

EFFECT OF FOOD AND NUTRITION ON ACADEMIC PERFORMANCE OF SELECTED GROUP OF PRIMARY SCHOOL STUDENTS: A CRITICAL UNDERSTANDING

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Abstract

Malnutrition is one of the world's most serious health problems and the single biggest contributor to child mortality. It saps a Child's growth potential, delays enrollment in school, limits their school performances and lowers their lifetime earning. In no place is this problem more serious than south-Asia as well as Bangladesh, where child malnutrition rates are among the highest in the world. This study is an attempt and has been made to analyze the relationship of nutritional status of grade V primary school students and their academic achievement. The sample size of this study was 200 from urban and rural area which consisted of an equal number of boys and girls.

Introduction

The health of students and its impact on their ability to perform well in academic have been receiving more attention recently. The effect of nutrition generally begins before birth, with the nutrition of a mother. Adequate nutrition is necessary for the development as well as growth of children. According to UNICEF (2004), In Bangladesh, around 50 percent children are grown up with malnutrition. Under nutrition can result poor development of the children. For example, iron deficiency causes nerve impulses slower as well as decreases attention span, fatigue and difficulty with concentration.¹ Anemia is one of the most prevalent nutritional disorders in the World, affecting nearly one quarter of all low- income

group of children in the United States.² Due to iron deficiency anemia is also very common in Bangladesh. It affects many children in our country and has been linked to a child's ability to learn by influencing attention span and memory. Besides iron, there can be iodine as well. This can be occurred during the early years of a child. Reduced cognition and achievement in school can be associated with iodine deficiency. In Bangladesh, around 56 percent families are attacked with iodine deficiency³. Recent evidence indicates that 15 percent of very low birth weight children and nearly 8 percent of low birth weight children require special education, compared to 4.3 percent of child born at normal weight⁴. A recent report of UNICEF (2007), study in South Africa shows that poor nutrition in early childhood has direct link to inadequate literacy skill, poor sentence construction, and poor sense of syntax, inadequate sound development and knowledge of the alphabet. According to nutrition survey of BIDS (1993), 73% children are anemic. It particularly affects young children and pregnant women.

Child Nutrition and Educational Performance

The level of nutrition largely depends on the quality of food that covers the all elements of nutrition or balanced food⁵. Children who live in low-income families tend to be under nourished which results in lost of knowledge and productivity. An ability child is to learn in school, poor attention spans and short memory have close link to inadequate nutrition.⁶ Many schools in the World even Bangladesh have tried to improve their school breakfast program. For example, the school Breakfast program is a wonderful program that allows children to receive the nutrition they need. It is shown that children who participate in school breakfast have lower rates of absence. Lacking of nutrition, near about 80 percent children are going to lose their boyhood, childhood as well as development process,⁷ which is very much important for the stage. Their parents are worried about their proper nutrition as well as education. But they have no way. Economic hardship is the main cause of these issues. Sometimes they are enrolled near by in the village or town, but failed to adjust themselves for these

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¹. Viviana Zelizer, *Pricing the Priceless Child: The Changing Social Value of Children* (New York: Basic Books, 1985).p.39

². John Rosenberg, *Child Nutrition* (Chicago: University of Chicago Press, 1998). p.21

³. Hellen Keller, *The Situation of World Children* (Dhaka:UPL, 2004).p.3

⁴. UNICEF report -2004, *Children's Nutrition and Learning* (Dhaka: UNICEF,july 2004).

⁵. Philippe Aries, *Centuries of Childhood: A Social History of Family Life* (New York: Random House, 1962).p.60.

⁶. David Woodworth, *The International Directory of Voluntary Work* (Wolverhampton : Gibbons Barford Print,1985). P.43

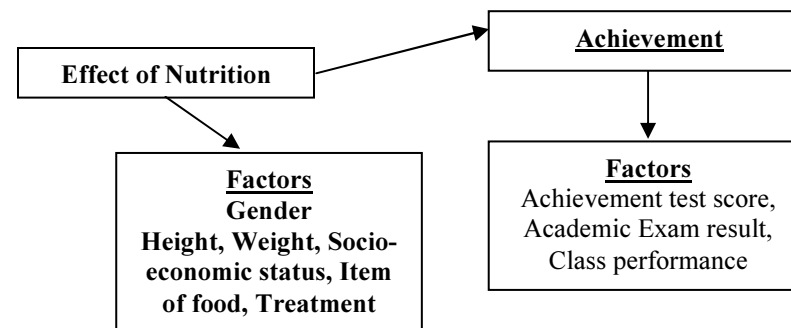
⁷. Shakharata Bulitrin, (Dhaka:CAMPE, October 2008)

opportunities. The poor people of Bangladesh are not generally taking 3 times meals in a day. For this reason, they are not interested to access their education. According to Monira Jahan- a well- versed writer, every thing is meaningless without economic security.⁸ So, there is a positive co- relation between food and education. Back in 400 B.C.- Hippo Crates said, “let food be your medicine and medicine be your food”.⁹ We know that basic education is the reliable root of all developments where food security is pre-condition. Though the enrollment rate has been significantly increased, yet a large number of children remain out side the school. As per the survey of UNICEF (2005), about 35 lac (3.5 million) children never enroll themselves in school and 40 percent students are being dropped-out before the completion of their primary education, particularly the students come from disadvantaged family where most of them are attacked by malnutrition. That is why; the children of poor families do not get opportunities to take education. Consequently, they survive in malnutrition; became unskilled manpower and they are being living ignored citizen all through their lives. Most of the studies relating to infants and their mental performance measured intelligence tests. The main intentions of the studies were to examine if severe protein-energy malnutrition in early age has been affected intellect by producing damage to central nervous system and study the neuron integrative adequacy of malnourished children. A lot of strategies have been taken for eradicating illiteracy. But due to the gap of information and lack of reliable date, no plan has been effective yet. As a result, the achievement rate of primary education as well as health situation remains beyond our national and international goal. So, comprehensive study or research work is very essential for finding out the relation between nutrition and education, which ensure the basic education for all.

Conceptual Framework

The conceptual framework of this study illustrates the relationship among the different variables are considered in the present study. The framework shows two major sets of variables, which are assumed to be related. One cluster consists of achievement i.e. school performance and achievement test scores of the students are regarded as dependent variables of this study. The second cluster of variables consists of food and nutritional aspects of the students along with certain factors of background, which are the independent variables of the study. These are namely- gender, height,

weight of selected students, socio-economic status of the students'. Weight and height for age are considered as indicator of the level of nutrition.



Framework

Thus the study is attempted to identify the relationship between these two clustered of variables, i.e. the effect of food and nutrition including the factors relating to background on the students academic performance.

Methodology

The type of research design is descriptive and evaluative in nature. It has manipulated quantitative method of analysis the information gathered from various sources. The present study aims to describe the effect of nutrition on school performance and attempts to discover the relationships of some non-manipulated background variables with nutrition and academic outcome. This research is being quantitative in nature and has used quantitative related strategies, such as questionnaire, observation and interview of the target group. A standardized achievement test was manipulated to each of the student to assess the co-relation between achievement score and nutrition as well.

Research Area

The study was conducted only in Rajshahi district of Bangladesh. A total number of 10 schools were selected from different parts of Rajsahi district to represent the following type of schools-

- i. Urban based primary schools -5
- ii. Rural based primary schools-5

Sample Size

The total of 10 primary schools (5 were urban, 5 were rural) were chosen purposively for collecting data. 200 students of grade V were selected at

⁸. Monira Jahan, *Food and Nutrition on Academic Achievement of Primary School Going Students: A Case Study* (University of Dhaka, IER, M.Ed Thesis, 2003)

⁹. World Bank -2003, *Poverty in Bangladesh: Building on Progress* (Dhaka: World Bank & Asian Development Bank, March, 2003).p.36

random from the selected schools. The ranges of the aged students' were between 9-11 years. Figure-1 presents the frequency and percentage distribution of the sample according to gender and the type of schools. Frequency and percentage distribution of the students by gender and type of schools.

Table- 1

Location of school	Boys	Girls	Total %
	N	N	
Rural	50	50	100
Urban	50	50	100
Total	100	100	200

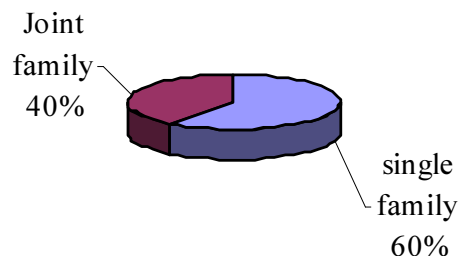
The data in fig-1 reveal that study sample had an equal representation of boys and girls in rural and urban schools. The purposive sampling technique was used in the selection of schools.

Socio-economic Status (SES) of the Selected Students

Students by Gender by type of schools

The distribution of the students by gender and types of schools is presented in table-2.

Family size of the children is shown in figure 2,



A significant number of students (60%) came from the single while 40% was from joint family. Nutrition has a direct relation to the type of family. It is observed, when the number of family member increase; generally it reduced the nutritional access and other facilities.

Form the above findings, it can be inferred that the family living standard completely depends on family size, which has direct impact on the access to quality of food along with other facilities, like education, financial security etc. It is assumed that small families are able to provide these facilities adequately and easily to the children along with others, which are necessary for their growth, physical mental and their educational performance.

Student's access to adequate nutrition and education both are related to their socio-economic status. From the socio-economic factors there are many obtains insights on how non-educational policies sustain affect educational out-come. In this study, to determine the socio-economic status of the students 2 variables were considered, namely-

1. Education of Parents
2. Monthly Household Income

Education of Parents

Percentage distribution of the percents by education attainment

Level of Education	Fathers %	Mothers %	Total Fathers + Mothers
Tertiary	17	4.5	10.75
Higher secondary	7.5	8	7.75
Secondary	38	32	35
Primary	23.5	39	31.25
Illiterate	14	16.5	15.25
Total	100	100	100

Table3, Shows that most of the parents (15.25%) were literate. Education is a basic human right and is fundamentally concerned with enhancement of quality of life.¹⁰ Education can play an important role to broaden access to information about quality of food and knowledge of nutrition. Parent's educational level has direct influence on the children development. This is because the parent's level of education and access of relevant information about nutrition as well as child development increase their awareness and ability to support their children's education.

Monthly Household Income

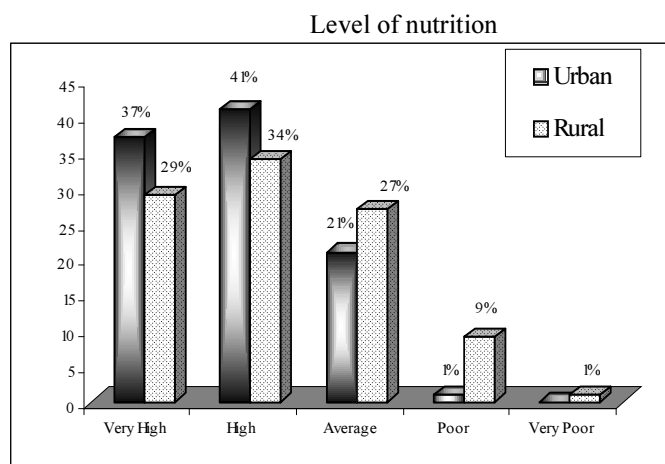
Percentage distribution of the students by monthly household income

Monthly household Income	Socio-economic Status (SES)	Respondents %
TK<5000	Lower SES	36.5%
Tk. 5000-9999	Middle SES	34.5%
Tk. 10000-14999	Upper middle SES	17.5%
Tk. 15000+	Upper SES	11.5%
Total		100%

¹⁰. PRSP 2004, *Unlocking the Potential: National Strategy for Accelerated Poverty Reduction* (draft), General Economics Division, Planning Commission, Govt. of Bangladesh, Dhaka 2004

As shown by data, most of the students (36.5%) belonged to take less than 5000 monthly household income groups that is highest number of the students come from lower income group families. Monthly household income is not only an indicator of standard of living; it is also a good measure to determine the nutrition access of the family. A high-income group is always very much conscious about quality of life and expenses of education of their offspring. They are quite unaware about the influence-consumed nutrition, growth and development of the children of high-income group, which in turn can influence their education attainment.

Data on nutrition intake within a week is given in figure-4

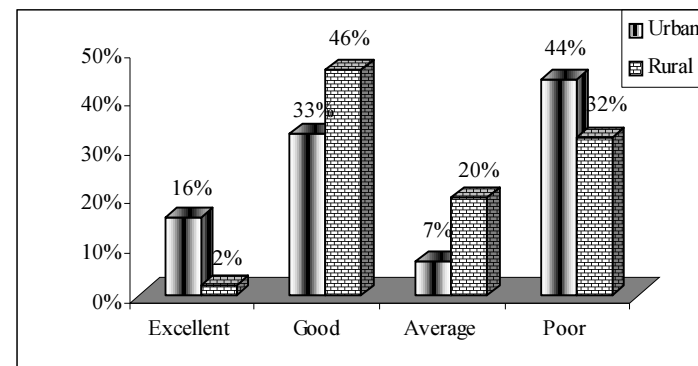


Percentage of *Very high* nutrition was 37% and *high* was 41% for urban students and 27% rural students had opportunity to intake average opportunities. *Poor* and *Very Poor* percentage was significantly noticeable. In case of taking *Very poor* nutrition, the percentage for urban students was 0 and for rural students was 1%. Urban parents have adequate knowledge about food as well as nutrition. The children of *poor* category did not eat any kind of fish, meat, egg, banana, milk generally in weak. Again, *very poor* children did not get 3 time meal generally in weak. In Rajshahi city, near about eighteen thousand (18,000) children are surviving with malnutrition. It is alarming with high position all over the country i.e., its position just after Guibanda,

Noyakhali and Nattrakona district (MICS 2005).¹¹ According to World Bank Survey, everyday 1820-2190 kilo calories are needed for the development of 5-12 years old as well as primary school going students.¹² As we motioned earlier that most of the students are coming from poor families. In this aspect, guardians have to fail support this feeding (Tiffin) expenditure. They cannot attentive their lesson. Feeding system is more effective to encourage to learning. If this system is stated, the student may be attentive to their learning. Moreover, food ensures nutrition and nutrition ensures the children development. According to PRSP (1), if a student has got Tiffin of 11tk he will have 583 kilo caloric.¹³

Achievement score by residence

Figure 5



Note:

Exam Value	Achievement Score	Remark
100	80+ (A ⁺)	Excellent
100	60+ (A)	Good
100	40+ (B)	Average
100	<40 (C)	Poor

Percentage of data on achievement score reveal that 16% students of urban schools obtained excellent score (80+) that was significantly higher than rural students (2%) rural students achievement was much more better than

¹¹. MICS 2005, (Dhaka: BBS & UNICEF, 2005)

¹². World Bank-2005, Dhaka

¹³. Shakhara Bulitrin (Dhaka: CAMPE, October, 2008)

the urban students. 33% urban had good achievement (60+) whereas this percentage was 46% for rural students.

Chi-square value of relationship between the students nutritional status and their achievement score according to the places where they are living are presented in the following table –6

Residence	N	X ²	df	P
Urban	100	68.43	12	p<0.05
Rural	100	67.78	12	p<0.05
Total- 200				

Chi-square test result

The test of significant between nutrition and achievement by residence reveals that the relation is high significant in both cases at .05 probability level, which indicates the students performances significantly related with their nutritional status. The x² value of the urban students was higher than the value of rural students, which indicates that the urban student's access to nutrition and performance is better than the rural students. This results support common findings in this area that an association exists between the nutrition status of children and their educational performance. Similar evidence was found from the study of *Bhuyan et.al (2002)*.¹⁴

Chi-square value of Nutrition and Achievement by Number of siblings

Distribution of number of siblings	n	x ²	df	p
1-2	124	36.47	12	p>0.05
3-4	196	19.69	12	p>0.05
5+	80	17.20	12	p>0.05

Table-7

In particularly, better early childhood nutrition raises academic achievement. It is assumed that well-nourished children enjoy arising because they enter into schools earlier and thus have more time to learn. Moreover, primary school enrollment of malnourished children tends to be delayed, probably because they were deemed unready for school at the minimum age of enrollment. Second, they did not seem to be a strong connection between child nutrition and learning effort, such as –homework time and school attendance. Third, height for age measured at or beyond the time of school enrollment seemed to be a poor indicator of early childhood nutritional status.

The results of the research of *Markello (1996)*¹⁵ indicated that age along with ability had a positive effect on achievement, but age had a negative effect on the amount of protein consumed.

The finding of the *Bhuyan a. Het.al (1992-1993)* study indicated that more of the nutritionally normal children received higher marks compared to the malnourished children and the examination performance of the children was related to their nutritional status. The contents were true for the weight for age and weight for height indicators. The average absenteeism was height among the malnourished children than the nutritionally normal children. *Allington (2001)*¹⁶ found from his study that many students start school with no breakfast or an inadequate breakfast. During reviewing the researcher found that qualitative surveys on breakfast consumption by Wisconsin students showed that approximately 10 percent of students at the elementary level, 25 percent in middle school and 30 percent of high school students started school without breakfast. Many other Students come to school without breakfast. Many other students come to school with an inadequate breakfast. Studies showed that omitting breakfast interferes with cognition and learning.

Findings and Recommendations

The study was descriptive and evaluative in nature. It used quantitative method to determine the effect of nutrition on achievement of the students. The major finding of the study are discussed as follows-

→It makes barrier to achieve the MDG goal of 2015.

→The largest group of the students (49%) of the study came from the medium size families. A significant number (31%) of the students were from small families while a notice able number of the respondents (20%) came from big families.

→Significant relationships were found between nutritional status and achievement by residence. But the chi-square value of the urban students (68.43) was slightly higher than the chi-square value of the rural students (67.78).

→In case of achivement, 16% urban students had excellent achievement than the rural (2%). At the same time a large portion of urban students (44%) level of performance was very poor than the rural students (32%). The achievement of rural students was significantly higher than the urban students did well (rural 46% and urban 33%) and average rural 20% and urban 7% achievement respectively).

¹⁴. Bhuyan et .al, *Nutritional Situation of Bangladeshi People* (Dhaka: Asian Development,2004).p.17

¹⁵. Markello, *Peoples Nutrition* (New York: University of Chicago,1996).p.2

¹⁶. Allington, *Concept of Nutrition* (England: Royal Books and publishers house Ltd., 2001). P-32.

→Achievement of the respondents also positively related to their age and height respectively. According to the age and height, 41 percent students were under weighted and 17 percent students were attracted by different types of disease .The students who have achieved good result, their food security was good, subsequently who did bad score in their school performances, there level is not satisfactory. But there are some exceptional causes and which are not disclosed. For these reasons, the children of poor family was fail to achieve satisfactory result. So there is positive relation between high nutrition and high achievement of the students.

→It is evident that government of Bangladesh has made a lot of efforts to help people improve their health and nutritional status, especially policies were made and several childhood nutrition and health programs were implemented for school going children. Government and non-government attempts are appreciable. But programs accomplishment has been insufficient to improve the situation significantly. In this regard some recommendation can be drawn to improve and implement the health education related programmes properly. The recommendations are as follows-

→ Nutrition program need to be co-ordinated with food security program in primary schools. Program will have launch to provide health education to the parents, so that they can be more aware to the necessity of nutrition of their children's growth and development.

→ Health education will have to introduced in primary curriculum, so that the teacher of that levels will have easily acquired knowledge about child growth and development as well as importance and role of nutrition on child overall development.

→Government should be included in the program design.

→International organizations and NGOs should be encouraged to get involved in more child health and nutrition in the educational institutions.

Actually, effect of having breakfast allows a student access to the schooling as well as meeting the demand of nutrition.