associated

with body mass index (BMI) for age and wasting which indicate current energy deficit as compared to weight for age and height for age. Maternal factors like age, weight and anemia also significantly affect child's nutritional status. In an intervention study which compared dietary intake and nutrient sources among Dalit mothers for their children aged 6-39 months living in villages based on improved access to the traditional Dalit food system noted that there were no significant difference in children's food intake between the intervention and control villages.

Moreover, effective implementation of the services requires adequate manpower and their periodic capacity building, infrastructure development, regular supply of quality food items, and logistic support. Facility based service need to be given to children with severe acute malnutrition, those with poor appetite or acute medical complications. Promotion of low-cost sustainable solutions like optimal infant and young child feeding practices need to be facilitated for preventing the occurrence of severe acute malnutrition. Since the variance in mild under-weight has a larger correlation with child mortality than variance in severe under-weight and the majority of under-nutrition cases belonged to mild malnutrition category, distribution of double ration even for mild malnourished children may be an important step in managing under-nutrition among children. Studies have shown that under-nutrition is more prevalence among marginalized groups such as slum dwellers, schedule caste population, and rural remote areas; therefore, there is a need for strengthening both coverage and quality of service delivery for these target groups following the principles of equitable distribution.

Various intervention models conducted in Bellary district in Karnataka, Tamil Nadu Integrated Nutrition Project in Tamil Nadu, Dular scheme in Bihar, Integrated Nutrition Health Project in nine states have shown varied success rates on nutritional status of children. An intervention study in Rajasthan on the impact of nutrition care centers showed a reduction in prevalence of under-nutrition from 66.7% to 59.6%. The success of programs depends on various factors including regional or state level needs, community perceptions and behaviors, acceptability of intervention measures by households, food security issues, food beliefs or taboos, likes or dislikes, cooking and child rearing practices, quality and quantity of the food item served. In this regard, evaluation of nutritional counseling for mothers and recommending sustainable behavioral change modifications are important factors that need to be considered to reduce the burden of malnutrition.

Factors associated with socioeconomic inequality such as poverty, illiteracy, lack of awareness regarding the quality of food items, large family and poor sanitary environment are associated with malnutrition. The malnutrition is found to be 2.7 times higher among families with lower household wealth index. Rapid population growth and political commitment have an indirect effect on malnutrition. Hence, socioeconomic development of the country with involvement of all the stakeholders concerned could result in reduction of malnutrition.

Review of literature

Review of selected literature is an essential part of every research process. It helps us to examine and evaluate what has been said earlier on the research subject.

Anjali B et al. (2012) A community based cross sectional study of under five children in a urban slum of Pune showed that 65.2% were undernourished.

Srivastava Anurag, et al (2012) carried out cross sectional study in selected urban slums of Bareilly district, Uttar Pradesh which showed that 66.3% were malnourished. Nearly 32.5%, 16.9%, 8.4% and 8.4% were suffering from grade I, II, III and IV malnutrition respectively.

Sabale Rupali et al. (2012) among under five children attending Under Five Clinic which was located in the midst of the urban slum area, Mumbai showed 30.8% and 21% moderately and severely malnourished respectively.

Jakhar et al. (2011) in rural Haryana showed that 42.7 % had normal weight for-age.

Munesh Kumar Sharma et al (2011) on the basis of IAP classification 72.5% were suffering from any form of malnutrition, and 22.4% from grade- III & IV (severe form) malnutrition. Gholamreza Sharifzadeh, et al (2010)23 cross sectional and descriptive analytical study was conducted on children under 6 years old in South Khorasan Iran, showed that weight index was normal in 52.2% children, 34.4% lightly underweight, 11.7% moderately underweight and 1.2% severely underweight.

Paramita Sengupta, et al (2010)6 conducted a cross-sectional survey of 200 randomly selected under-five children to determine the prevalence and risk factors of under-nutrition amongst under-five children living in an urban slum of Ludhiana. The study showed that 74 per cent of the children were stunted and 29.5 per cent of them were under-weight.

Objectives of the study :

- To assess the nutritional status in schedule caste school going children of rural area of Darbhanga District in Bihar.
- To assess the association of malnutrition with scholastic performance among selected school going schedule caste children.

Material and methods :

The research paper based on primary and secondary data. Primary data have been collected by field survey and secondary data have collected by books, Journals and website. Present study was done in randomly selected schools of rural area of Darbhanga District in Bihar. The sample size was calculated to be 380 by taking the prevalence of malnutrition. Total 480 students gave the complete information, were included in the study.

Data collection:

Complete information was received with the help of school teacher and parents which was followed by detailed examination of child. The information was obtained on pre designed and pre tested questionnaire, which was being prepared with the help of teachers and parents. Height and weight of children was obtained by using height measuring scale and electronic weighing scale. The values for height, weight and BMI was transformed to Z scores by using WHO charts.

Results

Study was done on all children of present in the selected schools. A total of 480 students, who were present on the day of examination and gave the complete information were included in the study. Among all 480 children, 29% (141) were found to be underweight was found among 22% (105) of the children and 2% (12) children. Of the total 480 students, 124 (26%) had poor scholastic performance. Of the total 141 underweight children, 48 children (34%) had poor scholastic performance while among 342 normal weight children, 76 children (22%) had poor scholastic performance, the difference was found to be statistically significant ($p < 0.05$).

Table : 1
Nutritional status of the children

Anthropometric measurement	SD	Z Scores Norms	SD	Total
Weight for age	-	342 (71%)	141 (29%)	480 (100%)
Height for age	-	423 (88%)	60 (12%)	480 (100%)
BMI for age	12 (2%)	366 (76%)	105 (22%)	480 (100%)

Source : Calculation based on self survey

Table : 2
Impact of under nutrition on Academic performance

Scholastic performance (n = 480)					χ^2 , df, p value
Anthropometric measurement		Good (>70%)	Poor ($\leq 70\%$)	Total	
Weight	Normal	266 (78%)	76 (22%)	342 (100%)	$\chi^2 = 7.31$, df = 1, p = 0.007
	Under weight	83 (66%)	48 (34%)	141 (100%)	
Height	Normal	327 (77%)	96 (23%)	423 (100%)	$\chi^2 = 15.8$, df = 1, p=0.000
	Stunting	32 (53%)	28 (47%)	60 (100%)	
BMI	Over weight	08 (75%)	04 (25%)	12 (100%)	$\chi^2 = 7.1$, df = 2, p = 0.02
	Normal	283 (77%)	83 (23%)	366 (100%)	
	Wasted	68 (64%)	37 (36%)	105 (100%)	

Source : Calculation based on self survey

Of the 60 stunted children, 28 (47%) children were found to be having poor academic performance, while among normal height children, 96 (23%) were having poor academic performance. This difference was found to be statistically significant ($p < 0.05$). Among children having BMI SD (105), 37 (36%) children had poor scholastic performance, while children with BMI in normal range (366), 83 (23%) had poor scholastic performance and this difference was found to be statistically significant.

Discussion

The present study was a cross sectional study done to find the prevalence of malnutrition among Schedule caste school going children and also to assess the relationship between nutritional status and academic performance. Study revealed a high prevalence of malnutrition among children attending schools and a significant relationship between several indicators of nutritional status and academic performance of students. In our study 29% children were found to be underweight. While study by Bhoite et al reported higher prevalence of underweight as 64% among school going children. Stunting was present in 60 children, giving prevalence of 12%. The results are comparable to study by Rashmi et al (2014) and Singh et al which reported prevalence of 7% and 21.8%, while a higher prevalence was reported by Clinical, anthropometry and biochemistry and Hasan et al (2013) as 62% and 40.4%. Weight for age, height for age and BMI for age were compared with academic performance it was found to be statistically significant ($p < 0.05$) and the results were comparable to findings by Rashmi et al (2014).

CONCLUSION

The distribution of risk factors and its influence on malnutrition among children in a given set up should be analyzed in planning diverse control measures. Strengthening public health interventions for mild malnutrition cases among the vulnerable groups with a focus on socioeconomic development and research on overweight, obesity and its etiological factors in the country are the prerequisites required to tackle malnutrition among schedule caste school going children in Rural Area of Darbhanga District in Bihar. Especially in today's competitive world, where there is no scope for an average child, poor academic performances due to malnutrition can debarred a child from a bright and beautiful future.

The present study recommends that efforts should be made to reduce the prevalence of malnutrition among schedule caste school children of Darbhanga District in Bihar. For this regular health checkups should be done at schools with the help of school authorities and hospitals. All teachers and parents should be given health and nutritional education sessions by the health experts to enforce healthy eating habits among children. Parents to be informed about the health status of the children by class teachers during parent teacher meetings and appropriate measures should be taken to improve the lunch pack.

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