Research paper on

"THE IMPACT OF PARENTAL EDUCATION ON CHILD HEALTH IN BANGLADESH"

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Lecturer

Tasneem Sultana

Department of Economics

United International University

Submitted by

Sayema Islam

ID: 121142006

Department of Economics

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Abstract

There are many researches in Bangladesh which work on the relationship between maternal education and child health, and often ignore paternal education. But for rearing a child and improving child's health status, both paternal and maternal education influences undoubtedly. By using cross sectional data from DHS-2014, this study has tried to find out the association between parental education with child health status. This is a Quantitative study with Father's education level, Mother's education level , Household Size, Wealth, Age of child in month, gender is used as independent variable and body mass index(BMI) as Dependent Variable. OLS regression indicates that parental education is positively associated with child health status. Health knowledge appears as an important way through which both paternal and maternal education converts into improved health outcomes for children and later economic and life outcomes such as education, learning, , health and earning. As the mother is the primary caretaker of child, and the father is the principle decision maker and earner in this country, except their education it is not possible to think about long term economic growth.

Keywords: parental education, child health status, Bangladesh, cross sectional data, BMI

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Table of Contents

1. Introduction

Health plays important role in child mortality, human capital, functionality and productivity of labor. Health is such kind of good which has not any market and thus generated in the family. Many literatures describe that education is one of the main determinants of improved labor market, economic growth, business and even in home by influencing health status of children. Education is a big portion of budget in low- and middle-income countries. Some extensive research has found linkage between the education of elders and the health outcome of their next generation.

Malnutrition in children is one of the major problems faced in Bangladesh. Each year 3·5 million deaths occur, while almost 50% of these deaths of children under 5 years of age occurs from malnutrition. These preventable losses of young lives occur especially in low and middle income countries, whilst most of the children broadly live within 20 countries including Bangladesh. Health survey in Bangladesh 2010 shows that 65% children of Bangladesh within 0 to 5 years have taken necessary immunization on time, 100% haven't been achieved despite free immunization service delivered door-to-door to children across the country.

Parents provide protection, food security, improved toilet facilities, better health status to family members and know child's health status. These have been influenced with Family resources such as household funding and rearing technique, parental literacy, the parents with formal education, parental completion of primary school. Mother plays role as a principle caregiver in Bangladesh while the father plays as chief decision maker within household. Father play major role regarding many important health decisions like immunization or participation decisions if it is necessary for them to visit health clinic. Father's education relates to family income as a higher educated father earns higher income as well as marries an educated woman. Mother's performance relies on her level of education which provides with basic knowledge about life and rearing healthy children and confidence of generate new ideas. These increase capacity to control domestic works mainly in children rearing and daily decisions on usual hygiene and nutritional intake of children. Child height can be described by parent's access to information which is the effect of parent's level of schooling.

This paper is organized as follows: section 2 discusses brief summary of the literature, section 3 presents the Dataset and data description, section 4 describes the econometric analysis and results, and conclusion is written in the last part.

2. Literature review

Many researchers have shown interest on finding out the relationship between parental education and child health status and also come out with different results in different times. Some studies also analyze the relationship between child health and other factors.

Sebastian Vollmer, Christian Bommer, Aditi Krishna, Kenneth Harttgen and SV Subramanian (2016) argued that not only paternal education but also maternal education is similarly strong indicator for child health condition. They focused on 3 components: stunting[1] , underweight and wasting[2] and used linear-probability models to forecast childhood under nutrition prevalence. Holding combined level of parental education constantly, maternal education impacts more than paternal education for reducing under nutrition at childhood. But when omitted variables are counted in fully adjusted models and compared both paternal and maternal education, they claim there are equal influences of both maternal and paternal education on childhood undernutrition.[3]

MONAZZA ASLAM and GEETA GANDHI KINGDON (2012) focused on 'pathways' through which parental education leads to improved child health outcome and health-seeking behavior. BY using instrumental variables, they find that: a) paternal education is positively correlated with health-seeking behavior such as immunization decision; b) maternal education has relation with child health outcome (height and weight) through improved labor market participation, larger exposure to media, higher health knowledge, extended empowerment in household decision making.[4]

[1] Stunting- low height for age
[2] Wasting- low weight for height
[3] Sebastian Vollmer, Christian Bommer, Aditi Krishna, Kenneth Harttgen and SV Subramanian(august,2016), *The association of parental education with childhood undernutrition in low- and middle-income countries: comparing the role of paternal and maternal education*, PP- 1,3,4,7-9
[4] MONAZZA ASLAM and GEETA GANDHI KINGDON (2012), *parental education and child health-understanding the pathways of impact in Pakistan*, PP-1,3,8,12,15,16

Ripon Kumar Mondal, Monoj Kumar Majumder, Shah Johir Rayhan (2014) conducted an empirical study using cross sectional data analysis from HIES 2010. They stated that mother's education is more influential on child health than father's education in Bangladesh. The main aim of this study was to find how mother's education is correlated with the child health in connection with mother's parental family education. The IV estimation suggested that maternal education is highly correlated with her paternal family. This study also finds that more educated mothers significantly impacts on better height-for-age of children. They suggested policy makers to ensure improvement of mother's skills and abilites through providing primary health care education, training and programs[5].

Md. Belal Hossain and Md Hasinur Rahaman Khan (2018) discussed about parental education with decreasing of childhood malnutrition prevalence in Bangladesh by using a modified Poisson regression. Stunting, wasting, underweight are assumed as 3 factors of children malnutrition. For brain development and linear growth of any child, the first 1000days are considered as the most critical days, that hinders childhood stunting and underweight. In Bangladesh, among under-5s children, stunted, underweight and wasted children are respectively 36·1%, 32·6% and 14·3%. Their study stated that higher level of parental education leads to the lower chances of child stunting and underweight but they did not find association between child wasting and parental education. The interaction-only model proofs that both father and mother with completion of grade 10 or more impacts positively on reduction of childhood malnutrition. Actually, both the mother as well as father helps to reduce the possibility of child malnutrition by completing grade 5 to 9, although it is reduced further when grade 10 or more has been completed by at least one partner[6].

Richard D Semba et al, Saskia de Pee, Kai Sun, Mayang Sari, Nasima Akhter, Martin W Bloem(2004) investigated the association between parental education and risk of child stunting in areas of rural and urban of both Bangladesh as well as Indonesia. They found the impact of mother's education on child stunting in Bangladesh was similar to Indonesia, while the

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[5] Ripon Kumar Mondal, Monoj Kumar Majumder, Shah Johir Rayhan (November,2014), *The Impact of Maternal Education on Child Health; Evidence from Bangladesh,PP- 19,22,23,25,26*

[6] Md. Belal Hossain and Md Hasinur Rahaman Khan (11 January 2018), *Role of parental education in reduction of prevalence of childhood undernutrition in Bangladesh*, PP- 1-3,6,8,9

association between father's education and child stunting was higher in Bangladesh compared to Indonesia. They claim that stunting preference was more in Bangladesh with 50·7% than Indonesia with 33·2%. In this study all findings show that Bangladeshi girls prefer more to marry at their early age instead of completing education compared to Indonesian girls. Early marriage leads to gap in health knowledge if drops study which effect on next generation health[7].

Francesco Burchi (2012) tried to come up with impact of household education on child health. The study found a significant effect on child height through household education whereas weight was not affected by household education. Here shows some empirical evidence that for improving long-term and short term health outcome of children, primary education is unavoidable. He found no statistical difference between parental education and household wealth on the two outcomes (height-for-age and weight-for-age)[8].

Anne Case and Christina Paxson (2002) presented the channels though which parental behavior (in prenatal period and childhood) and socio economic status impact on child health. Parents who are more productive and active in labor market easily can accept the kind of behavior which helps to improve health of their children. They found evidence of the association of parental behavior with their income and socio economic status, and the ways that show how parent's activity impact children's health. Household behavior also effects children's health as well. They stated that health insurance coverage and advantage of medical treatment might be important for child health but it is not to improve health status of children. Older children and adolescents are in risk of health problems due to low health behavior and socio economic status. So they suggested policy makers to focus on improving parental behavior. [9]

CAROL VLASSOFF AND ELSSY BONILLA (1993) discussed about the impact of gender inequality on tropical diseases of women in developing countries. Men and women both can be infected by these diseases equally but female who are the neglected members of many families in

[7] Richard D Semba, Saskia de Pee, Kai Sun, Mayang Sari, Nasima Akhter, Martin W Bloem (January 26, 2008), *Eff ect of parental formal education on risk of child stunting in Indonesia and Bangladesh: a cross-sectional study*, PP-322,325,326,327

[8] Francesco Burchi (16 NOVEMBER, 2012), *Whose education affects a child's nutritional status? From parents' to household's education*, PP-682,692-698

[9] Anne Case and Christina Paxson (2002), *Parental Behavior And Child Health,* **PP***:* 164,168,169,172, 173,176

developing countries, are affected more than female. Differences of social and economic factors, health services, care during sickness, social activity can be found in developing countries which lead to poor health outcome for female member of household.[10]

This literature tries to find how parental education influences child health. The variable of interest is body mass index (BMI)[11]. For regress the model, ordinary least square method (OLS) is used.

3. Dataset and data description

This paper uses secondary data from Bangladesh Demographic and Health Surveys (DHS) - 2014 to analyze paternal and maternal educational impact on child health. BDHS-2014 is a nationally representative cross-sectional survey, covering all areas of the country. The survey was conducted during June to November2014. The final sample of this survey consists of 43772 children.

Variable description:

Variable	Description
BMI	Body mass index of children
Fedu	Father's education level
Medu	Mother's education level
HHSize	Household Size
Weal	Wealth
Agem	Age of child in months
Gend2	Dummy equals 0 if male, 1 otherwise

Table 1 : Introduction of the variable used

[10] CAROL VLASSOFF AND ELSSY BONILLA (June,1993), *GENDER-RELATED DIFFERENCES IN THE IMPACT OF TROPICAL DISEASES ON WOMEN: WHAT DO WE KNOW?,* PP: 37-49

[11] BMI is a measure of weight relative to height.

$$BMI_i = \alpha + \beta_1 Fedu_i + \beta_2 MeduF_i + \beta_3 HHSize_i + \beta_4 Agem_i + \beta_5 Weal_i + \beta_6 Gend_i + \mu_i$$

The primary outcome variable is body mass index (BMI) of child i and as a function of Father'seducation level (Fedu), Mother's education level (Medu), and Household Size (HHSize), Wealth(weal), Age of child in month(Agem),gend2(female).

Parental educations can influence prenatal and postnatal health status. E.g., child feeding practices might be improved by maternal education in the critical 6-24 month and paternal education might impact on many decisions regarding health services. Anthropometric of children measurement depends on age and gender. Much research has found that in developing countries, more than 200 million children below five years belong to poor health and malnutrition. There are many parts of the world where discrimination between male and female children of taking health services has been found. So here also tries to find out impact of age and gender on child health in Bangladesh. Wealth plays major role in health status of children as economic status of family influences receiving investment in the form of nutrition and health services. After parents, household members are the ones who remain close to children. So, it is assuming that household size can impact on child health status. μ_i is error term of unobserved child.

a. Descriptive statistics:

Variable	Observation	Mean	Std. Dev.	Min	Max
BMI	**43,387**	**2232.849**	**452.923**	**1206**	**9998**
Fedu	**43,769**	**1.096118**	**1.015515**	**0**	**3**
Medu	**43,769**	**1.044686**	**.9081633**	**0**	**3**
HHsize	**43,769**	**58.28863**	**38.04603**	**1**	**222**
weal	**43,769**	**2.919766**	**1.399046**	**1**	**5**
Agem	**7,507**	**29.53044**	**17.0792**	**0**	**59**
Gend2	**43,772**	**.4883487**	**.4998699**	**0**	**1**

Table 2 : Descriptive statistics of variable used

The table-2 presents the descriptive statistics of the variables used in this study.

The dependent variable BMI measured the health status of children. Due to absence of data, the outcome might not be providing actual impact of BMI from the model. The observation has been found up to 43387 which depend on independent variables of regression model. It can be observed that minimum value is 1206 and the maximum is 9998. The mean is 2232.849 with a standard deviation of 452.923.

In the matter of Independent variables, four variables: father's education level, mother's education level, household size and wealth have 43,769 observations.

Father's education level is 1.096118 years on average with a standard deviation of 1.015515. There are fathers who have no education and highest education of 3 years.

Mather's education level values are same as father's education with minimum value of no education and maximum value is education of 3 years. Mother gets on average 1.044686 years of education which is lower than father's education and standard deviation is .9081633.

Household size mean is 58.28863 member of household and standard deviation is 38.04603. Maximum value is 1 household with high maximum value of 222 household.

Wealth mean is 2.919766 currencies with standard deviation of 1.399046. Maximum and minimum value is from 5 currencies to 1 currency.

For missing data, age in months variable have limited observation with 7507children. Average months of children are 29.53044 and standard deviation is 17.0792. No month of minimum value with 59 months of maximum value.

Gender variable has highest observation of 43772 male and female children with minimum value of 0 and maximum value of 1. Mean is .4883487 and standard deviation is .4998699.

4. Econometric analysis and result

variable	**Coefficient** **(SE)**
Fedu	37.5909 (6.585467)***
Medu	2.327685 (7.305933)
HHSize	.0332723 (.1318424)
Weal	85.64189 (4.13893)***
Agem	2.826852 (.2925869)***
Gend2	3.501074 (9.958618)
_cons	1773.685 (17.82123)***

Table 3: **Summary statistics of variable used. Note: Level of Significance: <1% ***, <5% **, <10% ***

There are a total of 7446 observations used in this analysis.

BMI_i = 1773.685 +37.5909$Fedu_i$+2.327685$Medu_i$+.0332723 $HHSize_i$ +85.64189 $Weal_i$ +2.826852 $Agem_i$+ 3.501074 $Gend_i$ + μ_i

If all the independent variables are simultaneously zero, BMI will be 1773.685 units.

The value of B_1 shows that if Fedu increases by 1 unit, then BMI will significantly increase by 37.5909 units on average (Keeping other variables constant). it is statistically significantly different from 0. Father's schooling effects in high portion. Main cause may be fathers are

fundamental decision-maker of the household and community. Mothers can use the "literacy services" of their husband for improving child health outcome.

Holding all other variables constant, the value of B_2 shows that if the Medu increases by 1unit BMI will actually increase by 2.327685 units on average. It is not statistically significantly different from 0. Mother's education might effect because women with higher education become more self-confident, so the more they can improve child feeding practices, can understand direction of medicines , can collect nutritional and health information from varieties media, allocate household resources for health and nutritional welfare for children.

The value of B_3 shows that if HHSize increases by 1 unit, BMI will increase by .0332723 units on average. (Holding other variables constant). It is not significantly different from 0. Beside parents, other household members like grandparents or elder siblings can be important care-givers, specially when both fathers and mothers works outside, and give valuable knowledge regarding health knowledge.

The value of B_4 shows that if Weal increases by 1 unit, BMI will increase on average by 85.64189 units. (Holding all other variables constant). The impact of wealth on child health is statistically significant Wealth raises nutritional status of the child. More economic position allows providing larger amount and higher quality food, better living environment and health services.

Holding all other variables constant, the value of B_5 shows that if Agem increases by 1 unit, BMI will increase by 2.826852 units on average. It is significantly different from 0.

The value of B_6 shows that if male child increases by 1unit, BMI will insignificantly increase on average by 3.501074 units compared to female children. (Holding all other variables constant). The reason behind this result might be female are physically weaker than men by born which is genetically natural. Other causes can be some of female child get less facilities of various health services and nutritious food than their brother in Bangladesh.

5. Conclusion

The present study investigates the association between father's and mother's education with child health. Analysis finds that both maternal and paternal education levels impact on child health status. Here, father's education effects more than maternal education, the reason might be women's low social status in Bangladesh and restricted power on decision making of household in developing countries like Bangladesh.

Parental education level is one way of enhancing human capital. In general, the low educated parents earn less and find it hard to provide better health status, improved toilet facilities, nutrient food which lacks necessary nutrients, brain development and learning experiences of a child. So, children with poor health lead to reduced work capacity when children turn into adults and trap families and children in poverty for generations. It leads to low per capital income and negatively impacts on long term economic growth. So, government in this country should encourage and take necessary steps to assure academic education for all boys and girls who will be the future decision makers, earners and caretaker of their household, otherwise without their education, it is not possible to gaining WHA[12] targets of improving child health status in Bangladesh.

[12] WHA Targets are-a) 40% reduction of the stunted children under-5, b)50% reduction of anaemia in women of reproductive age, c) 30% reduction in low birth weight, d)Not increasing of childhood overweight, e)at least 50% Increase the rate of exclusive breastfeeding in the first 6 months, f) less than 5% Reduction and maintenance of childhood wasting .

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