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Out of pocket expenditure of coronary heart disease patients in selected tertiary care hospital of Bangladesh

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ABSTRACT

The purpose of the study was to estimate the amount of out of pocket expenditure in case of coronary heart disease patient. A descriptive type of cross sectional study was conducted on 204 coronary heart disease patients admitted and currently treated for, in-patient department in coronary unit of Shaheed Ziaur Rahman Medial College Hospital, Bogura. Data were collected by using pretested semi structured questionnaire. The study conducted from January 2020 to December 2020. Data were analyzed by statistical package for social science (SPSS) version 26. Majority of the respondent age were in between 40-55 years. Most of them were male and in service group. In both sex 38.2 % were AMI (Acute Myocardial Infarction), 16.7 % were STEMI (ST-elevation myocardial infarction) and majority of the respondents were suffered from AMI as the first attack (56.2%). Among them 52.5% were spent money from savings, 21.1% have to sell property for treatment, none of them under coverage of any insurance or social financial safety. Medicine cost was low as because of most of the costly and cardiac medicines are supplied by the government. 51.5% respondents paid no money for medicines, average cost of medicine was 204.66Tk. Average cost of investigation was 1318 Tk, average cost of food 427.94Tk. Most of the respondent reached to the hospital by CNG and the average transport was 2008.92Tk and mean unofficial payment was 87.09Tk. There was no bed charge as all the patients stayed in nonpaying bed for continuous observation. According to this study the minimum total medical cost was 325Tk and maximum were 4525Tk, median total medical cost was 1425Tk, and median total non-medical cost was 1280Tk. Minimum total out pocket expenditure was 575Tk and maximum was 11525Tk. The median out of pocket expenditure was 2975Tk. The association between out of pocket expenditure and education of the respondents was statistically significant ($p<0.05$).This study provides some insight into the OPE in the cardiac unit of SZRMCH, Bogura which might be helpful in developing a strategy to minimize the OPE in cardiac unit.

INTRODUCTION

Out of pocket expenditures (OPE) has been defined as any direct outlay by households, including gratuities and in kind payments, to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups.

Out-of-pocket expenditures for healthcare continue to be the most significant means of healthcare issue in the developing world and constitute a large share of their living financial plan (Van Doorslaer et al., 2006). The healthcare expenditures are largely unpredictable and usually have a negative impact on the poor households, while large expenditures have catastrophic impacts on household welfare. A sudden serious feature of the illness deceits in the critical susceptibility of the poor to an unexpected and unforeseen healthcare related vulnerabilities, increased indebtedness due to income loss, and even employment. Thus, the illness and its related caring expenditures and consequent impacts can severely disrupt living standards (MoHFW, 2010).

Out-of-pocket healthcare expenditures of households in Bangladesh comprise 64.3% share of the total health expenditure and collectively

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spent approximately Taka 103.46 billion (US$1.49 billion) in yearly on health (Begum et al., 2002).

Nearly 62% of the healthcare expenditure is on purchasing drugs and medical consultations (Huq et al., 2015). Households also spend a significant portion of its income on transportation is about 6.2% related to healthcare services and facilities (i.e. ambulance/car rental). It is observed that a household, on an average, spends 7.5% of its total income for and the poorest 20% spent approximately 13.5% of their income for purchasing health care (Huque et al., 2011). The Out of Pocket healthcare expenditure sufficiently expensive as 25.5% of the population in Bangladesh is below poverty line (Kabir et al., 2002). Healthcare expenditures add another 4.2% population yearly (5.8 million people) to the extreme poverty. In absolute terms, the poverty impact of Out of Pocket expenditures for health care is substantially worse where the rates of poverty are higher and Out of Pocket health care expenditures have the most devastating impact and causes considerable financial risk. If this burden can be relieved by pointing and provisioning of public healthcare system, this would substantially mitigate the effects on poor households and poverty.

How to reduce the expenditures and decrease the share of household living standards is a fundamental question (Garg et al., 2005). Appropriate attention has hardly been given in Bangladesh to recognize the linkage between health, healthcare provision and poverty, which could be the basis for the public investment policies on the condition of health and living standard. CVD is the number one killer worldwide (WHO, 2015). According to the World Health Organization (WHO), 17.7 million people died from CVDs in 2015, representing 31% of all global deaths, a number that is expected to grow (Smith et al., 2012). Populations most affected are from low- and middle-income countries like Bangladesh, where 80% of these deaths occur (Laslett et al., 2012). In these countries, the projected cumulative economic losses from all non-communicable diseases will be $7.28 trillion from 2011 to 2025 and CVD will account for nearly half of this projected loss (Tytel et al., 2012). Against this backdrop, CVD is considered as a major public health concern worldwide. Bangladesh has experienced a significant increase in the prevalence of non-communicable chronic diseases and associated mortality in the last few decades. A rapid urbanization took place in Bangladesh in the past few decades due to its fast economic growth, and recently, it has emerged as a developing country (Saquib et al., 2012). The results of this growth and urbanization increase the concern that a further rise in the chronic disease burden may be seen due to habituation of a sedentary life style (changing food habits including growing access to and demand for processed food, inconsistent meal times and reduced physical activity) (Misra et al., 2007).

Households are the main source of financing for health care in Bangladesh, comprising 64% (BDT 103.459 billion) of Total Health Expenditure (THE) in 2007, growing from 57% in 1997. Household expenditure have been raising progressively as a share of GDP, from 1.5% in the late 1990s to slightly over 2% in recent years. Health services in Bangladesh remained predominantly financed by households OPES. OPE grew at 14% annually, faster than the annual growth rate of THE (12.7%) and GDP (10%).The growing reliance on OPE leaves the population at risk. But according to Bangladesh Household Income and Expenditure survey 2010, 63% of the medical expenses are beard by the patient and according to World Bank (2014) it is 67%, which is out of pocket expenditure.

This study was intended to find out the Out-of-Pocket Expenditure incurred by the patients admitted at coronary unit of Shaheed Ziaur Rahman Medical College Hospital, Bogura with the following objectives-

a. To identify the socio- demographic condition of the coronary heart disease patients.
b. To find out the type of coronary heart disease among the respondents.
c. To find out the type of treatment received by the coronary heart disease patient.
d. To calculate the medical costs incurred by the coronary heart disease patient.
e. To estimate the non-medical cost incurred by the coronary heart disease patient.

MATERIALS AND METHODS

The study

The study was conducted on coronary heart disease patient in Shaheed Ziaur Rahman Medical College for one year period starting from January 2020 to December 2020.

Sampling

Convenient type of sampling technique was applied for selection of required number of sample. A semi-structured questionnaire was developed through different stages of cross –check and analysis and that was used to collect the data from the respondents. The questionnaire was prepared by using selected variables according to objectives. The questionnaire was pretested in 250 Bedded General Hospital, Naogaon.

Data collection

Data were collected by face to face interview in Bangla. For the type of coronary heart disease and other information, the patient history file and other medical records were verified. At first permission was taken from the local authority of the study hospital. Then the purpose of the study was explained to the respondents and written consents were obtained from each respondent. It was made clear to the respondents that they had liberty to answer or not to answer any question. The assurance was given that all information would be kept confidentially. The participation and contribution were acknowledge with due respect. The data were checked and edited manually and verified before tabulation. Data were coded, entered and analyzed in the computer. The statistical analyzed was conducted using SPSS (statistical package for social science) version 26 statistical software.

Ethical consideration

The protocol was approved by protocol approval committee of NIPSOM. Ethical clearance for the study was obtained from the Institutional Review Board (IRB) of NIPSOM. Informed written consent was taken from each and every participant. Privacy and confidentiality was maintained strictly. There was no harm to the respondents as no invasive procedure was done. Participants had all rights to withdraw from the study. The data would not be used to another study.

RESULTS

The respondents were grouped into 5 different groups. Among them 40.7% were in age group 40-55 years, 39.7% were in 56-70 years age group, 14.7% were in 26-40 years age group, 2.5% were in 10-25 years group and 2.5% were 71-85 years age group. Regarding the age group mean age with (± SD) 53.40 ±11.871, Median 55, Mode: 50, where Minimum age was 22 years, Maximum age was 85 years (Table 1).

Table 1: Distribution of the respondents according to their age (n=204)

Characteristics		Percent
Age group (in years)	10-25	2.5
	26-40	14.7
	40-55	40.7
	56-70	39.7
	71-85	2.5
Sex	Male	75.5
	Female	24.5
Religion	Muslim	91.2
	Hindus	8.8
Marital Status	Married	86.3
	Unmarried	3.9
	Widow	2
	Divorced	7.8
Residence	Urban	52.5
	Rural	47.5

Among the patients 75.5% were male and 24.4% were female, 86.3% were married, 7.8% were divorced, 3.9% were unmarried and 2% were widow. It was found that 52.5% of the respondents were live in urban area and rest 47.5% were living in rural area. Most of the respondents (22.1%) were graduates followed by non educated (21.6%).

Data also showed that 23.5% respondents were in service, 21.6% were housewife 18.6% were engaged in agriculture work, 16.2%, were doing

business, 7.4% were day laborers, 6.4% were unemployed and others, 4.4% were retired and 2% were student.

Most of the patients were from middle income (25,000-35,000 Tk/month) families

Table 2: Distribution of the respondents according to duration of disease (n=204)

Duration of disease	Frequency	Percent
First onset	115	56.2
1 – 3 months	15	7.4
3- 6 months	20	9.8
6- 9 months	13	6.4
9-12 months	41	20.2
Total	204	100

It was observed that 56.2% of the respondents were in first onset of the disease, 20.2% were suffered for 9- 12 months, 9.8% were suffered for 3-6months, and 7.4 % were suffered for 1-3months and 6.4 % suffered for 6-9 months from coronary heart disease (Table 2).

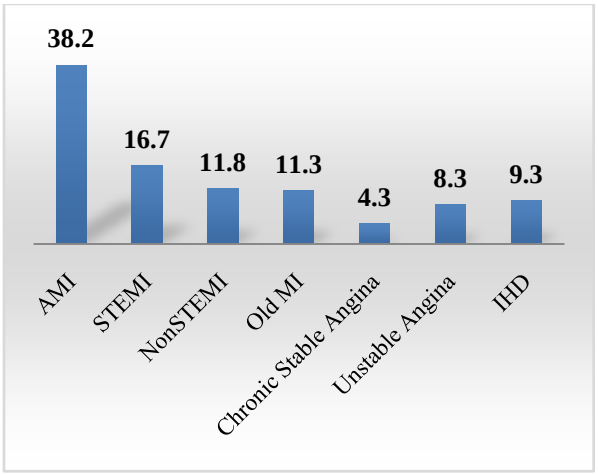

Figure 1: Distribution of respondents according to common type of CHD in male (n=154)

Among different type of coronary heart diseases 38.2% were AMI,16.7% were STEMI, 11.8% were Non STEMI, 11.3% were Old MI, 9.3% were IHD, 8.3% were Unstable angina, rest 4.3 % were Chronic stable Angina (Figure 1).

The money expended by the patient family mostly (52.5%) from their savings followed by property sells or borrowed from others (Table 3).

Table 3: Distribution of the respondents according to source of money for treatment (n= 204)

Source of money	Frequency	Percent
Savings	107	52.5%
Borrow from others	40	19.6%
Land sell	9	4.4%
Bank loan	4	2.0%
Property sell	43	21.1%
Others	1	0.5%
Total	204	100%

It was observed that on an average each patient expended 1324.29±704.36 for their routine investigation purpose. They expended average 204.66±265.718 Tk monthly for purchasing medicine, 427.94, SD±335.654 Tk for food. Most of the patients use CNG (42.6%) for transportation followed by Ambulance (22.1%). The average transportation cost for disease purpose was 2008.92±2222.45 per month.

Table 4: Distribution of the respondents by loss of income of the attendants (n=33)

Loss of income of attendants	Frequency	Percent	M±SD
Up to 1500Tk	15	45.45	2145.45 ±1599.04
1501-3000Tk	11	33.33	
>3000Tk	7	21.21	
Total	33	100	
Minimum loss 500Tk, Maximum loss 5000Tk			

Table 4 shows 33 respondent's attendants incurred loss of income during their stay in the hospital. The income loss was in between ±1500Tk among 45.45%, 1501-3000Tk in 33.33% and was more than 3000Tk in 21.21% attendants. The minimum loss of income was 500Tk, maximum loss was 5000 Tk. The mean loss with SD was 2145.45±1599.04.

Table 5: Distribution of the respondents by cost for unofficial payment

Cost of unofficial payment	Frequency	Percent	M±SD
≤100	160	78.4	87.09 ±73.48
101-200	37	18.1	
201-300	6	2.9	
>301	1	0.5	
Total	204	100	
Minimum cost 00Tk, Maximum cost 350Tk			

Table 5 shows the unofficial payment by the respondents during admission in the hospital. The cost was in between ≤100Tk among 78.4%, 101-200Tk among 18.1%, 201-300Tk in 2.9% and >301Tk among 1% of the respondents.

Table 6: Distribution of the respondents according to their medical cost (n=204)

Medical cost	Frequency	Percent	M±SD
≤ 1000	51	25	1425±745.18
1001 - 2000	100	49	
2001 - 3000	45	22.1	
3001 – 4000	5	2.5	
> 4001	3	1.5	
Total	204	100.0	
Minimum: 325, Maximum: 4525			

Table 6 reveals that the distribution of the respondents according to their total medical cost. Among in which 49% were expended 1001-2000Tk, 25% expended ≤ 1000Tk, 22.1% expended 2001-3000Tk, 2.5% expended 3001-4000Tk, 3% expended above 4001Tk, Median 1425, SD ± 745.18, Minimum: 325 and Maximum: 4525.

Table 7: Distribution of the respondents according to their non -medical cost (n=204)

Non-Medical cost in(Tk)	Frequency	Percent	M±SD
≤ 2000	134	65.7	1280 ±2455.61
2001– 4000	15	7.4	
4001 – 6000	27	13.2	
6001– 8000	21	10.3	
8001+	7	3.4	
Total	204	100.0	
Minimum: 100, Maximum: 9250			

Table 7 reveals that the distribution of the respondent according to their Non-medical cost. 65.7% were expended ≤2000Tk, 13.2% were expended 4001-6000Tk, 10.3% were expended 6001-8000Tk, 7.4% were expended 2001-4000Tk, and 3.4% were expended >8000Tk, The Median with SD1280 ±2455,61. Minimum: 100Tk, Maximum: 9250Tk.

Table 8: Distribution of the respondents according to their total out of pocket expenditure (n=204)

Out of Pocket Expenditure	Frequency	Percent	M±SD
≤ 2000	55	27.0	2975± 2689.93
2001 - 4000	76	37.3	
4001 - 6000	26	12.7	
6001 - 8000	20	9.8	
8001-10000	22	10.8	
Above 10000	5	2.5	
Total	204	100.0	
Minimum: 575, Maximum: 11525			

Table 8 reveals that the distribution of the respondent according to their total out of pocket expenditure. Among in which 37.3% were expended 2001-4000 Tk, 27.0% expended ≤ 2000Tk, 12.7% were expended 4001-6000 Tk,10.8% were expended 8001-10000Tk, 9.8% were expended 6001-8000Tk and 2.5% expended above 10000Tk. Median: 2975, SD: ±2689.93, Minimum: 575 and Maximum: 11525.

Table 9: Association between socio-demographic status and out of pocket expenditure status of the respondents (n=204)

Socio-demographic status	Total out of pocket expenditure			Test statistics
	≤4000 f (%)	4001-8000 f (%)	8001+f (%)	
Age (in years)				
≤ 25	2 (1.5)	2 (4.3)	1(3.7)	Fisher's Exact Value = 2.747 p=0.569
26-55	70 (53.4)	27(58.7)	14 (51.9)	
>56	59 (45.0)	17(37.0)	12 (44.4)	
Educational status of the respondents				
No formal education	37 (28.2)	4 (8.7)	4 (14.8)	$\chi2$=8.517 df=2 p=0.014
Educated	94 (71.8)	42 (91.3)	23(85.2)	
Occupational status of the respondents				
House wife	33(25.2)	7(15.2)	4 (14.8)	$\chi2$= 4.135 df=4 p=0.388
Agricultural worker	23 (17.6)	8 (17.4)	3 (11.1)	
Others	75 (57.3)	31 (67.4)	20 (74.1)	
Gender Of the respondents				
Male	97 (74.0)	35 (76.1)	22 (81.5)	$\chi2$=0.680 df=2 p=0.712
Female	34 (26.0)	11 (23.9)	5 (18.5)	

Table 10: Association between span of hospital stay and total out of pocket expenditure

Characteristics	Total out of pocket expenditure			Test statistics
Span of hospital stay	≤4000 f (%)	4001-8000 f (%)	8001+ f (%)	Fisher's Exact Value = 4.189 p=0.334
Less than 3 days	67(51.1%)	25(54.3%)	9 (33.3%)	
4-6 days	61(46.6%)	20 (43.5%)	18 (66.7)	
>6 days	3 (2.3%)	1 (2.2%)	0(0.0%)	

Table 9 shows that the association between socio-demographic status and out of pocket expenditure of the respondents. Among respondent's age $p>0.05$, respondent's education $p<0.05$, respondent's occupation $p>0.05$, respondent's gender $p>0.05$

Table 10 shows that the association between span of hospital stay and total out of pocket expenditure $p>0.05$.

Table 11: Comparison of mean of out of pocket expenditure by gender of the respondents

Gender of the respondents	Mean	SD±	Test statistics
Male	4192.46	±2768.68	t=1.213 df=202 p=0.227
Female	3662.00	±2413.38	

Table 11 shows that mean out of pocket expenditure for male mean with SD±:4192.46, ±2768.68, and female mean with SD±:3662.00, ±2413.38, No statistical differences were found between average out of pocket expenditure and gender of the respondents ($p>0.05$).

DISCUSSION

In the present study the selected criteria were socio-demographic condition, type of coronary heart disease, some variables related to medical and nonmedical cost. Based on the findings, the respondent's ages were categorized into 5 different groups. Among them 40.7% were in age group 40-55 years, 39.7% were in 56-70 years age group, and 2.5% were 71-85 years age group, mean age with (± SD) 53.40 ±11.871, where minimum age was 22 years, maximum age was 85 years. This

study was comparable with the study done by (Tolla, et al., 2017). By the gender 75.5% were male and 24.5% were female are affected by CHD, which states male are more vulnerable for the disease. This study was comparable with the study done by (Khanam, et al., 2019).

Out-pocket payment is an important component for healthcare funding but such mechanism do not contribute to equity in financing system (Bultman, et al., 2012). But rather it increases the gap of access to healthcare services due to income differences among individuals respondents were divided into 7 groups according to their income range where 26.0% were in the group of 25,001-30,000Tk, 22.1 % in the group 30,001–35,000Tk and 7.9% in the group above 40,001TK per month were the highest income group. 57.4 % respondents have 3-5family members in their house. Most of the family (56.4%) have single income generating member and next comes 38.7% have two earning members in the family. 31.9% were in the group of 25,001-30,000Tk, 19.6% in the group 35,001–40,000Tk and 5.4% in the group of 15,001- 20,000Tk per month spend for their living purpose. In Pakistan, (Zaidi et al., 2012) families still really overwhelming on an income of single earning member. This is usually the male member of the house, who are the main income source in their families which comparable to our study.

The association was not statistically significant between socio-demographic status and out of pocket expenditure of the respondent with age, gender, occupation ($p>0.05$). Similar to the study done by (Zaidi et al., 2012) but association between occupation and out of pocket expenditure of the respondents were statistically significant ($P<0.05$).

The incidence of coronary heart disease increases after age 40 years and most prevalent in the age 40-55 (40.7%) years. But the most prevalent group was 61-75 (average 60) years in the study done by Ding, et al. (2017).

Among different type of coronary heart disease 38.2 % were AMI, 16.7 % were STEMI, 11.8 % were Non STEMI, 11.3% were IHD, 9.3% were Unstable Angina, 8.3 % were Old MI, rest 4.3 % were Chronic stable Angina. This result is similar with the study done by Islam et al. (2016) where Myocardial Infarction is the major cause of admission in a tertiary level hospital. In another study done by Jan et al. (2016) where STEMI is the first cause of admission in the hospital.

The duration of disease is divided in to 5 categories. Among them 56.2% of the respondents were in first onset of the disease and 6.4 % suffered for 6-9 months from coronary heart disease. Among all the respondents 49.5% were stayed in the hospital for ≤ 3 days and 4% for 7-10 days. Ding et al. (2017) done a study on coronary heart disease where (34.0%) of the stayed in the hospital for ≤ 3 days.

Major sources of financial burden include spending on direct medical costs (eg, consultation fees, drugs, laboratory and hospital bed days), direct non-medical costs (eg, transportation) and indirect costs (eg, lost income due to lost productivity by patients and their attendants) (Tolla et al., 2017). The patients who are admitted in cardiac unit, all have to stay in nonpaying bed for constant observation by the doctors and nurses. So, they have no payment for the bed charges. In my study 51.5% respondents were expended no money for medicine and 11.8% were expended 501-1000Tk per admission which is only possible because of our government efforts. In the cardiac unit of Shaheed Ziaur Rahman Medical College Hospital, Bogura (SZRMCH), most of the cardiac medicines are supplied by the hospital including all the expensive medicines like Inj. streptokinase and enoxaparin sodium which is extremely needed for the AMI patients. The cost of one vial streptokinase is approximately 6000Tk and enoxaparin sodium is approximately 500Tk. Only the respondents have to buy the non-cardiac medicines which are not available in the hospital. This result cannot comparable with any study.

For routine investigation purpose 72.6% respondents expended 500-1500Tk, 2.5% respondents expended 2501-3500Tk and the mean cost was 1324.29Tk. Due to the corona pandemic, only blood investigations, ECG and Echo cardiography are done in the hospital. Coronary angiography or Percutaneous Transluminal Coronary Angioplasty is not done. Coronary

Artery Bypass Grafting (CABG) was not done at Shaheed Ziaur Rahman Medical College Hospital, Bogura (SZRMCH). If CABG is extremely needed for the patient then referred to the specialized cardiac hospital, which increases OOPE.

The source of money which spent for treatment purpose was 52.5% from savings and 21.1% from property sell, 19.6% borrow from others, 4.4% from land sell, 2.0% bank loan. As most of the respondents are from middle income family it is a great burden to bear the treatment cost.

In the government hospital food was supplied for the patients. 37.3% of the respondent spent ≤250Tk and 36.8% were spent 251-500Tk for food. And the patients nearby the hospital bring their food from house, that cost could not be calculated.

For transportation 42.6% respondents reached the hospital by CNG, 22.1% by Ambulance. Money spent for transportation in which most of them (58.3%) expended ≤1000Tk where mean cost was 2008.92 Tk with minimum 60Tk and maximum 8000Tk. Here there is a far difference between minimum cost and maximum cost because local patient near to the hospital came to the hospital by rickshaw but the patient from another district came by ambulance/micro/CNG. This cost including reached to the hospital and return to home. There is increasing inequality in service availability between rural and urban, as well as between the rich and the poor. This is a big discrepancy among the health services in Bangladesh too. For good and efficient service patient have to travel from rural to urban and to tertiary level hospital some services are largely available in some regions but here the patient pay their own cost. It's a high cost of travel expenses. If Government ambulance would be more available then the cost will be reduced.

When patient admitted in the hospital 56% respondents incurred loss of income during their stay in the hospital. The income loss was in between ≤3000Tk among 69.64%, 3001-6000Tk in 19.64% and was more than 6000Tk in 10.71% respondents. The minimum loss of income was 200 Tk, maximum loss was 1500 Tk.

This unofficial payment includes money given to the security guard and tips given to the ward boy or aya.

Since the main aspect of the study was to find out the cost of treatment of the cardiovascular patient, the cost was identified as direct cost and indirect cost as well as medical cost and non-medical cost.

The total medical cost includes medicine cost and investigation cost, in which 49% respondent were expended 1001-2000Tk, 25% expended ≤ 1000Tk, 22.1% expended 2001-3000Tk, 2.5% 3001-4000Tk, 3% expended above 4001Tk, Mean 1425, SD ± 745.18, Minimum: 325, Maximum: 4525.

The non-medical cost includes food cost, transport cost and unofficial payment by the respondents. 65.7% respondents were expended ≤2000Tk, 13.2% were expended 4001-6000Tk, 10.3% were expended 6001-8000Tk, 7.4% were expended 2001-4000Tk, and 3.4% were expended >8000 Tk, The median with SD 1280 ±2455,61 with minimum: 100Tk, maximum: 9250Tk. In a study of pediatric surgery in Bangladesh (Banu et al., 2018) the mean non-medical cost was $31.93 (Tk. 2714) which is closer to this finding Non-medical cost is higher than the medical cost because of the transportation cost. If transportation cost and unofficial payment cost can reduce then the non-medical cost can be also reduced.

The total out of pocket expenditure among the respondents in which 37.3% were expended 2001-4000 Tk, 27.0% expended ≤ 2000Tk, 12.7% were expended 4001-6000 Tk,10.8% were expended 8001-10000Tk, 9.8% were expended 6001-8000Tk and 2.5% expended above 10000Tk. Median: 2975, SD: ±2689.93, Minimum: 575, Maximum: 11525. The study revealed that none of the respondents were covered by social financial safety or insurance coverage. All respondents need to pay from their own pocket.

CONCLUSION

Coronary heart disease is a leading public health problem worldwide in terms of the economic burden from disease. In this study we found that majority of coronary artery disease affected people

were in service groups. So that our economic growth is largely hamper in personal and national level. All the patients received only medical treatment because of corona pandemic. The major contributors for medical cost were medicine cost and investigation cost while non-medical costs includes food costs, transport cost and unofficial payments. Cost of medication was low because of Government supply. Non-medical cost was higher than medical cost because of the transport cost. Shortening the length of hospital stay is an important method of reducing medical expenses. Significant relationship was found between OPE with education status of the respondents. Future in-depth studies may be done to explore the association of other factors with OPE among the patients in cardiac unit. This study will provide valuable information about OPE which will help policy makers for future improvement.

Recommendations

Out of Pocket expenditure is increasing day by day. As our country is a developing country catastrophic of coronary heart disease expenditure can be reduced by following recommendations:

1. Implementation of health insurance may reduce OPE.
2. Medical College Hospitals should ensure all the investigation facilities available and at minimum cost.
3. Establishment of proper referral system may reduce the expenditure burden.
4. Government ambulance service should be available for the referral patients.
5. Proper monitoring by the hospital authority will help to reduce unfair transaction for unofficial cost which will produce a positive change in out of pocket expenditure.

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