
The Impact of International Remittances on Education and Health in Bangladesh

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To cite this article:

Bezon Kumar. The Impact of International Remittances on Education and Health in Bangladesh. *International Journal of Science and Qualitative Analysis*. Vol. 5, No. 1, 2019, pp. 6-14. doi: 10.11648/j.ijjsqa.20190501.12

Received: April 21, 2019; **Accepted:** June 4, 2019; **Published:** June 18, 2019

Abstract: Over last few decades international remittances are playing a vital role in the socio-economic development of the developing countries like Bangladesh. Remittance contributes not only in household level but also in community and national level of a country. Although many studies have been carried out on poverty, growth, inequality, unemployment impact of remittances, impact of international remittances on education and health in Bangladesh has not been studied yet. Therefore, this study explores the impact of international remittances on education and health in Bangladesh. In achieving the objective, the study uses primary data collected from 396 households and applies both statistical and econometric methods. Firstly, the study uses statistical approach to bring to light the core scenario of education and health conditions of the households. Secondly, the study separately applies linear regression model estimated through OLS method to examine the impact of international remittances on education and health. The study finds that international remittances have negative and significant impact on education while international remittances have positive and significant on health. This paper finds that if the households receive remittance, the per capita expenditure on health may be increased by Tk. 4817.39 and the per capita expenditure on education may be decreased by Tk. 1020.67. Therefore, the study suggests government and non-government organizations nursing international remittances to improve households' health.

Keywords: International Remittances, Education, Health, Bangladesh

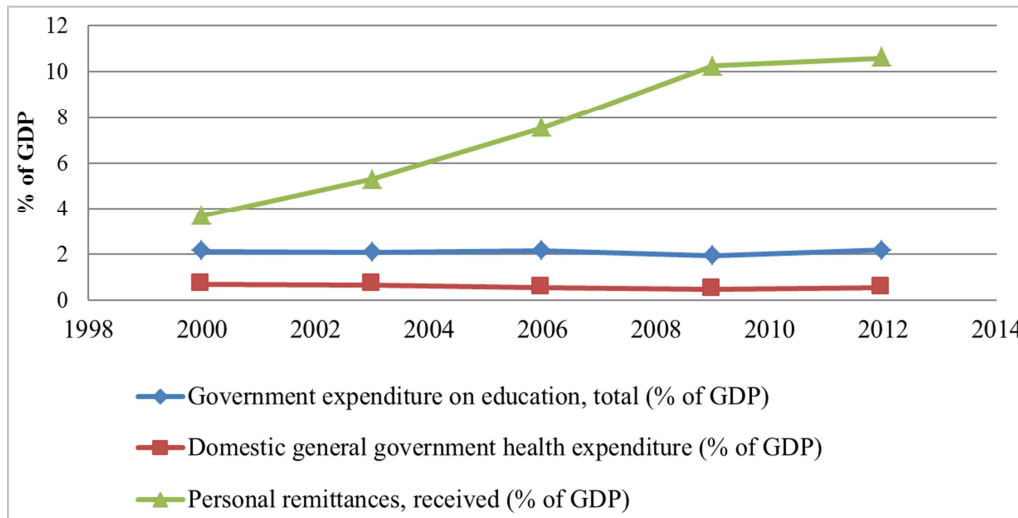
1. Introduction

The significance of remittances to the developing economies can never be ignored. Globalization is transforming the developing countries for the emancipated flow of goods and factors of production embracing labor across boundaries. According to United Nations Department for Social and Economic Affairs (UNDESA), worldwide international migrants have mounted to 258 million in 2017 from only 172 million in 2000 and total international remittances for 2017 were stated as \$613 billion [1]. India, Bangladesh, Pakistan, and Mexico are among the top ten countries of the world enclosing the highest number of international migrants and receiving the topmost international remittances [2]. Explicitly in Bangladesh, every third household has one migrated member and thus receives foreign remittance [3]. At present, there are 7.8 million migrants from Bangladesh living and

working abroad and remittances sent to households from employment abroad account for \$9.3 billion up to July 2018 [4-5]. This source of income relaxes the liquidity and budget constraints [6], enables consumption smoothing [7], and thus can improve health and education status [8]. Despite its significance, the impact of international remittances on household healthcare and educational expenditure is still an unexplored area in Bangladesh. For example, Chaaban and Mansour [9] targeted educational attendance and attainment in Jordan, Syria, and Lebanon. Phuyal, et al. [10] investigated spending pattern of foreign remittance and found that it is largely consumed on food and education. Further, Edwards and Ureta [11] investigated the link between remittances and schooling decision. On the other hand, remittance and health-related studies suggested a positive link between foreign remittances and health care expenditures in Mexico using household surveys [12-13]. According to World Bank statistics, education and health care expenditures incurred

by the Bangladesh government display almost horizontal pattern from 2000 to 2012. A noteworthy fact is that growth in remittance from 2000 to 2012 did not appreciate either of

healthcare and educational expenditures are shown in Figure 1.



Source: World Development Indicators

Figure 1. Relationship between International Remittances and Government Expenditure on Education and Health.

Rest of this chapter is divided into four sections. The second portion has profound literature review. Methodology has been discussed in the third section and fourth part describes the data analysis. The chapter is concluded with few recommendations in last section.

2. Literature Review

This section describes the earlier studies' core findings on the ongoing issue. Reviewing literature, it is observed that different researchers have found different findings using different methods. As for example, Adams and Cuenca [14] defined remittances as money or goods transmitted by workers from the migration destination to their origin. Foreign remittances have been studied so far in terms of their contribution to the sending societies like improving consumption levels, paying back loans, getting better education, convalescing health facilities, building homes, funding an investment [15-20], or paying utility bills [19] and reducing poverty [21-22]. Positively supplementing the income level of left behinds, remittances are considered a key source to fund education and health care expenditures directly or indirectly [23].

Remittances are positively associated with education and health through removal of liquidity constraints. Lifting up budget limitations allow households to invest more in education and health because their ability to pay unfolds. Previously, remittances-education related studies concentrated on educational performance, education attainment, and school enrollment and retention. Like Chaaban and Mansour [9] found a positive relationship between remittances and children education attendance and attainment in Syria, Jordan, and Lebanon. Phuyal, et al. [10] investigated expenditure patterns of international remittances

in Kathmandu and found remittances are mostly consumed for food and education. Another study by Edwards and Ureta [11] examined the impact of remittances on household's schooling decision and discovered its significantly positive relationship with school retention in El Salvador. Moreover, spending of remittances differs from boys to girls [24-25]. It has also been observed that Mexican communities with high inflow of international remittances have larger literacy concentration [26]. Oppositely, international remittances might impact negatively the educational performance via absenteeism effect. Negative shocks in labor market of destination country may compel the left behind family members to work at the cost of education. It may disturb the family life and can deteriorate the children educational outcomes. For example, McKenzie and Rapoport [27] reported significantly negative impact of migration on educational attainment for rural Mexican children. Also, Antman [28], Lee and Park [29], and Mansoor and Quillin [30] supported similar findings.

Being a dark area for scholars, international remittances and health-focused researches mainly targeted health outcomes [31-33, 8], healthcare outlays in expenditure pattern [34-35, 10], and mortality rate [23]. For instance, Amuedo-Dorantes and Pozo [12] provided the positive connection between foreign remittances and healthcare expenditures incurred by households in Mexico. Similarly, Valero-Gil [13] stated the direct relationship between the two by employing a Tobit model. Further, they reported interesting results that remittances are less devoted to healthcare expenditure in lower income households. Differences in health expenditure are asserted to be dependent upon remittance amount received by the households in the home countries [36].

International remittances literature is crowded with studies

contextualizing Bangladesh like [6, 15, 37-41] and its relationship has been explored with numerous economic and household factors using macro-level country data. But unfortunately, its direct linkage with educational and healthcare expenditure of Bangladesh using micro-level data did not catch attention yet. Thus, issue of international remittances at household level using primary data from Bangladesh perspective is a virgin area. Henceforth, these research gaps make our study more constructive and justified.

3. Data and Materials

3.1. Study Area and Data Collection

In order to carry out the study, primary data are collected from *Cumilla* district of Bangladesh. The rationale for selecting this district as study area is that every year many people from this district migrate abroad searching for better livelihoods. The district consists of 16 police stations. Employing multi-stage random sampling technique, *Devidwar*, *Daudkandi* and *Burichong* police stations are selected randomly from those police stations. Then, two unions are selected randomly from each police station. In the next step, from each union three villages are selected randomly. Finally, from each village 11 remittance recipient and 11 non-recipient households are selected randomly following Abbas et al. [42]. Consequently, a total of 396 household heads are scheduled for interview and data are collected from January to March, 2019 with a well-structured questionnaire.

3.2. Descriptive Statistics

To analyze the socio-economic features of households in the study area, the study applies descriptive statistics like frequency distribution. Beyond analysis, the estimated result is presented in tabular form.

3.3. Multiple Regression Analysis

Remittance plays a vital role at household level in many ways. Thus, it requires seeking out the extent to what international remittances impacts on education and health in Bangladesh. To estimate the extent, household expenditure on education and healthcare purpose is considered as dependent variable. As the dependent variable is continuous, the study applies a multiple regression model estimated through OLS method which shows a cause and effect relationship between dependent variable and a set of explanatory variables following Abbas et al. [42], Raihan et al. [43] Banik and Kumar [44] and Kumar [45]. Equation 1 states the relationship as follows:

$$EXP_i = f(P_i) \quad (1)$$

Econometrically the equation 1 can be formed as:

$$EXP_i = \delta P_i + \varepsilon_i \quad (2)$$

where, EXP_i dependent variable, is the monthly per capita expenditure on education and health and P_i is a set of explanatory variables that affect the dependent variable. More specifically, on the basis of the equation (2), multiple regression models for education and health can be written as:

$$EXP_{ei} = \delta_0 + \delta_1 ED + \delta_2 HS + \delta_3 OC + \delta_4 IL + \delta_5 LS + \delta_6 PI + \delta_7 RE + \varepsilon_i \quad (3)$$

$$EXP_{hi} = \delta_0 + \delta_1 ED + \delta_2 HS + \delta_3 OC + \delta_4 IL + \delta_5 LS + \delta_6 PI + \delta_7 RE + \varepsilon_i \quad (4)$$

where, EXP_{ei} and EXP_{hi} are monthly per capita expenditure on education and monthly per capita expenditure on health, respectively, $\delta_0, \dots, \delta_7$ are parameters to be estimated and ε_i is the stochastic disturbance term. The explanatory variables

used in above model are explained in Table 1. All these variables have been considered in the regression model from literature review.

Table 1. Description of explanatory variables used in both regression models.

Name of Variables	Type	Measurement	Expected Sign
Education (ED)	Continuous	Schooling of household head (years)	+
Household size (HS)	Continuous	Total number of family members	-
Occupation (OC)	Dummy	1 for non-agriculture, otherwise 0	+
Income from livestock (IL)	Continuous	Yearly income from livestock of household (Tk.)	+
Land size (LS)	Continuous	Total amount of land (<i>Bighas</i>)	+
Per capita income (PI)	Continuous	Monthly per capita income of household (Tk.)	+
Remittance (RE)	Dummy	1 if household receives remittances, otherwise 0	+

4. Results and Discussion

4.1. Education Related Features of Households

This segment presents a comparative analysis on the education related features of the children of both remittance recipient and non-recipient households which may bring out the core scenario of education of two groups of households. The result has been analyzed through SPSS 23 and presented in tabular form in the following table.

Table 2. Education Related Features of Households.

Variables	Indicators	% of households	
		Remittance recipient	Remittance non-recipient
Types of school	Government	48	66
	Non-government	37	30
	Private	13	4
Medium of instruction of the study	Bengali	93	97
	English	7	3
Distance of school from home	Beside home	45	69
	1.00 km to 2.00 km	40	27
	2.01 km and above	15	4
Medium of transportation in going school	On foot	14	55
	By personal transport	25	6
	By public transport	53	35
House tutor facilities	By school transport	7	4
	Yes	89	41
	No	11	59
Providing of education accessories timely	Yes	87	17
	No	13	83
Types of Tiffin	No Tiffin	17	59
	Home made	61	36
	Restaurant made	22	5
Level of education (passed last year)	Primary	60	45
	Secondary	20	29
	Graduation	17	19
	Higher studies	3	7

Source: Field survey, 2019

Table 2 reveals that most of the children study in government school. It is found that most of the children of both remittance recipient and non-recipient households study in government school because most of the schools in the rural areas of Bangladesh are government school where there is low tuition fee. In the study area, about 48 percent remittance recipient households' children study in government school whereas it is about 66 percent for remittance non-recipient households. The study also finds that the rate of studying children at private school is higher for remittance recipient households than that of non-recipient households. With the help of remittances, remittance recipient households become able to pay higher tuition fee at private school. Although most of the children of both types of households study in Bengali medium, the medium of instruction of the study in English is higher for remittance recipient households. As most of the government schools are situated beside home and familiar with low tuition fee, mostly remittance non-recipient households (45 percent) and non-recipient households (69 percent) send their children at government schools beside their home. The study also finds that most of the households use public transport to send their children to school and they also use private transport. Remittance recipient households (25 percent) use private transport more than that of non-recipient households (6 percent). The study finds that there are enough facilities of house tutor for remittance recipient households (89 percent) whereas remittance non-recipient households do not provide much home tutor facilities as they have no enough money to spend for it. The table also shows

that 87 percent remittance recipient households provide education accessories timely to the children while 83 percent remittance non-recipient cannot provide timely. In addition, the households who receive remittance mostly provide their children home made Tiffin than non-recipient households. The table also shows that most of the children of both types of households have passed primary level education. Interestingly, it is found that children of remittance non-recipient households (7 percent) passed higher studies more than remittance recipient households (3 percent) as remittance recipient households prefers sending their children abroad for earning remittance to sending them for higher studies.

From the above analysis, it is found that although recipient families are becoming able to bear educational expenditure and other facilities for their children with the help of remittance, they are failing to make their children educated in higher studies as they are sending their children abroad for earning remittances. Contrarily, remittance non-recipient households are making their children educated in higher studies despite being their lower capabilities to provide higher educational expenditure and other facilities.

4.2. Health Related Features of Households

This segment presents a comparative analysis between remittance recipient and non-recipient households on health related features in the following table.

Table 3. Health Related Features of Households.

Variables	Indicators	% of households	
		Remittance recipient	Remittance non-recipient
Consumption of nutritious food regularly	Yes	73	57
	No	27	43
Medium of water purification	No purification	31	64
	Boiled	13	11
	Filtered	45	16
Uses of sanitary latrine	Sodish and other	11	9
	Yes	96	91
Methods of having treatment in serious disease	No	4	9
	No treatment	3	18
Checking up health regularly	Visiting <i>Kabiraj</i>	13	27
	Visiting specialized doctor	84	55
Household head's knowledge about reproductive health	Yes	57	23
	No	43	77
Maintaining family planning	Yes	61	27
	No	39	73
Delivery Attendance	Yes	89	87
	No	11	13
	Home (without CHW*)	17	29
	Home (with CHW*)	31	41
	Hospital	52	30

Note: *CHW = Community Health Worker

Source: Field survey, 2019

Table 3 reveals that most of the households consume nutritious food regularly. However, remittance recipient households (73 percent) consume nutritious food regularly more than the non-recipient households (57 percent). The table also reveals that majority of the remittance recipient households (45 percent) use filter to purify water whereas most of the remittance non-recipient households (63 percent) do not use any method to purify water. The study also finds that most of the households use sanitary latrine and the rate of using sanitary latrine is greater for remittance recipient households (96 percent) than non-recipient households (91 percent). The table also shows that although most of the households of both categories visit specialized doctor for having treatment at the time of facing serious diseases, certain number of households do not visit specialized doctor as well. The rate of not visiting specialized doctor (having no treatment) is higher for remittance non-recipient households (18 percent) than remittance recipient households (3 percent). It is also found that 57 percent remittance recipient households check up their health regularly while the rate is 23 percent for non-recipient households. The study also finds

that 61 percent remittance recipient households' head have knowledge about reproductive health while the rate is about 27 for remittance non-recipients. Although both types of households maintain family planning, the rate of maintaining is higher for recipient households. The table also finds that most of the remittance recipient households (52 percent) use hospital facilities during delivery time whereas most of the non-recipient households use home delivery scheme considering community health worker (41 percent). From the above analysis, it is found that international remittances have notable influence on health care facilities of the recipient households.

4.3. Ratio of Per Capita Expenditure on Education and Health to Total Per Capita Household Expenditure

The ratio of per capita expenditure on education and health to total per capita household expenditure of remittance recipient and non-recipient households has been measured through SPSS 23 and presented in the following table.

Table 4. Ratio of per capita expenditure on education and health to total per capita household expenditure (Tk./year).

Sectors	Remittance recipient		Remittance non-recipient		Mean Difference (1-2)
	Mean (1)	%	Mean (2)	%	
Education	2398.82	3.74	3188.91	13.32	-790.09
Health	1991.34	3.11	727.96	3.04	1263.38
Others	59698.66	93.15	20012.31	83.63	39686.35
Total	64088.82	100	23929.18	100	40159.64

Source: Field survey, 2019

From this above table, an interesting result has been found that the amount of annual per capita expenditure on

education of remittance non-recipient households (Tk. 3188.91) is lower than that of remittance recipient

households (Tk. 2398.82). While remittance recipient households expense about 3.74 percent of total per capita expenditure per year on education purpose, remittance non-recipient households expense about 13.32 percent. The reason behind this difference is that remittance recipient households educate their children up to secondary or higher secondary level and send them abroad for earning more remittance. Contrarily, remittance non-recipient households have no many alternative options to earn and that is why they educate their children up to higher studies which incurs more expenditure on education. Besides education purpose, households expense on health purpose as well. The paper finds that remittance recipient households (Tk.1991.34) expense more on health care purpose than that of remittance non-recipient households (Tk. 727.96). Although both types

of households spend money on health care purpose almost at the same rate, remittance recipient households (3.11 percent) expense more than that of remittance non-recipient households (3.04 percent). This result can be explained by the fact that remittance recipient households can be able to enjoy better health care facilities with the presence of remittance. From the above analysis it is found that international remittances have a notable influence on health care but not in education.

4.4. Impact of Remittances on Education

The linear regression model for measuring the extent to what international remittances impact on education is analyzed with STATA-13 and the result is presented in Table 5.

Table 5. Impact of Remittances on Education.

Variables	Coefficient	Robust std. Err.	t-ratio	P> t
Cons.	76.01	214.51	0.35	0.72
Education	96.59	83.45	1.16	0.25
Household size**	-154.29	68.55	-2.25	0.03
Occupation	167.81	137.18	1.22	0.22
Income from livestock	0.0578	0.0849	0.68	0.49
Land***	372.47	89.89	4.14	0.00
Per capita income***	0.1892	0.0202	9.35	0.00
Remittance***	-1020.67	153.65	-6.64	0.00

F (7, 388) = 675.32; Prob > F = 0.000; R² = 0.97; Root MSE = 685.68; DW = 1.97

Note: ***, ** means 1% and 5% level of significance.

Source: Field survey, 2019

The table 5 shows that the value of R² is 0.97 indicates that explanatory variables of the model explain the dependent variable by 97 percent. Elsewhere, the F-statistic value is 675.32 with prob>F = 0.000 brings out that the model is completely good at fitted. The study has no any heteroscedasticity problem in the data that is clarified using robust standard error action. The study also exercises VIF to detect multicollinearity problem and explicitly reveals a negative result. The Durbin Watson test (DW = 1.97) expresses that no autocorrelation problem exists in the model. The study finds that household size, land, per capita income and remittance are significant variables although all variables fulfill the expected sign except remittance.

The coefficient of household size reveals that the per capita household expenditure on education per month may be decreased by Tk.154.29 if the household's family member is increased by one which is significant at 5 percent level of significance. The rational explanation may be that households with large number of family members have to spend huge amount of expenditure in different purposes like food and non-food items, housing, health, investment purposes and so on. That is why per capita expenditure on education becomes low. Abbas et al. [42] have also found the same findings.

Similarly, the per capita household expenditure on education per month may be increased by Tk.372.47 if the household head holds an extra unit of land. This result is significant at 1 percent level of significance and can be interpreted by the fact that households with large size of land can produce crops,

vegetables, fisheries, livestock and so on. This can build a strong basement for the household expenditure on education.

The study also finds that the per capita household expenditure on education per month will be increased by Tk.0.1892 if household's per capita income is increased by one unit which is significant at 1 percent significance level. The interpretation may be such that households with higher per capita income can expense more on education. Abbas et al. [42] have also found the same findings.

The coefficient of remittance reveals that the per capita household expenditure on education per month may be decreased by Tk.1020.67 if the households receive remittance which is significant at 1 percent level of significance. The rational explanation may be that remittance recipient households receive remittance and educate their children up to secondary or higher secondary level and send abroad for earning more remittances. For this reason, per capita expenditure on education of remittance recipient households is too lower than that of remittance non-recipient households. The result is in line with McKenzie and Rapoport [27] Antman [28], Lee and Park [29] and Mansoor and Quillin [30]. At the same time, the result violates the result of Abbas et al. [42] and Raihan et al. [43].

4.5. Impact of Remittances on Health

Besides measuring the impact of international remittances on education, the study also measures the extent to what

international remittances impact on health using a linear regression model estimated by OLS method. The result is

analyzed with STATA-13 and the estimated result is presented in Table 6.

Table 6. *Impact of Remittances on Health.*

Variables	Coefficient	Robust std. Err.	t-ratio	P> t
Cons.	-1082.81	875.68	-1.24	0.21
Education***	-1507.76	314.78	-4.79	0.00
Household size	304.19	284.71	1.07	0.29
Occupation***	2297.97	530.91	4.33	0.00
Income from livestock***	-2.36	0.34	-6.51	0.00
Land***	2687.65	456.82	5.88	0.00
Per capita income***	0.4828	0.099	4.90	0.00
Remittance***	4817.39	776.41	6.20	0.00

F (7, 388) = 20.07; Prob > F = 0.000; R² = 0.86; Root MSE = 2661.2; DW = 1.99

Note: *** means 1% level of significance.

Source: Field survey, 2019

The Table 6 shows that the value of R² is 0.86 indicates that explanatory variables of the model explain the dependent variable by 86 percent. Elsewhere, the F-statistic value is 20.07 with prob>F = 0.000 brings out that the model is completely good at fitted. The study has no any heteroscedasticity problem in the data that is clarified using robust standard error action. The study also exercises VIF to detect multicollinearity problem and explicitly reveals a negative result. The Durbin Watson test (DW = 1.99) expresses that no autocorrelation problem exists in the model. The study finds that education, occupation, income from livestock, land, per capita income and remittance are significant variables.

The estimated coefficient of education is -1507.76 exhibits that the per capita household expenditure on health per month may be decreased by Tk.0.0060 if the level of education of household head is increased by one year. This is significant at 1 percent level of significance. The dynamic explanation may be that the more the household head being educated the more he or she will be conscious of basic hygiene and health. That is why they do not get ill and need not to take health care facilities. The result is in line with Abbas et al. [42].

The per capita household expenditure on health per month may be increased by Tk.2297.97 if the occupation of household head is non-agricultural which is significant at 1 percent level of significance. The interpretation may be that household heads earn more income when they are involved in non-agricultural activities like services, business and so on. This paves the way to expense more on health care.

Similarly, the per capita household expenditure on health per month may be increased by Tk.2687.65 if the household head holds an extra unit of land. This result is significant at 1 percent level of significance and can be interpreted by the fact that households with large size of land can produce crops, vegetables, fisheries, livestock and so on. This can build a strong basement for the household expenditure on health.

The per capita household expenditure on health per month may be decreased by Tk.2.36 if the households' income from livestock is added by one unit. This result is significant at 1 percent level of significance and can be interpreted by the

fact that households which have enough livestock have enough facilities of nutrition which makes them physically fit and lowers the health care cost. Abbas et al. [42] have also found the same findings.

The study also finds that the per capita household expenditure on health per month may be increased by Tk.0.4828 if household's per capita income is increased by one unit which is significant at 1 percent significance level. The interpretation may such that households with higher per capita income can expense more on health care. Abbas et al. [42] have also found the same findings.

The coefficient of remittance reveals that the per capita household expenditure on health per month may be increased by Tk.4817.39 if the household receives remittance which is significant at 1 percent level of significance. The rational explanation may be that remittance recipient households can easily meet their health care expenditure with the blessings of remittance. The result is in line with Amuedo-Dorantes and Pozo [12], Adams [31], Olowa and Awoyemi [32], Ponce et al [33], Démurger and Wang [34], Thapa and Acharya [35] and Abbas et al. [42].

5. Conclusion and Policy Recommendations

This paper focuses on two separate questions. Such as: 1) do international remittances affect education in Bangladesh? and 2) do international remittances affect health in Bangladesh? To investigate these questions, this study uses primary data collected from remittance recipient and non-recipient households and employs several methods. Finally, this paper finds some interesting results. The results are interesting in many aspects as follows:

First, the study finds that international remittances have negative and significant impact on education of remittance recipient households. Empirically, this paper reveals that if a household receives international remittances, the per capita expenditure on education of that household is decreased by Tk.1020.67 which interprets that remittance have no role in improving education status of the recipient households. Second,

the study finds a positive and significant relationship between remittances and health. The study empirically finds that if a household receives international remittances, the per capita expenditure on health care of that household is increased by Tk.4817.39 which reveals that international remittances have positive and significant role in improving health status.

On the basis of the findings of this study, government and authorized non-government organizations are suggested to take policies to aware remittance recipient households about utilizing remittances on health care purpose. Although remittance are found as a negative factor affecting education, moreover, the study suggests remittance recipient households to make their children educated up to higher studies so that they can be turned into skilled human resources and contribute to the country's sustainable development. As the study has been carried out within very short time and budget, the study suggests to carry out further study on it.

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