IOSR Journal Of Humanities And Social Science (IOSR-JHSS)
Volume 23, Issue 1, Ver. 9 (January. 2018) PP 70-84
e-ISSN: 2279-0837, p-ISSN: 2279-0845.
www.iosrjournals.org

Household's Coping Mechanisms of Out-of-Pocket Expenditure on Health Care: a Case Study of Assam, India

Joel Basumatary[1] Prof. Nirankar Srivastav[2]
[1,2] *Department of Economics, North Eastern Hill University, Shillong-793022, Meghalaya, India*
Corresponding Author: Joel Basumatary

Abstract: Hitherto many countries especially the developing and underdeveloped countries depend on out-of-pocket (OOP) to finance the health care of the citizens. However, many households fall into poverty trap and become debt ridden due to huge OOP expenditure. Not every household can finance the OOP expenditure from current income and savings. Therefore, households have to either borrow or sell assets to make the expenditure. Knowledge on coping mechanisms of health care cost provides important information on how households respond to health shocks and how expenditure may affect their future welfare. The objective of this paper is to explore how households in rural Assam cope with, or arrange the necessary resources to pay for the OOP expenditure. This will give knowledge on how strategies differ between financing inpatient care and outpatient care and between different demographic and economic categories of the households.
Multinomial logistic regression has been used to look into the determinants of type of coping mechanisms households use. It has been found that current income and savings is the major means of coping mechanisms although this is mostly used by the non-poor households. The poor households mostly resort to borrowing from village funds.

Keywords: Out-of-Pocket, Health Care Coping Mechanism, Assam, Outpatient Care, Inpatient Care. Borrowing, Current Income and Savings

---

Date of Submission: 12-12-2017 Date of acceptance: 01-01-2018

I. INTRODUCTION

Out-of-Pocket (OOP, henceforth) expenditure for health care can cause households to incur catastrophic expenditures, which in turn can push them into poverty and those who are already poor pushed deeper into the pool of poverty. The need to make OOP expenditure could also result the households to avoid medical check-up or treatment, when they face health shocks. Many countries, notably the developing and underdeveloped countries rely heavily on OOP expenditure. Not every household, however, is capable of paying from its current income or savings. Thus, many have to either borrow or sell assets to make the expenditure. Some of the coping mechanism is economically catastrophic. For instance, borrowing could make a household debt ridden. Furthermore, households which sold their assets deplete their future earning, especially the assets like cattle or land in the rural areas. However, people are not in a position to meet those untoward expenditures, nonetheless, they are forced to pay for it, to protect their health and wealth, lest they would become poorer, especially when the head of the family face the health shocks. Therefore, it is important to investigate and understand how households arrange the resources to pay for OOP expenditure on health care. Health care coping mechanisms refer to ways in which households respond to shocks from the expenditure mechanisms used to pay for health services e.g. use of own money, borrowed money, sale of assets and the like. In many cases, use of adverse coping strategies for common illnesses is quite common. For instance, households use coping strategies such as, sale of assets, borrowing, and reduction in household consumption, which have the potential to adversely affect the economic wellbeing of the incurred households. As a result, households face long term debt, and some are pushed into debt trap (medical debt) and consequently into poverty trap. Knowledge on coping mechanisms of health care cost provides important information on how households respond to health shocks and how expenditure may affect their future welfare (Leive and Xu, 2008).The purpose of this paper is to explore how households in rural Assam cope with, or arrange the necessary resources to pay for the OOP expenditure. This will give the knowledge on how strategies differ between financing inpatient care and outpatient care and also amongst the different demographic and economic categories of the households. Coping mechanisms could be categorized into two; one, coping mechanism of financial costs (direct cost) and coping mechanism of time costs (indirect cost). Indirect costs like lost production due to illness were excluded from this study because it measures the impact of illness on household income, rather than the financial impact of seeking care.

This paper is arranged as follow: this introduction is followed by a review of literature on the similar studies; the third section is the data and methodology used; the fourth section is the results and discussion where discussion on coping mechanisms employed by the households and the multivariate results employed to look into the determinants of the type of coping mechanism employed by the households are shown; and the last section is the conclusion.

II. LITERATURE REVIEW ON SIMILAR STUDIES

Households accept to trade future welfare of all its members against access to health care for one of them, perceived as essential for survival (Damme et al., 2004). Therefore, future welfare is put at risk by incurring debts, selling off productive assets, or sacrificing investment in future productivity like children's education (Whitehead et al. 2001). Such type of coping mechanisms can trigger a vicious circle of impoverishment and further indebtedness (Wilkes et al. 1998). Following are some of the studies on OOP expenditure coping strategies. Sauerborn et al. (1996), Karbir et al. (2000) and Leive and Xu (2003) Damme et al. (2004) and Daivadanam et al. (2012) found that using loans as the means of paying for OOP expenditure. Sauerborn et al. (1996) further found that cash and mobilizing savings, sale of assets, income diversification, wage-labour, and gifts or aid from extended kins as the strategy to cope with OOP expenditure.Kabir et al. (2000) also found reduction in household expenditure to be the second most important response for the people. Diversifying income sources like current workers working for longer hours, new individual of the family entering into workforce, non-work related income generating strategies are also followed. High proportions of the households are found to be accessing to household savings to finance their health care cost, though households rarely have savings with the formal banking system. However, sale of assets was found to be relatively less utilized compared to other means. Returning to the rural home is another strategy to cope with the treatment cost and gifts and help either in cash or in kind from the relatives and employers is another important strategy used by the bustee (rural) dwellers. However, this strategy is found to be more important for the poorest households than the better off households. In Kyrgyzstan, one in three patients reported borrowing money for inpatient care, and in rural areas, 45 per cent of in-patients sold produce or livestock to cover hospital costs (Allin et al. (2005). McIntyre et al. (2005) found that most often the immediate response to finance medical expenses are available cash and mobilization of savings, though only few proportions of household could resort to this mechanism. Sale of assets and borrowing are also found to be the popular strategies of financing medical expenses, which are very impoverishing for the households especially when household sell assets like cattle and land. Leive and Xu (2007) found that intra-household labour substitution as the commonly employed strategy to cope with both the direct and indirect costs of illness. Sometimes, households reduce their spending on food, housing, and education especially when the OOP is at the highest level. Leive & Xu(2008) studied the coping strategies adopted by the 15 African countries in their work coping with out-of-pocket expenditure. It is found that higher inpatient spending was associated with a greater likelihood of borrowing and selling assets. Households with the highest level of inpatient spending were at least 10% more likely to borrow and sell assets than those that made no out-of-pocket expenditure for inpatient care was found in 11 out of 15 countries. It is also found that the richest households are always less likely to borrow and sell assets to finance the health care than the poorest households. Onwujekwe et al. (2010) investigating determinants of out-of-pocket spending and strategies for coping with expenditure for healthcare in southeast Nigeria found that the use of own money as the commonest expenditure-coping mechanism in the three communities followed by borrowed money. The sale of movable household assets or land was not commonly employed while fee exemptions and subsidies were almost non-existent as coping mechanisms. Skordis-Worrall et al. (2011) examined the maternal and neonatal health expenditure in Mumbai slums of India, where they found that 57.46 per cent of the cost of maternal and neo-natal care was financed with savings. 39.14 per cent from current income of wage and salary, and borrowing to be around 17.41 per cent. In order to cope with the OOP expenditure on health care, around 4.2 per cent of households borrowed money, and sold or mortgaged their assets (Bhojani et al., 2012). Daivadanam et al. (2012) in catastrophic health expenditure & coping strategies associated with acute coronary syndrome in Kerala, India found that the coping strategies adopted by the participants were loans (41%), savings (14%), health insurance (8%) and a combination of the above (37%). Thus, loans were found to be a predominant coping strategy for OOP expenditure and it was found to be used by all socio-economic strata. Further, 37 per cent (n=78) used a combination of loans, savings, gifts, insurance, *etc*. Ezeoke et al. (2012) found that people in Southern Nigeria coped with expenditure using their own money. It is also found that the urban people borrowed more than the rural people to pay for health care. It could be because in the rural areas there are lesser means to borrow money from and also could be because they (rural) people have less capacity to borrow due to lack of collateral security to provide for the loans than the urban counterparts. Ewelukwa et al. (2013) found use of own money as the main strategy to cope with the OOP expenditure for health care amongst the poorest income quintile which was followed by coping strategies like use of borrowed money, sale of moveable assets and family land, subsidy, deferred expenditure, community solidarity and exemptions in Nigeria. Etiaba et al.

(2015) found that 79.5 per cent of the households used their household's savings in Nigeria. 22.5 per cent of the households reduced other household expenses to finance the health care expenditures especially more in the average households. Hoque et al. (2015) found that richer households depended mainly on income and savings to incur the maternal healthcare cost in rural Banlgadesh. Likewise, households in which the husband had a regular salary and the woman was well educated relied on income and savings to a greater extent. For instance, 28% severe morbidity group of households financed the OOP expenditure using only loans. Approximately, two-fifths of households completely relied on loans, donations, or the sale of assets or a combination of all three sources. Kruk et al. (2017) found that one in four families across forty developing countries resorted to borrowing or selling assets or combination of borrowing and sell of household assets. This manifests that in the developing and less developed countries, still health care systems are not calibrated to protect the households from potential economic hardships of health care costs. There are only few studies available in India on coping mechanism. However, there is no study available in the rural areas and north eastern part of the country. Furthermore, even though the health care cost coping mechanisms has been studied widely in the world over, there is a dearth of literature on coping mechanism by type of health care viz., inpatient (IPD) and outpatient (OPD). Therefore, this study tries to fill this gap.

III. DATA AND METHODOLOGY

Study setting

The primary data has been collected from the rural Chirang district located in Assam. The survey started in the summer of 2015 i.e., July, 2015 and ended in December, 2015. Chirang district is bounded by Bhutan on the north, by Kokrajhar district on the west, Bongaigaon district on the south and by Baksa district on the east. For the livelihood people mainly depend on agriculture (more than 70%), and other activities like fishing, small businesses, construction works, government jobs etc. This district has the highest percentage of households living below the poverty line (India Census, 2011).

Method of Data Collection

As per the prevailing institutional arrangement in the study area, it is mandatory to meet the village headman of each village selected for the survey before entering the villages. Since, prior consent has to be taken from the village headmen before entering the villages for the survey; the village headmen were explained about the purpose of the visit. Since the village headmen keep the records of all the households, it was easy to get accessed the lists of households of each selected village.

Sampling Design

From Chirang district two major development blocks i.e., Borobazar Block and Sidli Block have been selected. 16 villages and 12 villages were surveyed from Borobazar block and Sidli Block respectively. From each block 288 households were surveyed taking equal number of households from poor and non-poor type of households. Therefore, 576 households were selected. Out of these 576 households, 288 households were poor households and 288 were non-poor households. The poor and non-poor households have been determined based on the methods proposed by Dreze and Khera (2010), automatic exclusion and automatic inclusion method. However, the method has been modified to suit the study better. The proposed modification is that the automatic inclusion of Scheduled Castes (SCs) and Scheduled Tribes (ST) into poor category has been deleted, since, in the study area (focus district) majority of the population is from ST. Thus, 576 households were selected by multistage sampling method. Table 1 describes the sampling design of the survey.

Table No.1: Sample Households

	Number of Blocks surveyed		**Total**
Number of Blocks surveyed			**2**
Name of Blocks Surveyed	**Borobazar Block**	**Sidli Block**	
Number of Primary Health Centres surveyed	4	4	8
Number of Villages surveyed	16	12	28
Number of Households surveyed	288	288	576
Number of Poor Households Surveyed	144	144	288
Number of Non-Poor Households surveyed	144	144	288

Methods of Data Analysis

The type of coping strategies used by the households were clubbed into three categories viz., those which choose current income & savings, those which sold household's produce/livestock & aid from relatives, and those which choose loan or borrowed money. It is a trichotomous outcome variable, therefore, a

multinomial logistic regression was estimated. In this analysis of coping mechanisms, the original coping mechanism employed by households was categorized into four groups:

1. current income & savings,
2. sold household's produce & aid from relatives,
3. loan or borrowed money, and
4. The mixed strategy (which includes approximately the combination of all the strategies mentioned above).

However, since, the multinomial logistic regression assumes exclusivity of outcome variables; the mixed strategy had being controlled while estimating the multinomial logistic regression. Since, in the multinomial logistic regression, a baseline (reference category) is followed, the variable with the lowest frequency has been taken as the reference category (Chan, 2005). The specification of the determinants of coping mechanism for the outpatient care (OPD) health care payments model is the following:

$$\log[Pij/P_{i3}] = \beta_0 + \beta_{1j} D_{ij} + \beta_{2j} S_{ij} + \beta_{3j} X_{ij} + \beta_{4j} Y_{ij} + \beta_{5j} Z_j + \varepsilon_{2ij}$$

Where the dependent variable is the log odds that household *i* will choose coping mechanism alternative j (j=1, 2) relative to alternative 3 for the OOP expenditure on OPD, where alternative 3 is loan or borrowed money, 1 is current income & savings and 2 is sold household's produce & aid from relatives. The alternative 3 is taken as the baseline category or the reference category, because it is with the smallest frequency. In the above model, D is the disease type (communicable, chronic and others), S is the size of the household, X is the income source of the household, and Y is the household's economic status (Poor or Non-Poor), and Z is the gender of the head of household. The βs vary by type of alternative and represent the net effects of the independent variables on the probabilities of choosing the coping mechanism. The term ε_2 represents unobserved determinants of coping mechanism choice and is assumed to be independently distributed.

Likewise to construct the indicator of coping mechanisms for inpatient care (IPD), household's coping mechanism were classified into three groups-

1. current income & savings,
2. Loan or borrowed money.
3. Sold household's produce including livestock & aid from relatives

Thus, a multinomial logistic regression model used is as follows:

$$\log[Pij/P_{i3}] = \beta_0 + \beta_{1j} D_{ij} + \beta_{2j} S_{ij} + \beta_{3j} X_{ij} + \beta_{4j} Y_{ij} + \beta_{5j} Z_j + \varepsilon_{2ij}$$

Where the dependent variable is the log odds that household *i* will choose coping mechanism alternative j (j=1, 2) relative to alternative 3 for the OOP expenditure on IPD, where alternative 3 is sold household's produce including livestock & aid from relatives, 1 is current income & savings and 2 is loan or borrowed money. The alternative 3 is taken as the baseline category or the reference category because it is with the smallest frequency. In the above model, D is the disease type (communicable, chronic and others), S is the size of the household, X is the income source of the household and Y is the household's economic status (Poor or Non-Poor), and Z is the gender of the head of household. The βs vary by type of alternative and represent the net effects of the independent variables on the probabilities of choosing the coping mechanism. The term ε_2 represents unobserved determinants of coping mechanism choice and is assumed to be independently distributed.

IV. RESULTS AND DISCUSSIONS

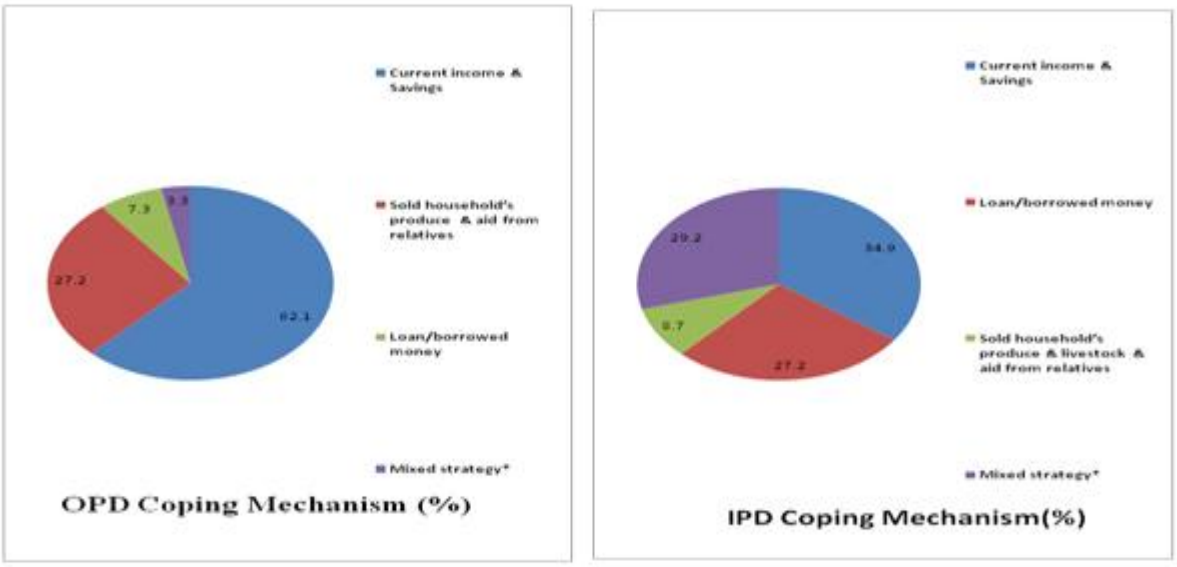
Coping Mechanisms Adopted by the Households

Coping mechanisms employed by the households in the study area has been shown from Table 7A.1 to 7A.14 and in Figure 1. Coping mechanism for the outpatient OOP expenditure is depicted from Table 7A.1 to 7A.7 and coping mechanism for the inpatient OOP expenditure is from Table 7A.8 to 7A.14 in the Appendix of this chapter. In Table 7A.1, it is shown that current income and savings is the dominant strategy employed by the households to finance the OOP expenditure for outpatient health care cost. Out of 449 households which incurred OOP on outpatient care, 62.1% of the households made OOP expenditure through current income and savings. The next strategy household employs to pay for their outpatient health care cost is the selling of household's produce and aid from relatives with 27.2% of households, and 7.3% of households employ loan/ borrow money. There are some households which employ combination of different strategies (mixed strategy) which includes current income, savings, sold household's produce, borrowed money to pay for their outpatient health care cost.

Thus, for outpatient OOP expenditure, most of the households depend on income and savings. There is also significant number of households which sold household produce, and also receive aids from their relatives. Taking loan or borrowed money to finance outpatient OOP expenditure is also found to be prevailing in the

study area, though marginally, compared to other strategies. For instance, 7.3% of households, out of 449 households solely borrowed money and financed their outpatient health care cost. Table 7A.8 shows the coping mechanism employed by the households for inpatient OOP expenditure. It is clear from the aforementioned table that, savings and current income is the dominant strategy for the households to finance the inpatient OOP expenditure. For instance, 34% of the households reported that they financed the inpatient OOP expenditure through current income and savings. Another second important strategy is the mixed strategy which includes current income, savings, sold households produce and livestock, loan and borrowed money. 29.2% of the households employed this mixed strategy. Furthermore, there is significant number of households i.e., 27.2% households which solely financed their inpatient OOP expenditure through loan/borrowed money. Thus, current income and savings is the dominant strategy employed by the households in both inpatient and outpatient OOP expenditure. Therefore, it goes in line with the existing literature, where the use of available cash and mobilize savings is the most immediate response to the financial cost of illness (Kabir et al., 1996; Sauerborn et al., 1996; Wilkes et al., 1997). It is to be emphasized; however, that although current income and savings are employed, it is the richer households which use this strategy more than the poor households. For instance, 87.5 % non-poor households used their current income and savings to finance the outpatient OOP expenditure compared to only 35.0% of poor households. Furthermore, only 2.8% poor households used current income and savings to pay for the inpatient OOP expenditure as against 64.1 % non-poor households (Table 7A.10). Therefore, this shows that the poor households have to arrange from other sources to finance their health care costs.

Figure No.1: Coping Mechanism(s) Employed by the Households (OPD and IPD)



Source: Field Survey

Borrowing money especially from the village funds which cater to the financial needs of the people in the village is another strategy to cope with the OOP expenditure for health care. This is more so, in case of inpatient OOP expenditure. For instance, 27.2% (Table 7A.8) households borrowed money to finance inpatient OOP expenditure as against 7.3% (Table 7A.1) households who borrowed money to pay for outpatient OOP expenditure. However, this strategy is mostly used by the poorer households. For instance, for outpatient OOP expenditure, 14.3% poor households borrowed from village funds and various sources as against only 0.9% non-poor households which made the borrowing to pay for outpatient OOP expenditure (Table 7A.3). Table 7A.10 further depicts that, 50.0% poor household borrowed money to pay for inpatient OOP expenditure as against only 6.4% non-poor households. Thus, poor households borrow money to finance for the health care costs more than the non-poor households. This shows that poor households have less capacity to earn and save compared to the non-poor households. Although borrowing from friends and family or from money lenders highlights the importance of social networks, the effects of loan on households can be severe and is determined by the character of the loan giver and the terms of the loan. It is to be mentioned that, in rural areas of the study area, when the borrowers are unable to repay the debt on time, the group of money lenders come to the debtor house and confiscate assets (livestock like cattle, pig etc or even land depending on the amount of debt). Some similar studies have also found that households remain in debt for a considerable time after the illness which created the debt (Wilkes et al., 1997; Mock et al., 2001). Thus, it can be concluded that in both outpatient care and inpatient care, current income and savings is mostly employed, though more by the non-poor households as against the

poor households. Borrowing is more dominant in case of inpatient than the outpatient OOP expenditure. Furthermore, borrowing is mostly employed by the poorer households compared to non-poor households both in outpatient and inpatient care. In case of inpatient care, people are more likely to employ mixed strategy compared to outpatient care. This must be because the cost is higher in the inpatient care than the outpatient care.

Multivariate Analysis

In this section, the multinomial logistic regression results of the models determining the coping mechanisms of the outpatient and inpatient health care costs have been shown. The coefficients, standard errors and the odds ratios have been displayed for both outpatient and inpatient models.

Determinants of Coping Mechanism for Outpatient Health Care (OPD)

The model summary of the multinomial logistic regression model is depicted in Table 2. It is clear from the diagnostic statistics of the model that, the final model is better than the initial intercept-only model at p=.000 (p<0.001). The Pearson chi-square statistic in the goodness-of-fit indicates that the model fits the data well at p=0.571 (which is p>0.05). In multinomial logistic regression pseudo R^2 is also considered. This pseudo R^2 of the multinomial logistic regression is similar to ordinary least-squares linear regression, which is the proportion of variance that can be explained by the model. Therefore, the Nagelkerke R^2 is 0.47. The Likelihood Ratio Tests results show that, out of five independent variables employed in the model, three variables are statistically significant.

Table No. :: 2 Model Summary of the Multinomial Logistic Regression Model (Outpatient Care)

Model Fitting Information				
Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	391.027			
Final	180.428	210.599	20	.000
Goodness-of-Fit				
		Chi-Square	df	Sig.
Pearson		96.745	100	.574
Deviance		93.655	100	.659
Pseudo R-Square				
Cox and Snell			.384	
Nagelkerke			.473	
McFadden			.290	
Likelihood Ratio Tests				
Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	1.804E2[a]	.000	0	.
Outpatient Disease Type	194.749	14.321	4	.006
Household primary Income source	222.528	42.100	8	.000
Head Gender	181.948	1.520	2	.468
Household population size	184.827	4.399	4	.355
Household Economic status	241.534	61.105	2	.000

Source: Based on Field Survey; Note: The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.
a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

Thus, the multinomial logistic regression model is reasonably good fit for estimating the determinants of coping mechanisms for the Outpatient OOP expenditure (Table 3). The results depict the effects of independent variables on the probability of choosing either the current income & savings or sold household's produce & aid from relatives vs. coping with loan or borrowed money. It is shown in Table 3 that poor households are less likely to choose current income and savings vs. loan/borrowed money and sold household's produce & aid from relatives vs. loan/borrowed money compared to the non-poor households (Odds Ratio(OR)= 0.02, p<0.001). In other words, the poor households are more likely to borrow money than use current income and sold household's produce & aid from relatives to pay for the outpatient OOP expenditure as against the non-poor households. Likewise, the households whose primary income is from retirement income are also less likely to choose Current income and savings vs. Loan/Borrowed money and Sold household's produce & Aid from relatives vs. Loan/Borrowed money compared to the type of households whose primary source of income is sale of agri-produce (OR=0.06, p<0.10). This reveals that the households whose primary source of income is sale of agri-produce choose current income & savings and Sell household's produce & access aid from relatives to pay for their outpatient OOP expenditure more than the households whose primary source of income is retirement income/pension.

Table No. 3: Multinomial logistic regression of the determinants of type of Coping Mechanisms (Outpatient (OPD))

Variable		**Outpatient (OPD)**		
		beta	Exp(B)/ORs	S.E.
Current income and savings vs. Loan/Borrowed money				
Primary Income source	Sale of agri-produce	1		
	Regular Salary & wages	17.61	4.44	5867.19
	Retirement Income	-2.79	0.06	**1.56***
	Wages from daily labour	0.24	1.28	0.59
	Business	0.91	2.47	0.63
Household's Economic status	Non-Poor	1		
	Poor	-4.02	0.02	**1.07****
Household Size	>=Seven	1		
	Five to Six	0.47	1.61	0.88
	One to four	0.20	1.22	0.92
Disease Type	Others	1		
	Communicable	-1.78	0.17	**0.57***
	Chronic	-1.65	0.19	**0.63***
Family Head Gender	Female	1		
	Male	-.81	0.45	1.16
Intercept		6.30	------	1.76****
Sold household's produce & Aid from relatives vs. Loan/Borrowed money				
Income source	Sale of agri-produce	1		
	Regular Salary & wages	15.88	7.86	5867.19
	Retirement Income	-22.00	2.76	00
	Wages from daily labour	-0.09	0.91	0.56
	Business	-1.43	0.24	**0.72****
Household's Economic status	Non-Poor	1		
	Poor	-1.98	0.14	**1.08***
Household Size	>=Seven	1		
	Five to Six	-0.45	0.64	0.88
	One to four	-0.64	0.53	0.88
Disease Type	Others	1		
	Communicable	-1.16	0.31	**0.56****
	Chronic	-0.95	0.39	0.62
Family Head Gender	Female	1		
	Male	-0.02	0.98	1.18
Intercept		4.58	-------	1.78***
N	434			
Pseudo R^2(Nagelkerke Psuedo R^2)	0.47			
Source: Based on Field Survey; Note: 1=Reference category; ORs=Odds Ratios; S.E.= Standard Errors; ****p<0.001, ***p<0.01, **p<0.05, *p<0.10				

The type of coping mechanisms employed for OOP expenditure by type of diseases, that is, communicable, chronic and others, it is found that households when faced with communicable disease are less likely to choose current income and savings vs borrowed money and Sold household's produce & Aid from relatives vs. Loan/Borrowed money compared to others type of disease (OR=0.17, p<0.01). Similarly, those, households who faced with chronic disease were less likely to choose current income and savings vs borrowed money and Sold household's produce & Aid from relatives vs. Loan/Borrowed money compared to others type of disease (OR=0.19, p<0.01). In other words, households with communicable disease and chronic disease are more likely to borrow money to fund their outpatient OOP expenditure as against the other type of diseases. Factors like gender of the head of households (male or female) and household population size were also employed in the model considering that these factors could also determine household's strategy of coping mechanisms employed to pay for the outpatient OOP expenditure. However, these factors are found to be not statistically significant determinants in our study.

Determinants of Coping Mechanism for Inpatient Health Care (IPD)

Like the previous model on coping mechanism for outpatient OOP expenditure, a model for the determinants of coping mechanism for Inpatient has also been constructed (Table 4). It is shown that the model summary of the final model is better than the initial intercept-only model at p=.000. The Pearson chi-square statistic in the goodness-of-fit indicates that the model fits the data well at p=0.983 (which is p>0.05). The (pseudo R^2) Nagelkerke R^2 is 0.78. It is seen from the likelihood Ratio Tests that out of five independent variables employed in the model; three variables viz., Inpatient disease type, household primary Income source, and household economic status are statistically significant.

Table No. 4: Model Summary of the Multinomial Logistic Regression Model (Inpatient Care)

Model Fitting Information				
Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	273.162			
Final	70.209	202.953	20	.000
Goodness-of-Fit				
		Chi-Square	df	Sig.
Pearson		40.857	62	.983
Deviance		32.738	62	.999
Pseudo R-Square				
Cox and Snell			.672	
Nagelkerke			.783	
McFadden			.570	
Likelihood Ratio Tests				
Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	70.209[a]	.000	0	.
Inpatient Disease Type	85.938	15.729	4	.003
Household primary Income source	106.508	36.299	8	.000
Head Gender	70.469	.260	2	.878
Household population size	74.041	3.832	4	.429
Household Economic status	152.753	82.544	2	.000

Source: Based on Field Survey; Note: The chi-square statistic is the difference in -2 log-likelihoods between the final model and a reduced model. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0.

a. This reduced model is equivalent to the final model because omitting the effect does not increase the degrees of freedom.

The results of the multinomial logistic regression model for the coping mechanisms of Inpatient OOP expenditure are shown in Table 5. Those households whose primary source of income is regular salary and wages (private or public) are more likely to choose current income and savings vs sold household's produce & livestock and Aid from relatives and Loan/Borrowed money vs sold household's produce & livestock and Aid from relatives compared to the households whose primary source of income is sale of agri-produce (OR=89.34, $p<0.001$). Similarly, those households whose primary source of income is from the business are more likely to go for Current income and savings vs. sold household's produce & livestock and Aid from relatives and Loan/Borrowed money vs sold household's produce & livestock and Aid from relatives compared to the households whose primary source of income is sale of agri-produce (although it is not statistically significant). The poor households are however, less likely to choose current income vs sold household's produce & livestock and Aid from relatives compared to non-poor households. In other words, the non-poor households choose current income and savings vs sold household's produce & livestock and Aid from relatives compared to non-poor households as against the poor households (OR=0.10, $p<0.05$). But the poor households are more likely to choose borrowed money vs sold household's produce & livestock and Aid from relatives to finance the Inpatient OOP expenditure compared to the non-poor households. This depicts the poor people's inability to finance the health care costs from own wealth. Thus, they have to depend on borrowing from other sources, which are sometimes catastrophic and puts the households permanently debt ridden.

Table No 5: Multinomial logistic regression on the determinants of medical OOP coping mechanisms (IPD)

Variable		**Inpatient(IPD)**		
		beta	Exp(B)/ORs	S.E.
Current income and savings vs. sold household's produce & livestock and Aid from relatives				
Income source	Sale of agri-produce	1		
	Regular Salary & wages	4.49	89.34	1.28***
	Retirement Income	17.39	3.57	6209.11
	Wages from daily labour	2.75	15.57	4200.14
	Business	3.33	28.06	0.81***
Household's Economic status	Non-Poor	1		
	Poor	-2.26	0.10	1.12**
Household Size	>=Seven	1		
	Five to Six	1.19	3.28	0.88
	One to four	0.27	1.31	0.76
Disease Type	Others	1		
	Communicable	-1.42	0.24	0.97*
	Chronic	-2.92	0.05	1.36**
Family Head Gender	Female	1		
	Male	-1.93	0.15	2279.25
Intercept		2.24	---------	2279.25
Loan/Borrowed money vs sold household's produce & livestock and Aid from relatives				
Income source	Sale of agri-produce	1		
	Regular Salary & wages	3.30	27.15	1.52**
	Retirement Income	19.40	2.67	6209.11
	Wages from daily labour	16.11	9.92	3781.04
	Business	1.26	3.53	1.18
Household's Economic status	Non-Poor	1		
	Poor	4.64	103.54	0.99***

Household Size	>=Seven	1		
	Five to Six	0.28	0.75	0.95
	One to four	-.69	0.50	0.99
Disease Type	Others	1		
	Communicable	1.68	5.36	0.83**
	Chronic	1.99	7.37	1.29*
Family Head Gender	Female	1		
	Male	-14.26	6.44	----------
Intercept		10.92	------	1.17***
N		167		
Pseudo R^2(Nagelkerke Pseudo R^2)		0.77		
Source: Based on Field Survey; Note: 1=Reference category; ORs=Odds Ratios; S.E.= Standard Errors; ***p<0.001, **p<0.05, *p<0.15				

Type of disease is another determinant of type of coping mechanisms for inpatient OOP expenditure. For instance, households with communicable diseases are less likely to choose Current income and savings vs. sold household's produce & livestock and Aid from relatives compared to household with other diseases. However, the households with communicable diseases are more likely to choose Loan/Borrowed money vs sold household's produce & livestock and Aid from relatives as against the household with other diseases. imilarly, households with chronic diseases are less likely to choose Current income and savings vs. sold household's produce & livestock and Aid from relatives and more likely to choose Loan/Borrowed money vs sold household's produce & livestock and Aid from relatives compared to the households with other diseases. Thus, it is clear that to pay for the inpatient OOP expenditure households with communicable diseases and chronic diseases are unable to finance their costs solely from the current income and savings. They have to either borrow from other sources or sell the household assets like livestock/produce or even take help from family and friends.

V. CONCLUSION

Health care costs are catastrophic for most of the lower income households, because they have to pay from their pocket. Health insurance is unknown to them and for many the premiums are too high. Therefore, in the absence of any government policy to arrange the health care expenditure, even the poorest of the poor are coerced to make OOP expenditure when they get health shocks. In such circumstances, type of financing the health care expenditure varies. For instance, in this study, it has been found that households employ different strategies to cope with the health care costs viz., current income & savings, sold households produce/livestock, aid from relatives and friends and borrow money from different sources like village money lenders. Financing through current income and savings is found to be the dominant strategies of the people in the study area. However, most of the lower income (poor) households are less likely to use this strategy. In fact, the poor households depend more on borrowed money to finance their health care. Furthermore, the poor households are less likely to sell household's produce and livestock and aid from relatives compared to richer households. Therefore, borrowing, especially from the village funds is the dominant strategy used by the poor households in the study area. However, this strategy (borrowing) has the potential to make the households debt ridden in the long run. In the similar studies, it has been found that even after the recovery from sickness the households were haunted with the debt (Wilkes et al., 1997; Mock et al., 2001; Krishna, 2011). Households with chronic and communicable diseases are more likely to finance the health care costs through borrowing, especially with the inpatient health care. Therefore, it is necessary that some policies are formulated taking into cognizance the health care needs of the people with such type of diseases. Furthermore, current income and savings is the most used method to finance both outpatient and inpatient OOP expenditure, though mostly by the richer people. It has been observed that, borrowing is higher in case of inpatient health care compared to outpatient. This shows the unavailability of prospective health insurance facilities and protective mechanism for the inpatient treatment.

ACKNOWLEDGEMENT:

The first author was the recipient of Senior Research Fellowship (NET-JRF Scheme) from the University Grant Commission, Ministry of Human Resource Development (Government of India) during the time of field survey and data analysis, and it is a part of PhD work.

APPENDIX

Table No.7A.1: Coping Mechanisms of outpatient (Outpatient (OPD))

	Frequency	Percentage
Current income & Savings	279	62.1
Sold household's produce, labour income & aid from relatives	122	27.2
Loan/borrowed money	33	7.3
Mixed strategy*	15	3.3
Total	449	100
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.		

Table No.7A.2: Coping mechanism by primary source of Income (outpatient (OPD))

	Outpatient (OPD) Method of Financing				Total
	Current income & Savings	Sold household's produce/livestocks & aid from relatives	Loan/borrowed money	Mixed strategy *	
Regular salary & wages	56(94.9)	5.1)	0(0.0)	0(0.0)	59(100)
Retirement income	4(80.0)	0(0.0)	1(2.0)	0(0.0)	5(100)
Wages from daily labour	13(36.1)	17(47.2)	6(16.7)	0(0.0)	36(100)
Business	111(90.2)	6(4.9)	4(3.3)	2(1.6)	123(100)
Sale of agri-produce	95(42.0)	96(42.5)	22(9.7)	13(5.8)	226(100)
Total	279(62.1)	122(27.2)	33(7.3)	15(3.3)	449(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.3: Coping mechanism by Economic Status of the households (Outpatient (OPD))

	Outpatient (OPD) method of finance category				Total
	Current income & Savings	Sold household's produce & aid from relatives	Loan/borrowed money	Mixed strategy*	
Poor	76(35.0)	101(46.5)	31(14.3)	9(4.1)	217(100)
Non-poor	203(87.5)	21(9.1)	2(0.9)	6(2.6)	232(100)
Total	279(62.1)	122(27.2)	33(7.3)	15(3.3)	449(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.4: Coping mechanism by Household's population size (Outpatient (OPD))

	Outpatient (OPD) method of finance category				Total
	Current income & Savings	Sold household's produce & aid from relatives	Loan/borrowed money	Mixed strategy*	
One to four	78(61.4)	34(26.8)	10(7.9)	5(3.9)	127(100)
Five to six	167(61.9)	73(27.0)	21(7.8)	9(3.3)	270(100)
Greater than six	34(65.4)	15(28.8)	2(3.8)	1(1.9)	52(100)
Total	279(62.1)	122(27.2)	33(7.3)	15(3.3)	449(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.5: Coping mechanism by Disease Type (Outpatient (OPD))

	Outpatient (OPD) method of finance category				Total
	Current income & Savings	Sold household's produce & aid from relatives	Loan/borrowed money	Mixed strategy*	
Communicable	71(48.6)	49(33.6)	19(13.0)	7(4.8)	146(100)
Chronic	85(65.9)	31(24.0)	9(7.0)	4(3.1)	129(100)
Other	123(70.7)	42(24.1)	5(2.9)	4(2.3)	174(100)
Total	279(62.1)	122(27.2)	33(7.3)	15(3.3)	449(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.6: Coping mechanism by Gender (Outpatient (OPD))

	Outpatient (OPD) method of finance category				Total
	Current income & Savings	Sold household's produce & aid from relatives	Loan/borrowed money	Mixed strategy*	
Male	273(62.3)	118(26.9)	32(7.3)	15(3.4)	438(100)
Female	6(54.5)	4(36.4)	1(9.1)	0(0.0)	11(100)
Total	279(62.1)	122(27.2)	33(7.3)	15(3.3)	449(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.7: Coping mechanism by Income Category (Outpatient (OPD))

	Outpatient (OPD) method of finance category				Total
	Current income & Savings	Sold household's produce & aid from relatives	Loan/borrowed money	Mixed strategy*	
Upto 75,000	76(35.2)	100(46.3)	31(14.4)	9(4.2)	216(100)
75,001-2,00,000	42(84.0)	4(8.0)	1(2.0)	3(6.0)	50(100)
Greater than 2,00,000	161(88.0)	18(9.8)	1(0.5)	3(1.6)	183(100)
Total	279(62.1)	122(27.2)	33(7.3)	15(3.3)	449(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce, loan or borrowed money etc.					

Table No.7A.8: Coping Mechanisms of Inpatient care (IPD)

	Frequency	Percentage
Current income & Savings	104	34.9
Loan/borrowed money	81	27.2
Sold household's produce, labour income & aid from relatives	26	8.7
Mixed strategy*	87	29.2
Total	298	100
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.		

Table No.7A.9: Coping mechanism by Household's primary Income source (Inpatient (IPD))

	Inpatient (IPD) Method of Financing				Total
	Current income & Savings	Loan/borrowed money	Sold household's produce & aid from relatives	Mixed strategy*	
Regular salary & wages	38(79.2)	4(8.3)	1(2.1)	5(10.4)	48(100)
Retirement income	1(33.3)	1(33.3)	0(0.0)	1(33.3)	3(100)
Wages from daily labour	0(0.0)	11(61.1)	0(0.0)	7(38.9)	18(100)
Business	51(60.0)	11(12.9)	3(3.5)	20(23.5)	85(100)
Sale of agri-produce	14(9.7)	54(37.5)	22(15.3)	54(37.5)	144(100)
Total	104(34.9)	81(27.2)	26(8.7)	87(29.2)	298(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.10: Coping mechanism by household's economic status (Inpatient (IPD))

	Inpatient (IPD) method of finance category				Total
	Current income & Savings	Loan/borrowed money	Sold household's produce & aid from relatives	Mixed strategy*	
Poor	4(2.8)	71(50.0)	9(6.3)	58(40.8)	142(100)
Non-poor	100(64.1)	10(6.4)	17(10.9)	29(18.6)	156(100)
Total	104(34.9)	81(27.2)	26(8.7)	87(29.2)	298(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.11: Coping mechanism by household's population size (Inpatient (IPD))

	Inpatient (IPD) method of finance category				Total
	Current income & Savings	Loan/borrowed money	Sold household's produce & aid from relatives	Mixed strategy*	
One to four	31(33.0)	25(26.6)	12(12.8)	26(27.7)	94(100)
Five to six	61(37.2)	48(29.3)	9(5.5)	46(28.0)	164(100)
Greater than six	12(30.0)	8(20.0)	5(12.5)	15(37.5)	40(100)
Total	104(34.9)	81(27.2)	26(8.7)	87(29.2)	298(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.12: Coping mechanism by disease type (Inpatient (IPD))

	Inpatient (IPD) method of finance category				Total
	Current income & Savings	Loan/borrowed money	Sold household's produce & aid from relatives	Mixed strategy*	
Communicable	62(36.0)	47(27.3)	15(8.7)	48(27.9)	172(100)
Chronic	11(36.7)	9(30.0)	2(6.7)	8(26.7)	30(100)
Other	17(33.3)	13(25.5)	6(11.8)	15(29.4)	51(100)
Total	104(34.9)	81(27.2)	26(8.7)	87(29.2)	298(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.13: Coping mechanism by head of gender of the household (Inpatient (IPD))

	Inpatient (IPD) method of finance category				Total
	Current income & Savings	Loan/borrowed money	Sold household's produce & aid from relatives	Mixed strategy*	
Male	104(36.0)	74(25.6)	26(9.0)	85(29.4)	289(100)
Female	0(0.0)	7(77.8)	0(0.0)	2(22.2)	9(100)
Total	104(34.9)	81(27.2)	26(8.7)	87(29.2)	298(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

Table No.7A.14: Coping mechanism by Income Category (Inpatient (IPD))

	Inpatient (IPD) method of finance category				Total
	Current income & Savings	Loan/borrowed money	Sold household's produce & aid from relatives	Mixed strategy*	
Upto 75,000	4(2.9)	71(51.1)	7(5.0)	57(41.0)	139(100)
75,001-2,00,000	7(46.7)	1(6.7)	4(26.7)	3(20.0)	15(100)
Greater than 2,00,000	93(64.6)	9(6.2)	15(10.4)	27(18.8)	144(100)
Total	104(34.9)	81(27.2)	26(8.7)	87(29.2)	298(100)
Source: Field survey, NOTE: *Mixed strategy includes those households which coped with current income, savings, sold household's produce/livestock, loan or borrowed money etc.					

REFERENCES

[1]. Allin, S., Davaki, K., & Mossialos, E. (2006). Paying for 'free'health care: the conundrum of informal payments in post-communist Europe. Global Corruption Report, 63. file:///C:/Users/user-/Downloads/Part%201_4_informal_payments-health%20(1).pdf

[2]. Bhojani, U., Thriveni, B. S., Devadasan, R., Munegowda, C. M., Devadasan, N., Kolsteren, P., & Criel, B. (2012). Out-of-pocket healthcare payments on chronic conditions impoverish urban poor in Bangalore, India. BMC public health, 12(1), 990. DOI: 10.1186/1471-2458-12-990

[3]. Chan, Y. H. (2005). Biostatistics 305. Multinomial logistic regression. Singapore medical journal, 46(6), 259. http://www.nuhs.edu.sg/wbn/slot/u3344/Biostats305_Multinomial.pdf

[4]. Daivadanam, M., Thankappan, K. R., Sarma, P. S., & Harikrishnan, S. (2012). Catastrophic health expenditure & coping strategies associated with acute coronary syndrome in Kerala, India. The Indian journal of medical research, 136(4), 585. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3516025/

[5]. Damme, W. V., Leemput, L. V., Hardeman, W., & Meessen, B. (2004). Out-of-pocket health expenditure and debt in poor households: evidence from Cambodia. Tropical Medicine & International Health, 9(2), 273-280.

[6]. Etiaba, E., Onwujekwe, O., Uzochukwu, B., & Adjagba, A. (2015). Investigating payment coping mechanisms used for the treatment of uncomplicated malaria to different socio-economic groups in Nigeria. African health sciences, 15(1), 42-48. file:///C:/Users/user-/Downloads/114009-318167-1-PB.pdf

[7]. Ewelukwa, O., Onoka, C., & Onwujekwe, O. (2013). Viewing health expenditures, payment and coping mechanisms with an equity lens in Nigeria. BMC health services research, 13(1), 87. DOI: 10.1186/1472-6963-13-87

[8]. Ezeoke, O. P., Onwujekwe, O. E., & Uzochukwu, B. S. (2012). Towards universal coverage: examining costs of illness, payment, and coping strategies to different population groups in southeast Nigeria. The American journal of tropical medicine and hygiene, 86(1), 52-57. DOI: https://doi.org/10.4269/ajtmh.2012.11-0090

[9]. Hoque, M. E., Dasgupta, S. K., Naznin, E., & Al Mamun, A. (2015). Household coping strategies for delivery and related healthcare cost: findings from rural Bangladesh. Tropical Medicine & International Health, 20(10), 1368-1375. DOI: 10.1111/tmi.12546

[10]. Kabir, M. A., Rahman, A., Salway, S., & Pryer, J. (2000). Sickness among the urban poor: a barrier to livelihood security. Journal of international development, 12(5), 707.
[11]. Krishna, A. (2011). One illness away: Why people become poor and how they escape poverty. Oxford University Press.
[12]. Kruk, M. E., Goldmann, E., & Galea, S. (2009). Borrowing and selling to pay for health care in low-and middle-income countries. Health Affairs, 28(4), 1056-1066. doi: 10.1377/hlthaff.28.4.1056
[13]. Leive, A., & Xu, K. (2008). Coping with out-of-pocket health payments: empirical evidence from 15 African countries. Bulletin of the World Health Organization, 86(11), 849-856C. http://dx.doi.org/10.1590/S0042-96862008001100014
[14]. McIntyre, D., Thiede, M., Dahlgren, G., & Whitehead, M. (2006). What are the economic consequences for households of illness and of paying for health care in low-and middle-income country contexts?. Social science & medicine, 62(4), 858-865. https://doi.org/10.1016/j.socscimed.2005.07.001
[15]. Mock, C. N., Gloyd, S., Adjei, S., Acheampong, F., & Gish, O. (2003). Economic consequences of injury and resulting family coping strategies in Ghana. Accident Analysis & Prevention, 35(1), 81-90. https://doi.org/10.1016/S0001-4575(01)00092-6
[16]. Onwujekwe, O. E., Uzochukwu, B. S., Obikeze, E. N., Okoronkwo, I., Ochonma, O. G., Onoka, C. A., ... & Okoli, C. (2010). Investigating determinants of out-of-pocket spending and strategies for coping with payments for healthcare in southeast Nigeria. BMC health services research, 10(1), 67. DOI: 10.1186/1472-6963-10-67
[17]. Sauerborn, R., Adams, A., & Hien, M. (1996). Household strategies to cope with the economic costs of illness. Social science & medicine, 43(3), 291-301. https://doi.org/10.1016/0277-9536(95)00375-4
[18]. Skordis-Worrall, J., Pace, N., Bapat, U., Das, S., More, N. S., Joshi, W., ... & Osrin, D. (2011). Maternal and neonatal health expenditure in Mumbai slums (India): a cross sectional study. BMC public health, 11(1), 150. DOI: 10.1186/1471-2458-11-150
[19]. Whitehead, M., Dahlgren, G., & Evans, T. (2001). Equity and health sector reforms: can low-income countries escape the medical poverty trap?. The Lancet, 358(9284), 833-836. DOI: http://dx.doi.org/10.1016/S0140-6736(01)05975-X
[20]. Wilkes, A., Hao, Y., Bloom, G., & Xingyuan, G. (1997). Coping with the costs of severe illness in rural China. Vol. 58. IDS WorkingPaper. Institute of Development Studies, Sussex, pp. 1–27
[21]. World Health Organization. (2007). Coping with out-of-pocket health payments: applications of Engel curves and two-part models in six African countries. http://www.who.int/health_financing/documents/dp_e_07_7-coping_with_outofpocket.pdf

IOSR Journal Of Humanities And Social Science (IOSR-JHSS) is UGC approved Journal with Sl. No. 5070, Journal no. 49323.

Joel Basumatary."Household's Coping Mechanisms of Out-of-Pocket Expenditure on Health Care: A Case Study of Assam, India." IOSR Journal Of Humanities And Social Science (IOSR-JHSS). vol. 23 no. 1, 2018, pp. 70-84.