MALNUTRITION AMONG 3-5 YEARS OLD CHILDREN IN THE HAOR BASIN OF BANGLADESH: A CROSS-SECTIONAL STUDY

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ABSTRACT

The main aim of this article is to identify factors contributing to malnutrition among 3 to 5 years old children living in Haor[a] Basin of Bangladesh. Two thousand and four hundred ninety eight (2498) children aged between 3 to 5 years were chosen randomly from forty primary schools[b] in Kishoreganj[c] district according to the cross-sectional design. The nutritional status of the children was assessed using a weight–for-age z-score[d] based on the World Health Organization 2007 cut-off points. The overall prevalence rate of underweight children was 18.2%. There was no significant difference in the prevalence rate between males and females (p=0.787). However, the percentage of underweight children was slightly higher among females (18.9%) compare to males (17.6%). There was association between parents' education level or employment status and childhood malnutrition (p=0.003). Malnutrition is significantly associated with living in unsafe environment, and at least lacking access to proper health facilities.

KEYWORDS: Children, Unhygienic Living Environment, Underweight, Haor Basin, Bangladesh

INTRODUCTION

Socio-demographic factors such age, sex, family size and number of children may indirectly contribute to a child's nutritional status and affect child health. The complex etiology of childhood malnutrition is a multifactorial process and related to many socioeconomic and socio-demographic factors.

The primary determinants of malnutrition were unsatisfactory food intake, severe and repeated infections, and affects of helminthes, or combination of the three. The nutritional status of children may also be affected by socio-economic and demographic factors such as paternal and maternal occupation and education, marital status, family income, nutritional knowledge of mothers, location of house (urban or rural, flood prone or dry land), gender and water supply or unsafe water.

The sex of children is an important influential factor in determining nutritional status. Some small scale studies on gender differences in anthropometric status found female children in Bangladesh to be at disadvantage. Some have found no gender differences and a few have revealed male children to be more often stunted or underweight.

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[a] Haor is a bowl shaped area. It covers seven districts of Bangladesh. Kishoreganj is one of the Haor surrounded areas in Bangladesh

[b] A primary school is a place where students aged from 1 to 10 years can learn primary education

[c] The Kishoreganj district is near to Dhaka (capital city of Bangladesh) and also one of the haor areas which is considered most vulnerable in terms of lacked behind of basic facilities like health, education, clean water, medical treatment

[d] z-score of <-2 is considered to be malnourished

The family-size and number of children living in the same house are important factors for nutritional status of the children, which reflects the quality of care given to those children. A study done to assess the nutritional status of children aged 6 to 59 months in a city of Zambia, in 2005 showed that 43% of undernourished children were associated with extended families (five to seven members) while 36% were associated with nuclear families (two to four members).

One important factor relating to childhood nutrition is the members' education. Many studies have demonstrated that improvements in secondary school enrollment rates among females are estimated to be responsible for 43% of the total 15.5% decline in the childhood underweight rate in developing countries during the period 1970-1995. The father's education also emerged as an important factor that was significantly associated with underweight status among under-five children. Analysis showed that children whose fathers had got scope to achieve higher education had lower levels of weight deficiency than those with non-literate fathers. Usually, in Bangladeshi society male members especially father is the main bread earner and decision maker in a family; so their higher education plays an important role in ensuring better nutritional status of children.

Geographical location also plays an significant role in child's nutritional status especially in haor basin every year flash flood destroy the crops which in turn increase the vulnerability of the families mainly children who are the main victim of scarcity of food. The 70% respondents said that flash fold affects severally to their food intake and often forced them to take one meal a day. The poor food intake is main cause behind malnutrition among children as the general perception of the respondents of the study area. Nutritional status is the status of a complex interaction between the foods we eat, our overall health and the environment in which we live, food, health and caring are the three in "pillars of well-being ranking".

Basic services, such as electricity and water supply, have been disrupted, and a rise in food prices has affected food security at the household level. Further, forced people to live with acute poverty. This will, in turn, cause malnutrition among family members, especially male and female children.

METHODOLOGY OF THE STUDY

A cross-sectional survey design was used; the sample size was 2498 aged between 3 and 5 years selected randomly from 4 different primary schools in Kishoreganj district in July, 2011. A list of 50 primary schools was collected from district education department office and then forty schools were selected from different areas of the district, representing both high and low socio-economic classes. Subsequently, a complete list of students' names in each of the selected primary schools was obtained, and 62 children from each school were then identified by employing simple random sampling method.

Sample size calculation was done by using following formula:

$$ss = \frac{Z^2 * (p) * (1-p)}{c^2}$$

Where:

Z = Z value (e.g. 1.96 for 95% confidence level)

p = percentage picking a choice, expressed as decimal (.5 used for sample size needed)

c = confidence interval, expressed as decimal (e.g., .04 = ±4)

Thus, the minimum sample –size calculated was 2498.

Malnutrition in the study was assessed by under-weight status or low weight-for-age z score as an indicator of childhood maturation. Underweight is 2 z-score below the international reference for weight-for-age. The z-scores were calculated for a child's weight-for-age z-score as an indicator of childhood malnutrition. Underweight is 2 z-score below the international reference for weight-for-age.

Parents' educational level is defined in this study as either low (ranging from non-literacy to primary education only) or high (secondary school, generally the final stage of compulsory education, and/ or university degree).

RESULTS

The prevalence of malnutrition in this study was 18.25. The mean age of children was 4.83. The family size is 4.56 and according to Bangladesh Bureau of Statistics (BBS, 2011). The minimum number of children in a family ranged between 1-3 and maximum 6-8.

More than 90% of the respondents' parents were still married. The most common level of education in mothers was at high level with 30%, with 70% educated to a low level. Among fathers, 11.4% were educated to a high level, with 88.6% educated to a low level. The highest rate of malnourishment in children was found in the low-education group, it was 17.4%. Almost 96% of the fathers were working and only 4% not working. Among the mothers, 55% were working and 45% were not working. The largest percent age of malnourishment was among the children of working mothers (19.4%).

There was no significant difference (p=0.787) between males and females regarding malnutrition, though the level of underweight was higher in females (18.9%) than in males (17.6%). Marital status (p=0.113), mother's education (p= 0.007), father's education (p=0.023) showed significant association with children's nutritional status. There was a relationship between insecure living environment and child's nutritional status where there was a significant relationship between families with a member evicted from land as a result of soil erosion in last one year with p=0.017 and prevalence odds ratio (POR) of 2.4, which means that families in which lost land due to flash or lost crops and fall in poverty had 2.4 times greater chance of having malnourished children. The relationship between living in a flood prone area i.e., in Haor basin and child's nutritional status was also significant with a p value of 0.003 and prevalence odds ratio of 2.3 while a family moving from their house because of land lose was not significantly associated with child's malnutrition status.

DISCUSSIONS AND CONCLUSIONS

No significant difference in the prevalence of malnutrition between male and female respondents (p=0.787) were found. However, the level of underweight was higher among females (18.9%) than among males (17.6%). The findings of this study are supported by other studies done in India, Pakistan. However, according to another study conducted in the same area i.e., Haor basin ensured that there is no difference in weight-for-age or weight-for-height between boys and girls in the Haor area. Also revealed a truth that girls are more vulnerable or have a greater possibility of reaching potential linear growth. This could suggest that girls of Bangladesh are biologically stronger at an early age. However, there was significant relationship between lacks of proper medical facilities in rural areas of Haor basin with child's nutritional heath.

In this study, the most common level of education among both mothers and fathers was low (70.0% and 88.6% respectively). The low educational level ranged from non-literacy to primary education while the highly-educated group attended secondary schools and universities. The prevalence of underweight was higher among children of low-educated fathers (22.7%) and low educated mothers (24.0%) compared to those of more highly educated parents. The association between parents' educational level and childhood malnutrition, however, was significant (p=0.007 for the mother's education and p=0.023 for the father's education). The unstable natural calamity in Haor basin in the last four to five years affects family and child health. If we looking ten years back we will find all most all villages in Haor basin remain outside of natural calamity. Flash flood and recurrent flood were not a regular phenomenon. So, all respondents termed the change behavior of climate as change in climate.

In this study, the higher percentage of families (45%) that had involved in seasonal migration from their living place because of erosion of cultivable land and years after years the situation became worst at the Haor basin. This could have affected children's health as they stayed in other's house or relatives' houses where food intake may not have been satisfactory. Of the respondents' parents, 38% said that their living area was not secure while 23% of families had one member killed in the flash flood or storm surge, leaving either father or mother with the sole responsibility for providing food and supplies to the family.

The association between insecure living areas, a family goes in vulnerable position and childhood malnutrition was significant. This result is supported by other studies. Various researches proved that people/families living in Haor during and after the flood are more malnourished and higher mortality rates than the high land area. Major improvements in nutritional status and a decline in mortality were found among children of those residential areas which are flood free. Stunting and low weight-for-age were significantly higher among children from families with low socio-economic status and migrants. Comparison of these data with an earlier nutritional survey in the area showed that the nutritional status of children in Haor basin had worsened because of successive land erosion and lower food supply during monsoon period.

ACKNOWLEDGEMENTS

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