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Out-of-Pocket Healthcare Expenditure of Bangladesh: An Analysis of Decomposition, Distribution and Determinants Based on HIES 2016

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Abstract

The objectives of this study are to estimate the total out-of-pocket healthcare expenditure and decompose it into inpatient and outpatient out-of-pocket expenditure, to depict the distribution and investigate their determinants. This is a cross-sectional study based on HIES 2016 data collected by BBS. The total sample size is 34,507 who have experienced any type of illness and sought any type of medical treatment and incurred out-of-pocket expenditure for healthcare. The analysis of distribution, decomposition of the out-of-pocket healthcare expenditure, and estimated coefficients from the log-linear multiple regression models have been employed to achieve the objectives of this study. The monthly average out-of-pocket healthcare expenditure was BDT 1170 in 2016. The mean healthcare expenditures for inpatient and outpatient out-of-pocket expenditure were BDT 1874 and BDT 1120, respectively. Factors such as age, marital status, educational level and symptoms of illness were significant determinants of the out-of-pocket healthcare expenditure. This study found that as one got ageing she/he incurred on average more healthcare cost. Furthermore, as one got more education she/he also paid more to utilize healthcare than the reference category. Hence, this study has confirmed the well-known predictions of the Grossman Model of Demand for Healthcare.

Keywords: Out-of-pocket healthcare expenditure, financing healthcare, inpatient, outpatient, Bangladesh

1. Introduction

Healthcare expenditure is rising all over the world, and Bangladesh is no exception. The per capita healthcare expenditure was $42 in 2018 and $37 in Bangladesh in 2017. Total healthcare expenditure was BDT 452 billion in 2015. Though the government healthcare expenditure is rising each year, the percentage share of it remains declining. The government expenditure on healthcare was 23 percent of the

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total healthcare expenditure in 2015. In Bangladesh, total healthcare spending is dominated by private sector financing, where out-of-pocket healthcare expenditure is the key healthcare financing mechanism. Household out-of-pocket expenditure has increased from 83% to 89% from 1997 to 2015 (BNHA, 2015). A large number of households face difficulty meeting their out-of-pocket healthcare expenses during the utilization of healthcare services. The heavy reliance of healthcare financing on the out-of-pocket payments makes individuals and households undesirable situations which leads them to severe poverty. To reduce the challenges, figuring out the determinants of the out-of-pocket healthcare expenditure and decomposing it into inpatient and outpatient healthcare expenditure is of great interest, which will play a crucial role in setting strategies for health policy in Bangladesh.

Several studies have investigated the contributing factors of healthcare expenditure. Age, sex, level of education and household income have a significant influence on the spending of healthcare. The average healthcare expenditure was higher for males in the age category of 65 to 69 years in 2010. Though the average healthcare expenditure was high for males, it was higher for females of reproductive age (Sarker et al., 2014). Moreover, marital status and place of residency played a crucial role in the utilization of healthcare services as well as healthcare expenditure. On average urban patients spent 7 percent more than rural patients in 2010 (Molla et al., 2017).

Research studies have identified that the presence of chronic diseases, household wealth, household non-food expenditure, unsafe water and unhygienic toilets were important predictors of the overall out-of-pocket healthcare expenditure in South Asia (Malik & Syed, 2012; Molla et al., 2017). A study on the rural population in India found that the median out-of-pocket healthcare expenditure was Rs. 3870. It showed that the presence of public health facilities, presence of health insurance, education, type of family, caste category and the gender of the head of the family were significant determinants of out-of-pocket and catastrophic health expenditure in India (Dalul et al., 2020). Another cross-sectional study in Peru on population with lower-level of income reported that annual household expenditure per capita, number of children, women of reproductive age, older persons, enrolment in health insurance and number of household members were important associated factors of out-of-pocket payments (Pavon & Sanchez, 2018).

In Bangladesh, people suffer from different kinds of diseases. The Household Income and Expenditure Survey (HIES) 2016 report of Bangladesh reveals that 55.05 percent suffered from fever in the last 30 days of the survey period. More than 11% reported pain, with diarrhoea (5.73%) and asthma/bronchitis/respiratory problems (3.59%) following HIES 2016. Households suffering from several diseases incurred high outpatient medical expenses. The national monthly average outpatient medical expenses were BDT 328, where in rural it was BDT 312 and in urban it was BDT 378 respectively (BBS 2019). All these expenditures were higher in 2010. The national monthly average medical expenditure was BDT 397, while it was BDT 386 and BDT 400 in rural and urban areas, respectively (BBS, 2011). Most of the people suffering

from different diseases and illnesses were almost experiencing financial difficulties at that point. Patients generally seek inpatient care or outpatient care. So, the decomposition and distribution analysis of the inpatient and outpatient healthcare costs will contribute to the identification and investigation of the medical expenses.

However, the information regarding medical expenses were collected or reported as outpatient medical expenses or the total out-of-pocket medical expenses in the household income and expenditure surveys published up to 2010. As a result, all of the studies that have been published thus far have focused on the analysis of total out-of-pocket healthcare expenses. But the HIES 2016 collected the medical treatment costs into two different categories, which were separated by the inpatient healthcare expenditure and the outpatient healthcare expenditure. The availability of the newly added information permits this study to seek the distribution and decomposition of the total out-of-pocket healthcare expenses into outpatient and inpatient healthcare expenses and helps detect their determinants of them.

1.1 Objectives

i) To estimate the total healthcare expenditure and decompose it into inpatient and outpatient healthcare expenditure;
ii) To illustrate the decomposition and distribution of the inpatient and outpatient out-of-pocket healthcare expenditure;
iii) To investigate the determinants of the total, inpatient and outpatient out-of-pocket healthcare expenditures.

2. Method

2.1 Data and Variables

The study utilizes data from the latest Household Income and Expenditure Survey (HIES) 2016 conducted by the Bangladesh Bureau of Statistics (BBS). BBS collects data for HIES on a regular basis. This dataset gives valuable information about individual and household income, consumption expenditure, education, health and other demographic characteristics. The total sampled households covered in the HIES 2016 was 46076 and the total population was 159.58 million. The HIES 2016 consists of 21 questions regarding illness and injuries and the cost of inpatient and outpatient treatment of all household members. The HIES 2016 has the total cost of outpatient treatment for the last 30 days as well as the total cost of inpatient treatment for the last 12 months. The present study estimates all types of treatment costs for 30 days, so it converts the cost monthly where it is necessary.

The paper intends to decompose the total treatment cost of healthcare into inpatient and outpatient. Then it plans to depict the determinants of the inpatient, outpatient and total out-of-pocket healthcare expenditures. So it takes the patients into account who have suffered from any symptoms of illness/injury/disease in the last 30 days or 12 months (in the case of inpatients) before the survey. In HIES 2016 the reported symptoms/diseases are as follows: diarrhoea, fever, dysentery, pain, injury, blood pressure, heart disease, respiratory diseases/asthma/bronchitis,

weakness, dizziness, pneumonia, typhoid, tuberculosis, malaria, jaundice, female diseases, pregnancy-related diseases, cancer, mental health, paralysis, epilepsy, scabies/skin diseases, kidney diseases, liver diseases, ear/ENT problems, eye problems and others. Respondents reported their diseases ranked from 1 to 3 according to the severity of their suffering. The present study uses the first symptoms ranked as 1 of the sufferers. The total number of individuals who suffered from any of the above symptoms or diseases during the last 30 days or 12 months before the survey was 39,137. Among them, 34510 patients had sought any type of medical treatment and 34507 patients reported inpatient and outpatient healthcare expenditure. Hence, the paper uses the sample population as 34507 to perform the analysis of decomposition, distribution and determinant.

To estimate the log-linear multiple regression models the study calculates females and males as sex dummies; married, unmarried and others (widowed, divorced and separated) as dummies of marital status. It also calculates four age category dummies: childhood (less than 20 years), young adulthood (20-39 years), middle-aged adulthood (40-64 years) and elderly (more than 64 years). Seven dummies for educational status have been created such as no education, primary education, secondary education, SSC, HSC, graduation and others; to include earning status earner and not earner dummies are also created; rural and urban dummies are included to cover residency status. The descriptive statistics of this study is represented in Table 1.

The study uses three outcome variables such as the total out-of-pocket healthcare expenditure, inpatient out-of-pocket healthcare expenditure and outpatient out-of-pocket healthcare expenditure. The total outpatient healthcare expenditure has been calculated by summing consultation fees, cost of medicines, cost of investigation and transport cost. The total inpatient healthcare expenditure has been estimated summing operation cost, consultation fees, bed/cabin charges, cost of medicines, the cost of investigation, transport costs, other formal charges and maternity costs. The total out-of-pocket healthcare expenditure consists of total outpatient and inpatient out-of-pocket healthcare expenditures. All the outcome variables have been estimated monthly in BDT.

2.2 Econometric Model

To examine the determinants of the out-of-pocket healthcare expenditures, the paper estimates the following log-linear multiple regression model:

$$lnh_i = \alpha + \sum_{i=1}^{n} \beta_i x_i + \varepsilon_i \quad \text{(i)}$$

where, lnh_i represents the log of out-of-pocket healthcare expenditure for an individual patient i and x_i represents the set of explanatory variables for the patient i.

This study observes that the out-of-pocket payments for healthcare are characterized by a large cluster of value at zero and the distribution of payments is rightly skewed. So, this study takes the natural logarithm of the out-of-pocket healthcare payments (dependent variable) to reduce the effect of skewness. The set

of explanatory variables of the study is the sex of the respondent, age, education level, marital status, earning status, ten diseases and the residency status of the patients. The above-stated log-linear multiple regression model (i) has been estimated by the ordinary least square method three times incorporating the three different dependent (outcome) variables: out-of-pocket healthcare expenditure, inpatient out-of-pocket healthcare expenditure and outpatient out-of-pocket healthcare expenditure. Table 5 represents these three models as Model I, Model II and Model III respectively. The estimated coefficients have been analyzed to investigate the determinants of the out-of-pocket healthcare spending. To interpret the coefficients of the models the study used the exponential method using the ((EXP(coefficient) – 1)*100) formula in the discussion section.

3. Result and Discussion

3.1 Background Characteristics

Table 1 depicts the background characteristics of the sampled population for this study. The total number of individuals who have suffered from any type of illness sought medical treatment and paid for healthcare utilization is 34507. The study population constitutes 50.76% female and 24% earner. It covers 6% elderly population aged more than 64 years and 22% middle-aged who are between 40 to 64 years old. The young population aged 20 to 39 years is 31% of the total population.

Table 1: Background characteristics of the sampled population (n= 34507)

Variables	n (%)	Variables	n (%)
Gender		**Marital Status**	
Female	17517 (50.76)	Others	5825 (16.88)
Male	16990 (49.24)	**Earner Status**	
Age Category		Not Earner	24178 (70.07)
Childhood	14091 (40.85)	Earner	10329 (29.93)
Young adulthood	10695 (30.98)	**Symptoms of illness**	
Middle aged adulthood	7625 (22.10)	Fever	18553 (53.77)
Elderly	2096 (6.07)	Pain	3744 (10.85)
Educational Status		Diarrhoea	1987 (5.76)
No education	1384 (4.01)	Asthma	1309 (3.79)
Primary	9838 (28.51)	Weakness	960 (2.78)
Secondary	7037 (20.39)	Injury	785 (2.27)
SSC	1929 (5.59)	Blood pressure	742 (2.15)
HSC	1205 (3.49)	Dizziness	608 (1.76)
Graduate	459 (1.33)	Heart disease	395 (1.14)
Others	12655 (36.67)	Others	5424 (15.73)
Marital Status		**Residency**	
Married	17860 (51.76)	Rural	24506 (71.02)
Unmarried	10822 (31.36)	Urban	10001 (28.98)

Source: Household Income and Expenditure Survey 2016

In this study, the highest percentage of the population who have completed primary education is 28.51% followed by secondary (20.39%) who have completed either class six/seven/eight or nine. It examines almost 52% of the married

population and 31% of the unmarried population. Among the study population almost 54% suffered from fever and 11% experienced pain followed by diarrhoea (5.76%). Although the percentage of patients who had suffered from weakness, injury or blood pressure was almost the same, the percentage of patients who had suffered from asthma was 3.79%. In addition, the percentage of patients suffering from heart disease was half that of patients suffering from high blood pressure. Seventy-one percent of the study population was living in the rural area as where twenty-nine percent was living in the urban area.

3.2 Decomposition and Distribution of Out-of-Pocket Healthcare Expenditure

Table 2 shows the decomposition and distribution of the total out-of-pocket healthcare expenditure into inpatient and outpatient healthcare expenditure based on HIES 2016. The total sample size is 34507. These individuals had suffered from any type of illness in the last month of the survey and had sought any type of medical treatment and spent on healthcare. Among them, 1517 patients reported their treatment cost as an inpatient where the monthly average inpatient out-of-pocket healthcare expenditure was almost BDT 1874. In addition, female patients paid around BDT 211 more on average compared to male patients. Moreover, data showed that the monthly average inpatient healthcare costs was more in rural (BDT1916) than in urban (BDT 1790).

Table 2: Decomposition and distribution of total out-of-pocket healthcare expenditure

Variable	Mean (n)	Female Male	Rural Urban
Inpatient healthcare expenditure	1873.79 1517	1975.55 1764.82	1916 1790
Outpatient healthcare expenditure	1120.95 33479	1118.73 1123.23	1098.16 1176
Total out-of-pocket healthcare expenditure	1169.92 34507	1174.09 1165.62	1140.67 1241.6

Source: Household Income and Expenditure Survey 2016
Note: Expenditure in BDT

Among the total sampled population 94 percent experienced the outpatient treatment cost which was on average BDT 1121. It is clear from Table 2 that the reported male patients experienced slightly higher mean healthcare cost compared to female patients. Another interesting finding of Table 2 is that the rural patients' average monthly inpatient treatment expenditure was higher whereas the urban patients' monthly outpatient expenditure was higher. These findings may contribute to health policy that policy needs to set target to reduce the inpatient treatment costs in rural and reduce outpatient cost in urban. Hence, this study plans to give a distribution of the inpatient and outpatient out-of-pocket healthcare expenditure. This distribution will help to specify policy intervention for the specific category.

On average, the monthly total out-of-pocket healthcare expenditure was BDT 1170 where the payments of female patients were on an average high. In addition,

patients receiving treatment at urban had more total out-of-pocket healthcare expenditures. This result is consistent with the previous research results (Mahumud et al., 2017).

Table 3 represents the decomposition and distribution of the inpatient out-of-pocket healthcare expenditure by giving the breakdown into nine categories. From Table 3, it is evident that the cost of medicine is the highest cost driver in inpatient healthcare expenditure. The average monthly cost of medicine is BDT 536, where it is higher in the case of female patients and urban patients. The mean operation cost is observed BDT 393 which is almost 21 percent of the total inpatient healthcare. The cost of the investigation is the third contributor to the total healthcare expenditure and its mean value is about BDT 241. Patients also spent a significant amount on hiring cabins followed by transport cost and informal tips. Data also express that the average inpatient costs of the following categories are higher for males: operation cost, consultation fees, investigation cost, transport cost and informal tips. In addition, patients living in rural areas spend on average more in the categories of transport cost, informal tips, and formal charges and also in the case of maternity.

Table 3: Decomposition and distribution of inpatient out-of-pocket healthcare expenditure by components

Components	Average (n)	% of total IOOPHCE	Female Male	Rural Urban
Operational cost	393.04 (1164)	20.98	332.77 458.48	355 465.97
Consultation fees	109.47 (1281)	5.84	96.93 123.25	103.08 122.15
Bed/Cabin charges	180.11 (1248)	9.61	187.07 172.63	172.09 195.9
Costs of medicine	536.35 (1401)	28.63	546.98 525.08	533.42 542.2
Cost of investigations	241.16 (1321)	12.87	226.62 256.82	239.62 244.26
Transport cost	116.14 (1378)	6.26	113.39 119.06	117.52 113.37
Informal tips	120.57 (1121)	6.43	80.35 162.47	135.58 92.54
Other formal charges	86.16 (1200)	4.6	102.47 68.73	96.54 66.02
Maternity cost	72.16 (946)	3.85	73.97 65.16	89.22 39.71
Total	1873.59 (1517)	100	1975.55 1769.82	1916.3 1790.47

Source: Household Income and Expenditure Survey 2016
Note: IOOPHCE means inpatient out-of-pocket healthcare expenditure

Table 4 represents the decomposition and distribution of outpatient healthcare expenditure into several categories with respect to sex and residency status. The average total outpatient healthcare expenditure was BDT 1120.95 in 2016. The

average outpatient healthcare expenditure was decomposed into four categories where the cost of medicine was the highest contributor, at BDT 669, which was almost 60 percent of the total outpatient healthcare expenditure. The medicine cost was also the highest cost in the distribution of out-of-pocket healthcare expenditure in the previous study (Sarker et al., 2014). The second highest cost driver was the cost of investigation, which was on average BDT 262. The mean consultation fee was BDT 135 in case of outpatient care in 2016 whereas it was BDT 160 in 2010 (HIES 2010 report). The mean transportation cost of the outpatient care was 10.44 percent which was 6.20 percent of the inpatient healthcare expenditure. In the case of females, the average cost of medicine was BDT 664.85 and that of investigation was BDT 269.30. The average transport cost was higher in rural compared to urban.

Table 4: Decomposition and distribution of outpatient out-of-pocket healthcare expenditure by components

Components	Average (n)	% of total OOPHCE	Female Male	Rural Urban
Consultation fees	134.62 (27431)	12.01	125.94 143.62	128.76 148.57
Cost of medicines	668.80 (31909)	59.66	664.85 672.88	666.47 674.55
Cost of investigation	262.22 (26206)	23.39	269.3 254.88	238.95 321.26
Transport cost	116.99 (28295)	10.44	115.94 118.07	119.58 110.76
Total	1120.95 (33479)	100	1118.73 1123.23	1098.16 1176.22

Source: Household Income and Expenditure Survey 2016
Note: OHCE means outpatient out-of-pocket healthcare expenditure

3.3 Determinants of Out-of-Pocket Healthcare Expenditure

Table 5 reports the associated factors of total out-of-pocket healthcare expenditure along with the inpatient and outpatient out-of-pocket healthcare expenditure. The important determining factors of the cost of healthcare are sex of the patient, age, education, marital status, earning condition, place of residency and types of illness. Furthermore, individual life style, literacy level of spouse, household size, unhygienic toilet facility, unsafe drinking water, housing material, any obstetric delivery and distance of health facility are also determining factor for out-of-pocket payments (Malik & Syed, 2012).

From the results of the log-linear multiple regression models, for Model I and Model III, this study found that age, marital status, educational status, symptoms of illness had s significant relationship with out-of-pocket healthcare expenditure. Regarding the Model II, this study observed that only the symptoms of illness had significant association with the inpatient out-of-pocket payments of healthcare demand. Marital status had a significant influence in determining the cost of healthcare. The regression results showed that unmarried individuals faced on average 7% higher outpatient healthcare expenditures compared to the individuals

who were currently married and the values (both of total healthcare expenditure and outpatient healthcare expenditure) of these coefficients were significant at the 0.05 significance level. Although the value of the associated coefficient for the inpatient healthcare expenditure was not significant but it was still positive showing its positive influence on the expenditure for unmarried ones.

Individuals having no earnings faced more outpatient and total out-of-pocket costs for healthcare utilization and less inpatient health expenditure compared to those who had earnings. In addition, the patients who were not earner spent on average 7% more than the patients who were earners for the case of total out-of-pocket healthcare payments; and the negative value of the associated coefficient for the inpatient care implied the tendency of lower health spending of the patients who were not earners.

Table 5: Determinants of out-of-pocket healthcare expenditure

Independent Variables	Model I		Model II		Mode III	
	Outcome Variables					
	Total HCE	Standard Errors	Inpatient HCE	Standard Errors	Outpatient HCE	Standard Errors
Sex						
Female	-0.02	0.02	0.07	0.11	-0.02	0.02
Male (ref)						
Age category						
Childhood	-0.05	-0.21	-0.21	0.17	-0.05	0.03
Young adulthood	-0.01	0.02	-0.01	0.13	-0.02	0.02
Middle aged adulthood (ref)						
Elderly	0.14***	0.04	-0.32	0.19	0.14***	0.04
Marital Status						
Married (ref)						
Unmarried	0.07*	0.03	0.07	0.15	0.07*	0.03
Others	-0.05	0.03	0.04	0.16	0.05	0.03
Earner status						
Not earner	0.07***	0.02	-0.03	0.11	0.07	0.02
Earner (ref)						
Educational status						
No education (ref)						
Primary	0.09*	0.04	-0.32	0.18	0.07*	0.04
Upclass9	0.14***	0.04	-0.29	0.2	0.12**	0.04
SSC	0.24***	0.05	-0.14	0.22	0.23***	0.05
HSC	0.28***	0.06	-0.33	0.31	0.26***	0.05
Graduation	0.46***	0.08	0.26	0.28	0.41***	0.08
Others	0.07	0.04	-0.13	0.18	0.05	0.04
Symptoms of illness						
Fever (ref)						
Pain	0.79***	0.03	-0.05	0.16	0.80***	0.03
Diarrhoea	0.31***	0.03	-0.58	0.2	0.31***	0.03
Weakness	0.76***	0.04	0.06	0.31	0.75***	0.04
Asthma	1.05***	0.04	0.22	0.16	1.04***	0.04

Independent Variables	Model I		Model II		Mode III	
	Outcome Variables					
	Total HCE	Standard Errors	Inpatient HCE	Standard Errors	Outpatient HCE	Standard Errors
Injury	1.34***	0.06	0.57*	0.28	1.34***	0.05
Blood pressure	1.13***	0.06	0.50**	0.17	1.11***	0.06
Dizziness	0.42***	0.07	-0.23	0.45	0.44***	0.07
Heart Disease	1.93***	0.07	0.68***	0.18	1.87***	0.07
Others	1.19***	0.02	0.45***	0.11	1.16***	0.02
Residency Status						
Rural (ref)						
Urban	0.01	0.02	0.11	0.09	0	0.02
Constant	5.42***	0.04	6.55***	0.21	5.41***	0.4
N	32598		1462		32522	
R squared	0.138		0.049		0.138	
Prob>F	0		0		0	
Root MSE	1.33		1.66		1.33	

*Note: *p <0.05, **p <0.01, ***p<0.001, HCE represents health care expenditure*

The level of education has a strong influence on the utilization and cost of healthcare. This study found that people with primary, secondary, SSC and HSC levels of education had fewer inpatient out-of-pocket healthcare costs than those who had no education. All the categories of education significantly influenced the total out-of-pocket healthcare cost and outpatient healthcare expenditure. For instance, individuals having primary education on average spent 9% greater than individuals having no education. The patients completing HSC paid for outpatient care 30% higher than the reference category. In addition, patients having and under graduation spent 58% more than those having no education holding other things constant. Hence, it is clear from the estimated coefficients that as one gets more educated she/he spends more on the demand for healthcare which is consistent with the well-known prediction of the Grossman Model of Demand for Healthcare (Grossman, 1972).

In addition, the respondents falling in the childhood (less than 20 years) and young adulthood (20 -39 years) age categories faced less out-of-pocket healthcare cost than the reference category. But for the total healthcare and outpatient expenditures, the senior citizens/ elderly (more than 64 years) spent 15 percent higher than the middle-aged (40-64 years) category. Though statistically insignificant female patients revealed lower healthcare payments than their counterparts in case of outpatient healthcare expenditure and higher expenditure for inpatient care for health.

Different diseases had a significant impact on the spending of healthcare. This study found that fever, pain, diarrhoea, weakness, asthma, injury, blood pressure, dizziness and heart disease were important predictors of the healthcare spending. For example, patients who had suffered from diarrhoea had spent 36% more than those who had suffered from fever holding other things constant in case of outpatient care. Among the included symptoms, patients suffering from blood pressure spent 67%

more for healthcare than the reference category in case of inpatient care. It also seems that patients living in urban area spent on an average more than the patients living in rural areas.

4. Conclusion and Recommendations

This study decomposed the total out-of-pocket payment into inpatient and outpatient care for the utilization of healthcare. It was estimated that the average monthly inpatient and outpatient spending for healthcare were BDT 1874 and BDT 1121, respectively; and the mean of the total out-of-pocket healthcare expenditure were BDT 1170. In addition, this study found that the cost of medicine was the number one cost driver for both of the cost of inpatient and outpatient treatment. Hence, to reduce the out-of-pocket payments for health, the policy needs to target the reduction of the cost of medicine at the first phase.

The monthly average cost of operation and investigation were BDT 393 and BDT 241 respectively in the case of inpatient healthcare expenditure where male patients' spending were higher than their counterpart for both of the components. So, policy needs to be targeted to reduce the operation cost and investigation cost in the second phase. Along with this, males may be suggested to take care of their health in such a way that will be the application of the wisdom "prevention is better than cure". This suggestion is also applicable for females because their mean spending for inpatient and total out-of-pocket payments were higher.

Another important finding of the study is that although the mean expenditure of outpatient and total out-of-pocket expenditure is higher in urban, rural areas cannot be left behind because mean inpatient out-of-pocket healthcare spending is high in rural areas compared to urban. Hence, policy should not be concentrated on the urban only.

This study also investigated the determinants of out-of-pocket inpatient, outpatient and total healthcare expenditure based on the Bangladesh Household Income and Expenditure Survey 2016. It found that elderly people (aged more than 64 years) spent more than middle-aged people (aged between 40-64 years) and literate people spent more than illiterate ones. The data also showed that more than fifty percent of the sampled population suffered from fever. Patients suffering from pain, weakness, asthma, blood pressure, injury and heart disease spent significant amounts of money on their treatment for any type of care.

The government of Bangladesh has a target to reduce the out-of-pocket healthcare expenditure from 64% to 32% within 2032 to achieve universal health coverage (UHC). Many countries, including Bangladesh, have set UHC as a priority in their health sectors for equitable health access. The UHC target states that all citizens should access healthcare at affordable costs without any financial hardship (WHO, 2019). But the lack of proper financial risk protection mechanism triggers individuals to fall in financial crisis. Globally about 11.7% of the world's population suffer from catastrophic healthcare expenditure annually and around 1.4% of

individuals fall into poverty because of such expenditure (Wagstaff et al., 2020.) An empirical study on financial risk protection of universal health coverage found that about 3.5% of total population in Bangladesh fell into poverty annually due to out-of-pocket payments for healthcare (Khan & Ahmed, 2017). Hence, it is urgent to develop and implement alternative healthcare financing mechanism in Bangladesh as soon as possible.

Another possible way to reduce the heavy reliance on the out-of-pocket payment mechanism is to introduce a cost-effective way such as meditation, yoga and scientific food habits on a large scale to people. One study examined the changes in physician costs among meditation practitioners and non-practitioners in Canada utilizing a quasi-experimental study design. The researcher assessed the patterns of the government payments to physicians for treating the experimental and control groups. He found that the meditation practitioner groups' mean payment decreased by $ 44.93 annually, but he found no significant changes in the control groups' mean payment for the study time period (Herron, 2011). So, mediation practice may contribute to lessening the out-of-pocket burden on the patients in case of Bangladesh also.

Moreover, meditation has been encouraged to get relief from stress and to be relaxed for hypertension patients in the national guideline for management of hypertension in Bangladesh prepared by the Government of the People's Republic of Bangladesh (NGMHB, 2013). More publicity and implementation of meditation and yoga may reduce the higher out-of-pocket healthcare expenditure in Bangladesh which will be a new research field for researchers, academicians and especially for health economists.

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