Chapter 5

IMPACT OF HEALTHCARE EXPENDITURE ON RURAL HOUSEHOLDS

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5.1. Introduction

In the previous chapter, it has been observed that the amount of out-of-pocket health expenses spent by rural households is significantly high, and the household's earnings are often not enough to pay for the medical bill. This chapter aims to assess the consequences of these high out-of-pocket health expenses on the households' economic conditions. With the help of the survey data, we have tried to find out how does high out-of-pocket health expenditure affects rural households.

5.2. High Out-of-Pocket Health Expenses Burden and Households' Financial Status

Catastrophic health expenditure is a measure of financial risk for household health care expenses. Incidence of catastrophic health expenses establishes the presence of high financial risk for the household, the aftereffects of which can be devastating. At times, the high cost of treatment forced the households to spend most of their savings and sell household assets. It has been already found that in cases when the household earnings are not sufficient enough to match healthcare requirements, the next alternative is borrowing for most of the rural households. With extensive borrowing, a household's financial debt is likely to go up drastically, increasing its vulnerability in the long run. In the following segments, with the help of statistical measures, an attempt has been made to quantify the prevalence of catastrophic health expenditure in rural settings and to identify the different factors leading the households to such conditions. We have tried to assess the impact of high out-of-pocket health expenses on the overall financial condition of the households based on the household's opinion about the health care cost incurred in the past one-year period.

5.2.1. Incidence of Catastrophic Health Expenditure

The financial burden born by a household because of the health care cost is measured using the ratio of household's out-of-pocket expenditure to the household's capacity to pay. When the household healthcare expenditure equals or exceeds a defined limit, the healthcare expense turns catastrophic. According to Xu (2005), the threshold for

catastrophic health expenditure for a household is 40 percent or more of its capacity to pay or non-subsistence spending. Hence, to find out whether the estimated out-of-pocket health expenses for the rural households are catastrophic or not, the subsequent steps have been followed.

Step 1: To estimate the subsistence spending for each of the households (SE_h), the subsistence expenditure per (equivalent) capita, i.e., the current poverty line (pl) for rural India[24], is adjusted against the equivalent family size.

$$SE_h = pl * eqsize_h$$

In this case, considering the economy of scale for household consumption, equivalent household size ($eqsize_h$) used over the actual household size (*hhsize*).

$$eqsize_h = hhsize_h{}^\beta$$

Here β=0.56, as estimated from previous studies based on 59 countries' household survey data.

Step 2: A household's capacity to pay (ctp_h) is usually defined in terms of its non-subsistence spending. But the non-subsistence spending at times might be less than the country's specified poverty standard, because of the food subsidies, self-production, and other non-cash means of food consumption not reported in the survey under food expenditure. In such cases, the non-food expenditure substitutes for non-subsistence spending. So,

$$if \quad SE_h <= food_h, ctp_h = exp_h - SE_h$$
$$if \quad SE_h >= food_h, ctp_h = exp_h - food_h$$

where exp_h is the total expenditure of a household and $food_h$ stands for the household's total food expenditure.

Step 3: For the calculations, the household's capacity to pay has been used to define financial burden caused due to a household's OOP health care expenses (OOP_h), expressed as a proportion of it (OOP_h/ctp_h). So, according to the WHO discussion paper (Xu, 2005), for any household, if this ratio matches or exceeds the threshold value of 0.40, then that household has incurred catastrophic health expenditure due to health care

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[24] According to the Rangarajan Committee Report on Poverty, the poverty line is estimated, as monthly per capita expenditure of Rs 1407 in urban areas and Rs 972 in rural areas. For calculation purposes, we have considered the poverty line for rural areas as yearly per capita expenditure, i.e., Rs 11664 per annum per capita.

services, otherwise not. If $cata_h$ represents the household status in terms of occurrence of catastrophic health expenditure the,

$$\text{for } OOP_h/ctp_h \geq 0.40, cata_h = 1 \text{ (Yes)}$$
$$\text{and for } OOP_h/ctp_h < 0.40, cata_h = 0 \text{ (No)}$$

The out-of-pocket health expenses only cover the direct costs paid by the households upfront at the time-of-service delivery, not the indirect costs associated with it. While determining the incidence of catastrophic expenses also, the methodology considers only the direct cost component of the households' out-of-pocket health expense amount. The indirect costs include transportation cost, food/lodging costs, and all these costs combined can be used to address the different aspects of the physical accessibility of the treatment facilities visited. In our study, the estimated share of the indirect cost in the total healthcare cost is considerably high, which makes it hard to ignore from the financial risk perspective. Hence, here we've considered both direct OOP healthcare costs and total OOP healthcare costs separately to assess the rate of catastrophic health expenses among the rural households. The table below (Table 38) suggests that around one-third of the households have suffered from catastrophe caused by high direct OOP health expenses. On the other hand, when the indirect cost associated with health care is taken into account as well, the rate of catastrophe concerning the total annual OOP health expenditure incurred by the households slightly increases by 2.9 percent. Thus, we can say that the influence of the indirect costs of treatment on the incidence of healthcare catastrophe is not very strong compared to direct healthcare costs. Therefore, here onwards, the analysis will emphasize the catastrophe status caused by direct out-of-pocket health expenses of the households.

Table 38: Incidence Rate of Catastrophic Health Expenses

Incidence of Catastrophic Health Expenditure	Direct OOP Health Expenses	Total OOP Health Expenses	Change in Rate
Yes	33.1%	36.0%	2.9%
No	66.9%	64.0%	

Source: Compiled by the Author

The households from the lower-income groups are usually more likely to suffer from the consequences of the high out-of-pocket healthcare cost. Thus, it can be assumed that the incidence rate for catastrophic health expenditure would also be highest across the lower-income households, but shockingly the study implies otherwise.

According to Table 39, even though the catastrophe incidence rate is the highest for the lowest income group, the situation doesn't improve much when we move up the income hierarchy. For the remaining income groups, including highest-earning households as well, around one-third of households from each category have incurred catastrophic health expenditure in the past year period. The Chi-square test with the two variables, i.e., income categories of the households and CHE incidence status, also confirms that there is no association between household's annual income and its chances of incurring catastrophic health expenses (chi-square value=2.883, df=4, sig=0.578). The financial risk linked with high healthcare costs seems similar across all households, irrespective of their financial status. It is not solely an issue for the poor only. Hence, it is essential to further review the issue of financial burden due to healthcare costs and to identify the various factors influencing such events.

Table 39: Cross-Tabulation between Income groups and Incidence Status of CHE

Income Group	Incidence of Catastrophic Health Expenses	
	Yes	No
Up to Rs. 60000	84 (37.5%)	140 (62.5%)
Rs. 60001 – Rs.90000	70 (32.6%)	145 (67.4%)
Rs.90001 – Rs. 129600	64 (30.6%)	145 (69.4%)
Rs.129601 – Rs.231000	68 (31.3%)	149 (68.7%)
Rs. 231001 and more	72 (33.5%)	143 (66.5%)
Total	358 (33.1%)	722 (66.9%)

Source: Compiled by the Author

5.2.2. Determinants of the incidence of CHE

With more than one-third of the sample being susceptible to the health care catastrophe, irrespective of their economic background, it is very crucial to explore the various factors that force a household's health care expenses to cross the catastrophe threshold. Previously, academicians have made several attempts to identify the key factors responsible for experiencing catastrophic health care expenses. The studies have shown a wide variation in the contributory factors across different regions. Hence, to determine the factors that contribute to the incidence of catastrophic health expenditure pushing the rural households of Assam towards impoverishment, a series of binary logistic regression has been carried out with selected independent variables. The set of predictor variables fitting into the decided settings are selected based on our assumptions. All the variables selected for the regression model are divided into three categories: (a)

household demographics, (b) healthcare risk and treatment pattern, and (c) healthcare financing pattern.

a) Household Demographics versus Incidence of Catastrophic Health Expenditure

In the first group, two demographic variables, family size, i.e., the number of household members and total annual income of the households, are considered for the binary logit regression. We have assumed that the more the number of members in a household more will be the illness episode counts; hence, higher will be the household's health care expenses. Similarly, high-income households are less likely to incur catastrophic health expenditures, since high-income households can easily bear high costs of healthcare.

But the resultant logit model nullified both of these assumptions. The annual incomes, as well as the household family size, are found to be insignificant in determining the catastrophe status of the representative household (Table 40). This result further validates our previous finding (Section 5.2.1, Table 39) that financial risk from health care treatment is not affected by the households' financial status. Similarly, the catastrophe incidence is free of the influence of how big the family is.

Table 40: Variables considered for Binary Logit Model (9)

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	Number of members in the household (size)	-.067	.037	3.258	1	.071	.936	.870	1.006
	Annual Income of the Household (Inc_A)	.000	.000	.308	1	.579	1.000	1.000	1.000
	Constant	-.422	.172	6.032	1	.014	.656		
a. Variable(s) entered on step 1: size, Inc_A.									

Source: Compiled by the Author

b) Health Risk and Treatment Pattern versus Incidence of Catastrophic Healthcare Expenditure

The second set of variables, representing the health risk, and healthcare-seeking patterns, can be further divided into seven subsets to best fit into a logit model. These subsets of variables are tested for a logit model to identify the explanatory variables for catastrophic health expenditure. The results of each of the binary logistic regression results are summarized below.

i.   Subset 1:

The presence of any chronic condition, IP case(s), OP case(s), or death caused by medical reasons flags the existence of health risk to a certain extent, leading to medical expenses. Drinking and smoking habits are injurious to health. The presence of these habits raises the health risk level for the household and the financial risk as well. Studies suggest that health insurance policies are the only way to protect households from the financial ramification of high medical expenses. So, we have assumed that the households enlisted under health insurance schemes will be less vulnerable to high healthcare costs.

The first subset of variables covers five dichotomous variables. These five variables record if any of the discussed conditions are there in the households or not. A logit model is derived using these seven independent variables to predict the probability of occurrence of catastrophic healthcare expenditure among the households. The Hosmer and Lemeshow Test of goodness-of-fit result implied that the model is a good fit for the data $p=0.080$ (>0.05) (Table: 41).

Table 41: Model Summary for Binary Logit Model (10)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1167.764[a]	.172	.240
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Source: Compiled by the Author

There are two indicators available for explaining the variability in the dependent variable due to the independent variables, and they are Cox & Snell R Square and Nagelkerke R Square. The Cox & Snell R Square is a pseudo-R square value based on the log-likelihood for the model compared to the log-likelihood for a baseline model. With categorical outcomes, its theoretical maximum value is always less than 1. The Nagelkerke R Square is an adjusted version of the Cox & Snell R-square; it adjusts the scale of the statistic to cover the full range from 0 to 1. The Cox &Snell R Square value often underestimates the variability in the dependent variable (Bucur, Danet, Lehr, Lehr, & NitaLazar, 2017); hence Nagelkerke R Square is usually considered for interpretation over Cox & Snell R Square value. Considering the Nagelkerke R square value, the logit model explains roughly a 24 percent variation in the outcome variable. The model also correctly classified 71.5% of the cases compared to 66.9% in the case of the null model.

Table 42: Hosmer and Lemeshow Test for Binary Logit Model (10)

Step	Chi-square	df	Sig.
1	12.695	7	.080

Source: Compiled by the Author

Out of the seven variables, initially considered for the logit model (2), only three variables are statistically significant at the 95 percent confidence level. The three explanatory variables influencing the probability of occurrence of catastrophic health expenditure in a household are the incidence status of IP case(s), OP case(s), and death(s) of family members due to medical reasons. As per the odds ratios for the significant variables from the regression table (Table 43),

i) A household without any IP cases in the past 365 days is 0.352 times less likely to witness catastrophic health expenses than families with IP cases.

ii) Similarly, a household with any reported OP cases in the past 30 days is 0.162 times less likely to witness catastrophic health expenses compared to houses with OP cases for the mentioned recall period.

iii) A household without any death of a household member(s) due to medical reasons is 0.127 times less likely to witness catastrophic health expenses compared to a family which has seen the death of a family member in the past 365 day due to medical condition (during or post-treatment).

Table 43: Variables considered for the Binary Logit Model (10)

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	Absence of chronic condition in the household [chronic(1)]	-.262	.177	2.196	1	.138	.770	.545	1.088
	Absence of IP case(s) in the household [IP(1)]	**-1.045**	**.145**	**52.279**	**1**	**.000**	**.352**	**.265**	**.467**
	Absence of OP case(s) in the household [OP(1)]	**-1.821**	**.190**	**92.028**	**1**	**.000**	**.162**	**.112**	**.235**
	Households without health insurance enrolment [Ins_Enrol(1)]	-.051	.173	.087	1	.768	.950	.677	1.333
	Household without any death due to medical conditions	**-2.061**	**.317**	**42.163**	**1**	**.000**	**.127**	**.068**	**.237**

[death(1)]								
Household without any member with alcohol drinking habit [drinker(1)]	.403	.304	1.751	1	.186	1.496	.824	2.715
Household without any member with smoking habit [smoker(1)]	-.047	.266	.031	1	.861	.954	.567	1.608
Constant	2.009	.427	22.123	1	.000	7.459		

a. Variable(s) entered on step 1: chronic, IP, OP, Ins_Enrol, death, drinker, smoker.

Source: Compiled by the Author

The odds ratio values imply that the incidence of catastrophic health expenses influenced by the rise of IP cases the most, followed by OP and death cases. Health insurance is the globally accepted best tool for providing financial protection against health risks. But surprisingly, the health insurance enrolment status doesn't have any contributory impact over catastrophe incidence in the rural setting.

ii.   Subset 2:

The second variable subset representing the household health risk and treatment pattern contains four variables, i.e., the number of OP cases in a month, number of IP cases in a year, number of deaths in a household due to medical reasons, and the total number of chronic cases in the household. Each visit to any type of health care provider always involves a certain amount of monetary expense. When the number of such visits is more, it can be assumed that the health expenses will be high as well. Hence, both IP cases count for a year and OP case count for a month are considered for the logit model. Death of a person during or post-treatment indicates the severity of the medical condition and the treatment of critical medical cases often cost a fortune. So, it has been assumed that the increase in the number of deaths of family member during/post-medical treatment is likely to inflict a high financial burden on the household. A chronic condition is not entirely curable. Such patients are always under prescribed medications, and check-ups at regular intervals are also mandatory to maintain the health condition. As a result, the patients have to spend a constant amount of money at a repeated interval. The previous model suggests that the presence of chronic cases is not significant for the incidence of catastrophe. But it can be assumed that the increase in the numbers of chronic cases in a

household call for more OOP expenses, maintaining a continuous financial burden on the household throughout the year.

The Hosmer and Lemeshow test result implies that the logit model is a good fit to the data (Table 45). Based on the selected pseudo-R square value, the independent variables of the logit model can explain 30.4% of the variance in the dependent variable, and the model can correctly classify 69.7% of the cases compared to 56.4% in the case of the null model.

Table 44: Model Summary for Binary Logit Model (11)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	576.285[a]	.227	.304
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Source: Compiled by the Author

Table 45: Hosmer and Lemeshow Test for Binary Logit Model (11)

Step	Chi-square	df	Sig.
1	7.612	8	.472

Source: Compiled by the Author

All the four variables considered for the logit model (3) are statistically significant at the 95 percent confidence level. The odds ratios [Exp(B)] for the significant variables from the regression table (Table 46) imply that

i)   An increase by one in the number of death cases in a year is going to increase the probability of incidence of catastrophic health expenditure by 6.116 times (511.6% more likely).

ii) An increase by one in the number of in-patient cases in a year is going to increase the probability of incurring catastrophic health expenditure by 1.922 times (92.2% more likely).

iii) Increase by one for the number of out-patient cases in a month is going to increase the probability of catastrophic health expenditure by 2.906 times (190.6% more likely)

Table 46: Variables considered for the Binary Logit Model (11)

		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	**Number of family members died in the past 365 days due to medical**	**1.811**	**.599**	**9.152**	**1**	**.002**	**6.116**	**1.892**	**19.768**

reasons [death_count]								
Total number of chronic diseases in a household [Total_chronic_cases]	.110	.063	3.009	1	.083	1.116	.986	1.264
Total number of IP cases in the past 365 days [OOP_IP_case_count]	**.653**	**.125**	**27.097**	**1**	**.000**	**1.922**	**1.503**	**2.458**
Total number of OP cases in the past 30/31 days [OOP_OP_case_count]	**1.067**	**.145**	**54.353**	**1**	**.000**	**2.906**	**2.189**	**3.859**
Constant	-2.509	.278	81.521	1	.000	.081		

a. Variable(s) entered on step 1: death_count, Total_chronic_cases, OOP_IP_case_count, OOP_OP_case_count.

Source: Compiled by the Author

The previous logit model (model no 10) has already established that the presence of IP, OP, and death cases all three plays a crucial role in forcing a household's healthcare spending beyond the catastrophe threshold. But, when we examined the frequency of occurrence, the resultant impacts are reversed. Treatment leading to the death of a family member signifies the severity of the illness or long-term suffering from the ailment, either way; often a hefty amount is spent by the households. Thus, an increase in such death count can be alarming for the families. On the other hand, OP visits are more frequent compared to IP cases, and it has been already established that it is responsible for a significantly large amount of spending. Hence, more frequent OP visits forcing a household towards catastrophe is not at all surprising at current circumstances. IP cases often stand for severe illness, calling for high expenses; thus, increase in such cases can set off a household on a course towards financial hardship.

iii. Subset 3:

The third subset under the healthcare-seeking pattern covers the two categorical variables describing the health care selection pattern for the household in case of both IP cases [IP_provider] and OP cases [OP_provider]. The provider selection pattern can be of three types; solely public, solely private, and mix of both. The study has already detected a very high public-private disparity in healthcare costs, and hence, it is more essential to investigate the extent to which this disparity can trigger catastrophe

amidst the rural households. For the comparative assessment, the public healthcare provider has been taken as the reference group. The comparison between the public and private healthcare providers is represented by code "1" [IP_PROVIDER(1) and OP_PROVIDER(1)] and code "2" stands for the comparison between the public provider and mix of both provider selection pattern [IP_PROVIDER(2) and OP_PROVIDER(2)].

Table 47: Model Summary for Binary Logit Model (12)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	417.370[a]	.065	.087
a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.			

Source: Compiled by the Author

According to the Hosmer and Lemeshow test for the goodness-of-fit test, the derived model is a good fit for the data as sig>0.05 (Table 48). Although the Nagelkerke R square value suggests that the derived model can only explain only 8.7% variance in the incidence status of catastrophe, this logit model can correctly classify 60.7% of the cases compared to 54.1% in the case of the null model.

Table 48: Hosmer and Lemeshow Test for Binary Logit Model (12)

Step	Chi-square	Df	Sig.
1	1.910	4	.752

Source: Compiled by the Author

The regression table (Table 49) confirms that, as anticipated, the public-private disparity in the health sector has a strong influence over the occurrence of catastrophic healthcare expenditure among rural households for OP cases. The treatment in private facilities for OP cases can increase the chances of catastrophe incidence. The odds ratios from the regression results (Table 49) conclude that,

Table 49: Variables considered for the Binary Logit Model (12)

		B	S.E.	Wald	Df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	IP_PROVIDER			5.905	2	.052			
	IP_PROVIDER(1)	.592	.268	4.880	1	.027	1.807	1.069	3.055
	IP_PROVIDER(2)	.641	.473	1.840	1	.175	1.899	.752	4.795
	OP_PROVIDER			11.182	2	.004			
	OP_PROVIDER(1)	**.718**	**.253**	**8.070**	**1**	**.005**	**2.050**	**1.249**	**3.363**
	OP_PROVIDER(2)	**1.145**	**.503**	**5.184**	**1**	**.023**	**3.143**	**1.173**	**8.421**
	Constant	-.372	.166	5.013	1	.025	.689		
a. Variable(s) entered on step 1: IP_PROVIDER, OP_PROVIDER.									

Source: Compiled by the Author

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i) The households that have availed OP treatment solely in private facilities in the past year are 2.050 times more likely to incur catastrophic healthcare expenditure compared to the homes which have availed OP treatment entirely in government facilities.

ii) Similarly, the households that have availed OP treatment in both public and private facilities in the past year are 2.143 times more likely to incur catastrophic healthcare expenditure compared to the families that have availed OP treatment solely in government facilities.

It has been already acknowledged that there is a vast difference in treatment costs between public facilities and private facilities. Availing treatment from a private healthcare provider is much more expensive than treatments in public facilities. The result of this binary logistic regression further confirms that the involvement of private sector healthcare services in the treatment process multiplies the financial risk for rural households and even can push a family towards financial hardship.

iv. Subset 4:

The logit model 11 has already established that the number of IP cases that occurred in a year significantly contribute towards pushing a household's healthcare expenses through the catastrophe level. So next, we want to check how the influence of the number of IP cases varies across the different treatment patterns adopted for the various ailments. Therefore, three continuous scale variables are taken into account for the next binary logistic regression. They are the number of IP treatments received only from public facilities [IP_G], the number of IP treatments received solely from private facilities [IP_P], and the number of IP treatments received from both public and private facilities [IP_M].

Table 50: Model Summary for Binary Logit Model (13)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1300.405[a]	.064	.089
a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.			

Source: Compiled by the Author

The Hosmer and Lemeshow test for the goodness-of-fit test confirmed that the derived model is a good fit for the data as sig>0.05 (Table 51). Here, as well the Nagelkerke R square value suggests that the derived model can only explain only 8.9%

variance in the incidence status of catastrophe, but the logit model (13) can satisfactorily classify 68.9% of the total cases correctly.

Table 51: Hosmer and Lemeshow Test for Binary Logit Model (13)

Step	Chi-square	df	Sig.
1	5.541	3	.136

Source: Compiled by the Author

Table 52: Variables considered for the Binary Logit Model (13)

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	**Number of IP cases in Public facilities [IP_G]**	**.287**	**.094**	**9.429**	**1**	**.002**	**1.333**	**1.109**	**1.601**
	Number of IP case in Private facilities [IP_P]	**.916**	**.145**	**39.908**	**1**	**.000**	**2.498**	**1.881**	**3.319**
	Number of IP cases treated in both Public and Private facilities [IP_M]	**.901**	**.244**	**13.667**	**1**	**.000**	**2.462**	**1.527**	**3.968**
	Constant	-1.037	.085	147.584	1	.000	.355		
a. Variable(s) entered on step 1: IP_G, IP_P, IP_M.									

Source: Compiled by the Author

All three variables considered for the logit model (13) are statistically significant at the 95 percent confidence interval. With the help of the odds ratio from the regression table (Table 52), the extent of influence exerted by each of the variables on the incidence of catastrophic health expenditure among rural households can be estimated to some extent. According to the odds ratios,

i) An increase by one unit in the number of in-patient cases treated solely in a public healthcare provider is going to increase the household's probability of incurring catastrophic health expenditure by 1.333 times, i.e., a house is 33.3% more likely to incur catastrophic health expenditure in such cases.

ii) An increase by one unit in the number of in-patient cases treated solely in a private healthcare provider is going to increase the household's probability of incurring catastrophic health expenditure by 2.498 times (149.8% more likely).

iii) An increase by one unit in the number of in-patient cases treated in both public and private healthcare providers is going to increase the household's probability of incurring catastrophic health expenditure by 2.462 times (146.2% more likely).

The study has already established that IP case count is a significant explanatory variable in predicting the incidence of financial catastrophe in a household. But, considering the high-level disparity in treatment cost between public and private sector facilities, it is evident that the impact of IP cases will vary across the type providers. As anticipated, the risk is highest for IP cases treated in private facilities and lowest for IP cases treated in public facilities.

v.   Subset 5:

Similar to IP cases, logit model 11 has also established the number of OP cases in a month's duration to be an influencing factor in determining the probability of incidence of catastrophic health expenditure for rural households. To better understand the impact of the OP case counts on catastrophe occurrence, it is essential to assess if there is any difference in influence across different types of providers. Hence, three continuous scale variables, i.e., the number of OP treatments received solely from public facilities [OP_G], entirely from private facilities [OP_P], and from both public as well as private facilities combinedly [OP_M], respectively, are also tested using a binary logistic regression. The logit model thus derived correctly classified 74.3% of the cases compared to 66.9% in the case of the null model.

Table 53: Model Summary for Binary Logit Model (14)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1155.994[a]	.181	.252
a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.			

Source: Compiled by the Author

Table 54 Hosmer and Lemeshow Test for Binary Logit (14)

Step	Chi-square	df	Sig.
1	4.880	3	.181

Source: Compiled by the Author

According to the Hosmer and Lemeshow test for the goodness-of-fit test, the derived model is a good fit for the data (Table 54). Based on the selected pseudo-R square value, the independent variables of the logit model can explain 25.2% of the variance in

the dependent variable, and the model can correctly classify 74.3% of the cases compared to 66.9% in the case of the null model.

Table 55: Variables considered for the Binary Logit Model (14)

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1ª	**Number of OP cases in Public facilities [OP_G]**	**.727**	**.091**	**63.322**	**1**	**.000**	**2.068**	**1.729**	2.473
	Number of OP case in Private facilities [OP_P]	**1.584**	**.136**	**135.482**	**1**	**.000**	**4.877**	**3.735**	6.368
	Number of OP cases treated in both Public and private facilities [OP_M]	**1.161**	**.301**	**14.847**	**1**	**.000**	**3.194**	**1.769**	5.765
	Constant	-1.814	.121	224.432	1	.000	.163		
a. Variable(s) entered on step 1: OP_G, OP_P, OP_M.									

Source: Compiled by the Author

Similar to the IP cases, all three variables considered for the logit model (6) are statistically significant at the 95 percent confidence interval. With the help of the odds ratio from the regression table (Table 55), the extent of influence exerted by each of the variables on the incidence of catastrophic health expenditure among rural households could be gauged. According to the odds ratios,

i) An increase by one unit in the number of out-patient cases treated solely in a public healthcare provider is going to increase the household's probability of incurring catastrophic health expenditure by 1.068 times, i.e., a family is 106.8% more likely to incur catastrophic health expenditure in those cases.

ii) An increase by one unit in the number of in-patient cases treated solely in a private healthcare provider is going to increase the household's probability of incurring catastrophic health expenditure by 3.877 times (387.7% more likely).

iii) An increase by one unit in the number of in-patient cases treated in both public and private healthcare providers is going to increase the household's probability of incurring catastrophic health expenditure by 2.194 times (219.4% more likely).

Similar to the IP cases, the influence of the OP case counts over the incidence of catastrophic health expenditure findings from the logit model (14) also demonstrates huge contrast across the provider selection pattern. The predicted impact of the high cost of treatment in private facilities on rural households is very high in the case of OP visits as well. For the treatment episodes solely treated in private facilities, the impact factor is not only the highest, but the magnitude is alarming as well. Even in cases of treatment episodes where households have consulted both public and private providers, the risk of financial catastrophe is significantly high. Although the public healthcare facilities provide the OP consultation for a minimal fee or free of cost, the associated cost of diagnostics and medications are often very high, and those are mostly purchased from private facilities only. It might explain such a high impact value for the number of OP treatment cases in public facilities (odds ratio for OP_G = 2.068) despite the attempts to make primary care affordable by NHM.

c) Healthcare Financing Pattern versus Incidence of Catastrophic Healthcare Expenditure

The last set of variables considers the variables depicting the utilization pattern of different available financing measures in rural settings. The variables used to describe the financing pattern can be further divided into two subsets to best fit into a logit model. These subsets of variables are tested for a logit model to identify the explanatory variables for catastrophic health expenditure. The results of each of the binary logistic regression results are summarized below.

i. Subset 1:

There are several financing measures available to pay for healthcare services. When households' earnings are not sufficient to pay for the medical bill, the families rely on other sources. Extensive usage of specific alternatives is an indication that the healthcare cost for the household is far beyond what the family can afford. Hence, another binary logistic regression has been carried out to check whether different financing patterns can predict the probability of households incurring catastrophic health

expenditure. Here, seven dichotomous variables for all seven financing options have been tested into the model.

Table 56: Model Summary for Binary Logit Model (15)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1260.329[a]	.098	.137
a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.			

Source: Compiled by the Author

The Hosmer and Lemeshow test established that the model is a perfect fit for the dataset. According to the pseudo-R square value (Table 56), the model can explain a 13.7% variance in the dependent variable.

Table 57: Hosmer and Lemeshow Test for Binary Logit Model (15)

Step	Chi-square	df	Sig.
1	10.982	7	.139

Source: Compiled by the Author

Out of the seven variables initially considered only four variables are found to be significant (at 95% confidence level) in predicting the catastrophe status of the households. As per the overall correct percentage results, the model classified 69.2% of the cases correctly. The explanatory variables identified by the regression correspond to the following financing measures: sale of assets, borrowing from relatives/friends, borrowings from moneylenders, and credits from SHG/MFIs.

Table 58: Variables considered for the Binary Logit Model (15)

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1[a]	Used household income[fin_a(1)]	-.871	.534	2.661	1	.103	.418	.147	1.192
	Used household savings [fin_b(1)]	.216	.231	.873	1	.350	1.241	.789	1.952
	Reimbursement received from health insurance/policies [fin_c(1)]	.490	.451	1.180	1	.277	1.632	.674	3.951
	Sold of household assets [fin_d(1)]	**.922**	**.153**	**36.565**	**1**	**.000**	**2.515**	**1.865**	**3.391**
	Borrowed from relatives/friends [fin_e(1)]	**.530**	**.139**	**14.500**	**1**	**.000**	**1.700**	**1.294**	**2.233**
	Borrowed from money lenders	**.630**	**.189**	**11.079**	**1**	**.001**	**1.878**	**1.296**	**2.723**

	B	S.E.	Wald	df	Sig.	Exp(B)		
[fin_f(1)]								
Availed micro-credit from SHG/MFIs [fin_h(1)]	**.681**	**.138**	**24.510**	**1**	**.000**	**1.975**	**1.509**	**2.587**
Constant	-.911	.534	2.906	1	.088	.402		
a. Variable(s) entered on step 1: fin_a, fin_b, fin_c, fin_d, fin_e, fin_f, fin_h.								

Source: Compiled by the Author

Following interpretations can be drawn from the odds ratio for those determining variables of the derived logit model;

i) A household that has to sell off assets to pay the medical bills is 1.515 times more likely to witness catastrophic health expenses compared to a house that hasn't done that.

ii) A household that has borrowed money from relatives or friends for medical treatments is 0.7 times more likely to incur catastrophic health expenditure in comparison to the houses that don't have such borrowings.

iii) Households with borrowing from moneylenders to finance the households' healthcare needs have 0.878 times probability to witness a financial catastrophe.

iv) Households that have availed credits from SHG/MFIs for healthcare purposes have 0.975 times higher probability of witness catastrophic healthcare expenditure.

ii. Subset 2:

The study has revealed that borrowings from friends and relatives are of two types, i.e., for one, households have to pay interest, and in the other cases, houses' have to repay the principal only. Since using financial assistance from friends /relatives is an explanatory variable for predicting the catastrophe status for the household, we tried to find out if these variations in the borrowing types also independent determinants for the catastrophe caused by high household' healthcare costs or not. The logit model (16) derived using only these two variables representing the household's borrowing status from friends/relatives (i.e., with interest and without interest) is a perfect fit for the data based on the Hosmer and Lemeshow test (Table 60). The model seemed to classify 70 percent of the cases correctly, but the model can explain only a 10.9% variance in the dependent variable (as per Nagelkerke R square value, Table 59).

The regression model shows that both the variables considered for the model are statistically significant (at 95% confidence level) in predicting the incidence of catastrophic healthcare expenditure among the rural households. The odds ratio for the two significant variables infers that the probability of financial catastrophe is 1.118 times higher for families that have acquired money with interest compared to the houses who haven't borrowed. On the other hand, the household that has borrowed money but won't have to repay any interest is 2.643 times more susceptible to financial catastrophe compared to the houses without such borrowings. Likewise, money borrowed from relatives/friends with the repayment condition to pay interest is likely to exert less financial strain on the household compared to the borrowings without any such provisions of repayment. Hence, it can be expected that their influence on financial hardship to be higher as well. The frequency distribution showed that its utilization rate of borrowing with interest is quite low between the two types of borrowings. It might explain the resultant impact factor being lower for acquiring money with interest [Exp(B) = 2.118] than that for funding without any interest [Exp(B) = 3.643] against our anticipations.

Table 59: Model Summary for Binary Logit Model (16)

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1284.320a	.078	.109
a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.			

Source: Compiled by the Author

Table 60: Hosmer and Lemeshow Test for Binary Logit Model (16)

Step	Chi-square	df	Sig.
1	.012	1	.911

Source: Compiled by the Author

Table 61: Variables considered for the Binary Logit Model (16)

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1a	**Borrowed money from relatives/friends with interest [with_int(1)]**	.751	.233	10.402	1	.001	2.118	1.342	3.343
	Borrowed money from relatives/friends without interest	1.293	.152	72.465	1	.000	3.643	2.705	4.907

[without_int(1)]								
Constant	-1.100	.082	180.393	1	.000	.333		
a. Variable(s) entered on step 1: with_int, without_int.								

Source: Compiled by the Author

The logit models 15 and 16 have classified the four most frequently utilized financing measures by rural households as predictors in determining the probability of the incidence of financial catastrophe. Although both the models are not self-sufficient for predicting the household's catastrophe status (due to the low value of pseudo-R square values), it provides enough evidence to affirm that none of these financing measures are adequate from the financial security viewpoint. These four financing measures assist in accessing the required healthcare services at the hour of need, but in the long run, they highly likely to inflict severe financial hardship for rural households.

It is not possible to explain the incidence of catastrophic healthcare expenditure for a rural household by a limited number of determinants. As we have seen, several variables influence the households' likelihood of encountering financial hardship, and as we explored each of these variables further, we noticed the significant variations in effect. But the study reveals that out of the several probable indicators, mostly the variables representing a household's healthcare-seeking pattern are the strongest determinants of catastrophe. Thus, to properly approach the issue of financial hardship for rural houses, the healthcare-seeking behavior of the rural household must be taken into account.

5.2.3. Impact of OOP Health Expenditure based on Households' Perception

The academicians quantify the extreme ramification of high out-of-pocket health expenditure in terms of the incidence of catastrophic healthcare expenditure, which can push a household towards the vicious cycle of poverty. But to understand the overall impact of out-of-pocket health expenses in the rural settings of the state, it is very crucial to consider their outlook on the matter. A detailed assessment of rural households' opinions about the healthcare cost incurred by them will a big assistance in understanding the issue of high out-of-pocket health expenses from another standpoint. A total of 13 statements (with 5-point rating scale) have been used in the survey interview schedule to acquire a better perceptive on household's health expenses and its impact. In this section, an attempt has been made to understand people's perception regarding their OOP health expenses with the help of these 13 statements.

The survey data show (Table 62) that the majority of the respondents consider that the cost of healthcare treatment for their households is quite high, and more than half of

the families have even witnessed a rapid increase in the share of healthcare costs in the total expenditure. These changes might be due to the persistently high health risk in the state, along with the swift epidemiological transition.

Table 62: Frequency Distribution Table for Statement I & II

	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I	The health care cost is very high.	42 (3.9%)	85 (7.9%)	244 (22.6%)	**517** **(47.9%)**	192 (17.8%)
II	Health care costs are increasing rapidly with time.	42 (3.9%)	85 (7.9%)	355 (32.9%)	**369** **(34.2%)**	229 (21.2%)

Source: Compiled by the Author

To identify the various factors that influence the households' opinion regarding the belief that the health care cost is very high, a set of simple ordinal logistic regression (OLR) tests are carried out. For deriving a more stable logit model representing the dependent variables more adequately, the 5 levels of agreements have been reduced to 3 categories, i.e., Agree, Neutral, and Disagree. Firstly, the primary assumptions for each of the ordinal regressions are verified. The "Test of Parallel Lines" results confirmed the presence of proportional odds for each of the regression models. The full likelihood ratio and the goodness-of-fit statistics (Pearson and Deviance) confirmed that each of the regression models fitted the respective dataset. The statistically significant variables (for a 95% confidence interval) from the different ordinal regression tests are listed in the table below (Table 63). The estimated odds ratios for each of these statistically significant variables have been used to find out their influence on the order of the dependent variable.[25]

Table 63: OLR Results for Statement I

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	1.048	0.200	24.449	1	0.000	2.848
		Rs. 60001 to Rs. 90000	0.881	0.197	19.913	1	0.000	2.412
		Rs. 90001 to	0.510	0.191	7.166	1	0.007	1.665

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[25] The same procedure has been followed for all the OLR tests conducted for the study. All the "Test of Parallel Lines" results, the full likelihood ratios and the goodness-of-fit statistics (Pearson and Deviance) for each of the OLRs are included in Annexure E.

			B	Std. Error	Wald	df	Sig.	Exp(B)
		Rs.129600						
		Rs.129601 to Rs.231000	0.778	0.194	16.053	1	0.000	2.177
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Incidence of OP visit for the household	Yes	0.572	0.131	19.130	1	0.000	1.772
		No (Ref.)	0.000	-	-	0	-	1.000
3	Presence of chronic conditions in the households	Yes	1.010	0.142	50.877	1	0.000	2.747
		No (Ref.)	0.000	-	-	0	-	1.000
4	Availed IP treatment in a public facility	Yes	0.752	0.148	25.981	1	0.000	2.121
		No (Ref.)	0.000	-	-	0	-	1.000
5	Availed IP treatment in a private facility	Yes	0.796	0.213	13.918	1	0.000	2.217
		No (Ref.)	0.000	-	-	0	-	1.000
6	OP consultation from a public facility	Yes	0.298	0.130	5.296	1	0.021	1.347
		No (Ref.)	0.000	-	-	0	-	1.000
7	OP consultation from a private facility	Yes	0.326	0.146	5.000	1	0.025	1.385
		No (Ref.)	0.000	-	-	0	-	1.000
8	Insurance Enrolment Status	Yes	0.540	0.163	11.051	1	0.001	1.716
		No (Ref.)	0.000	-	-	0	-	1.000

Source: Compiled by the Author

The estimated odds ratios, i.e., Exp (B) values of the ordinal regressions can be interpreted as follows:

i) The household categories based on annual income and households' opinion about the notion that household healthcare costs are very high, both share a positive association. Here, the highest-income group of households (Rs 231001 or more) is the reference group for comparative assessment. According to the odds ratio, a family from the lowest income group (Rs 60000 or less in a year) is more likely to believe that healthcare costs are very high than the reference group of households (OR=2.848). Compared to a house from the highest-income category, a family with yearly earnings between Rs 60001 and Rs 90000 is 2.412 times more likely to agree that healthcare costs for the household are very high. A house with average annual earnings (between Rs 90001 and Rs. 129600) is 1.665 times more likely to agree to the notion compared to the households from the highest income group. Similarly, odds of a family with an annual earning between Rs 129600 and Rs 231000, agreeing to the belief is 2.177 times more likely than the odds of a household

from the highest income category. In short, the healthcare expenses are quite high for houses with below average earnings.

ii) OP visits are often more frequent in the count than other types of treatments. The families that reported at least one OP case within a recall period of 30 days are more likely to agree that the households' health care costs are too high compared to the families without the incidence of any OP case (OR= 1.772).

iii) Chronic illness means a need for lifelong treatment. Thus, the patients have to spend a constant amount money for treatment at a regular interval. With such continuous treatment costs, families are prone to feel the burden. The OLR test also confirmed that the houses with one or more chronic conditions among its members are more likely to agree on healthcare costs being high in comparison to the households without any chronic cases (OR=2.747).

iv) IP treatments have a strong influence over households' opinion about the overall healthcare cost of the house. The public healthcare facilities of the state deliver different healthcare services at a subsidized rate. So, the treatment in such facilities should be relatively cheaper. But contrastingly, the households that have availed IP treatment in a public healthcare facility are more likely to believe that the households' healthcare costs are very high, in comparison to the families that haven't availed IP treatment in any public healthcare facility (OR=2.121).

v) Unlike public facilities, there is no concession in treatment costs in private healthcare facilities; charges are quite high in these facilities. Hence, as suspected, the households that have availed IP treatment from a private healthcare provider are more likely to believe that the households' healthcare costs are very high, in comparison to the houses that haven't availed IP treatment from a private healthcare provider (OR=2.217).

vi) The households that have visited a public healthcare provider for OP consultation are more likely to believe that the households' healthcare costs are very high, in comparison to the houses that haven't visited any public healthcare provider for OP treatment (OR=1.347). Despite the several initiatives made by the government to make healthcare affordable through the different public healthcare facilities, rural households visiting government provider for OP consultation still feels that healthcare costs are very high.

vii) The houses that have reported visiting any private healthcare facility for OP treatment are more likely to believe that households healthcare costs are very high, in

comparison to the households that haven't visited any such provider for OP treatment (OR=1.385). Healthcare services always have been expensive in private facilities, and the test results have also confirmed the obvious.

viii) The purpose of health insurance policies is to provide financial safety against high healthcare costs. The presence of such schemes is supposed to reduce healthcare costs for the families. But surprisingly OLR test shows that the houses with health insurance enrolment are more likely to believe that healthcare costs are too high. The odds of a family enrolled under any health insurance scheme, agreeing to the belief that household healthcare cost is too high, is 1.716 times the odds of the families without any enrolment.

As the results have confirmed that health care cost is very high for the large part of the sample households, the next concern is whether this high cost of healthcare has raised concern for affordability in the rural areas. According to the survey (Table 64), around half of the households think that healthcare costs are not that affordable and the household income is not sufficient for them to pay for various healthcare needs.

Table 64: Frequency Distribution Table for Statement III & IV

	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
III	Health care expenses are affordable.	197 (18.2%)	**345 (31.9%)**	317 (29.4%)	166 (15.4%)	55 (5.1%)
IV	Household income is sufficient to cover health care costs.	254 (23.5%)	**342 (31.7%)**	259 (24.0%)	164 (15.2%)	61 (5.6%)

Source: Compiled by the Author

The Spearman rank correlation coefficients confirm that the high cost of healthcare shares strong but negative correlations with affordability and sufficiency of household income healthcare costs. This implies that when the households perceive the healthcare cost to be very high, the households often believe that they cannot afford it, and household income is also not enough to pay those medical bills.

Table 65: Rank Correlation Result (1)

Spearman's rho		Health care expenses are affordable.	Household income is sufficient to cover health care costs.
The health care cost is very high.	Correlation Coefficient	**-0.776**	**-0.778**
	Sig. (2-tailed)	**0.000**	**0.000**

Source: Compiled by the Author

We have conducted seven simple ordinal logistic regressions to pinpoint the different indicators for the households' opinion about the affordability of the health care

cost. Similarly, another six simple ordinal regressions are carried out to test the influence of different relevant variables on the household's perception about whether their income is sufficient to fulfill all of the healthcare needs.

Table 66: OLR Results for Statement I**I**

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	-1.990	0.195	103.896	1	0.000	0.137
		Rs. 60001 to Rs. 90000	-1.643	0.190	74.933	1	0.000	0.193
		Rs. 90001 to Rs.129600	-1.008	0.183	30.429	1	0.000	0.365
		Rs.129601 to Rs.231000	-1.162	0.182	40.546	1	0.000	0.313
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Religion	Hindu	0.314	0.118	7.051	1	0.008	1.368
		Muslim (Ref.)	0	-	-	0	-	1.000
3	Caste	General	-0.158	0.199	0.633	1	0.426	0.854
		OBC	0.132	0.215	0.374	1	0.541	1.141
		SC	-0.684	0.341	4.037	1	0.045	0.504
		ST (Ref.)	0	-	-	0	-	1.000
4	Presence of chronic conditions in the households	Yes	-0.675	0.135	25.098	1	0.000	0.509
		No (Ref.)	0	-	-	0	-	1.000
5	Availed IP treatment in a private facility	Yes	-0.561	0.177	10.074	1	0.002	0.570
		No (Ref.)	0	-	-	0	-	1.000
6	Utilization of savings for medical bills	Yes	-0.564	0.176	10.311	1	0.001	0.569
		No (Ref.)	0	-	-	0	-	1.000
7	Insurance Enrolment Status	Yes	-0.394	0.142	7.733	1	0.005	0.674
		No (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

The estimated odds ratios, i.e., Exp (B) values for the OLR tests regarding the affordability of healthcare expenses (Table 66), can be interpreted, as follows:

i) There is an overall negative association between household categories based on annual income and households' opinion about the notion that household healthcare costs are affordable, i.e., with improvement in households' income level, healthcare converts to an affordable commodity. In comparison to the highest-income families (more than Rs

231000), all other families are less likely to agree to the statement that the healthcare costs are very much affordable. The odds of a family from the lowest income group (Rs. 60000 or less in a year), agreeing to the belief that healthcare cost is affordable for them, is 0.137 times the odds of a household from the highest income group admitting that they can easily afford healthcare. The odds of a house earning between Rs 60001 and Rs 90000 per year, agreeing on the affordability of household income for healthcare, is 0.193 times the odds of a household from the highest income category believing the same. The odds of a house with moderate annual earning between Rs 90001 and Rs. 129600 per year, agreeing to the notion is 0.365 times the odds for a household from the highest income category. Similarly, odds of a house with an annual earning between Rs 129600 and Rs 231000, agreeing to the belief is 0.313 times less likely than the odds of a household from the highest income category. As the household income decreases, the strength of agreement becomes very weak; bottom income group households strongly believe that it is hard for them to pay for healthcare services.

ii) Hindu families are more likely to believe the notion than Muslim families. The odds of the families following Hinduism agreeing to their healthcare expenses being affordable is 1.368 times than the household following the Islamic religious beliefs.

iii) Out of the three social groups in comparison to the fourth social group (ST), only one group has (SC) found to be statistically significant. According to the table, the odds of the households from the SC group agreeing on the affordability of health care expenses is 0.504 times the odds of the reference social group (ST), i.e., SC houses are less likely accept that healthcare costs within an affordable range.

iv) In the presence of chronic health conditions, houses needed to spend a constant amount of money frequently on prescribed medication and diagnostic tests. According to the OLR, households with chronic patients are less likely to accept that healthcare costs are easily affordable. The likelihood for the families with one or more chronic conditions among its members to agree on healthcare costs being affordable is 0.509 times that of the households without any chronic cases. It might indicate that it is hard for families to bear those fixed costs of chronic treatments, which might also lead to treatment withdrawal.

v) The odds of a household that have availed IP treatment from a private healthcare provider to believe that the households' healthcare costs are affordable is 0.570 times the odds of the houses that haven't availed any IP treatment from a private healthcare provider. Private healthcare is much more expensive than public healthcare services, thus

less relatively affordable. The OLR test also confirms that the households that have utilized private healthcare facilities are less likely to believe that the healthcare costs are affordable in recent times.

vi) From the financing point of view, when healthcare treatment costs force the households to spend from their savings, such houses are less likely to comply with the notion that healthcare costs are affordable. The odds of a family that has utilized the households' savings to pay the medical bills agreeing that they can afford the healthcare cost is 0.569 times the odds of a family that has never used their savings for medical cases.

vii) The households registered under some health insurance schemes are less likely to accept that they can manage to pay for healthcare services. The odds of a house enrolled under any health insurance scheme, agreeing to the belief that household healthcare cost is affordable, is 0.674 times the odds of the households without any enrolment. It seems that despite the health insurance enrolment, the families are doubtful about the healthcare costs.

Table 67: OLR Results for Statement IV

OLR Test No	Variable		Estimates	Std. Error	Wald	Df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	-2.044	0.200	104.460	1	0.000	0.129
		Rs. 60001 to Rs. 90000	-1.739	0.194	80.331	1	0.000	0.176
		Rs. 90001 to Rs.129600	-1.060	0.184	33.288	1	0.000	0.346
		Rs.129601 to Rs.231000	-1.244	0.184	45.569	1	0.000	0.288
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Religion	Hindu	0.330	0.121	7.479	1	0.006	1.391
		Muslim (Ref.)	0	-	-	0	-	1.000
3	Caste	General	-0.140	0.202	0.476	1	0.490	0.870
		OBC	0.194	0.219	0.788	1	0.375	1.214
		SC	-0.759	0.358	4.490	1	0.034	*0.468*
		ST (Ref.)	0	-	-	0	-	1.000
4	Presence of chronic	Yes	-0.763	0.136	31.461	1	0.000	0.466
		No (Ref.)	0	-	-	0	-	1.000

	conditions in the households							
5	Availed IP treatment in a private facility	Yes	-0.569	0.183	9.655	1	0.002	0.566
		No (Ref.)	0	-	-	0	-	1.000
6	Insurance Enrolment Status	Yes	-0.401	0.146	7.581	1	0.006	0.670
		No (Ref.)	0	-	-	0	-	1.000

<div align="center">Source: Compiled by the Author</div>

Similarly, following interpretations are drawn from the estimated odds ratios for the six simple OLR tests (Table 67) concerning households' opinion on the sufficiency of the household earning for healthcare expenses.

i) The income group of the households' and households' views on the statement "Household income is sufficient to cover health care costs" also share a negative association. The income group of Rs 231000 or more, i.e., the highest income group is the reference group for the OLR test. The odds of a family from the lowest income group (Rs. 60000 or less in a year) agreeing that their income is enough for healthcare cost is 0.129 times the odds of a household from the highest income group admitting that household income is sufficient to pay the treatment costs. The odds of a house earning between Rs 60001 and Rs 90000 per year, agreeing on the sufficiency of household income, is 0.176 times the odds of a household from the highest income category believing the same. The odds of a house with moderate annual earning between Rs 90001 and Rs. 129600 per year, agreeing to the notion is 0.346 times the odds for a household from the highest income category. Similarly, odds of a house with an annual earning between Rs 129600 and Rs 231000, agreeing to the belief is 0.288 times less likely than the odds of a household from the highest income category. According to the results, as we go down the income hierarchy, the strength of disagreement increases, i.e., with the decrease in income level, household belief become stronger that their income is not sufficient to pay for the medical bills, and sense of disagreement is the strongest for the bottom two income groups.

ii) The likelihood of a household following Hinduism to think that household income is sufficient to pay the medical bill is more (1.391 times) than that of a house with an Islamic background.

iii) Out of the four social groups of our society, only the households from the SC group are less likely to agree that the household income is sufficient enough for medical bills in comparison to the ST houses. According to the Table 67, the odds of the

households from the SC group believing the household income to be enough to fulfill healthcare need is *0.468* times the odds of the reference social group (ST).

iv) In the presence of chronic conditions, households are less likely to accept that their annual income is sufficient to meet the care needs. The likelihood for the houses with one or more chronic conditions among its members to agree on the sufficiency of household income for paying healthcare cost are 0.466 times that of the households without any chronic cases.

v) According to the OLR test, households that have availed IP treatment from private providers are less likely to agree that household income is enough to pay the medical bills. The odds of a house that have availed IP treatment from a private healthcare provider to believe that the households' income can cover the healthcare costs is 0.566 times the odds of the families that haven't availed any IP treatment from a private healthcare provider.

vi) The households with health insurance enrollment are less likely (OR = 0.670) to believe that household income is sufficient to cover the costs of medical treatment, compared to the households without any such enrolments. It means that regardless of registration under health security schemes, the families do not feel financially secure.

Table 68: Frequency Distribution Table for Statement V, VI and VII

	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
V	Health care expenses have depleted the household savings level.	70 (6.5%)	224 (20.7%)	277 (25.6%)	**361** **(33.4%)**	148 (13.7%)
VI	Health care expenses have increased the financial debt of the family.	157 (14.5%)	219 (20.3%)	254 (23.5%)	**309** **(28.6%)**	141 (13.1%)
VII	The health care cost caused family asset depletion.	**590** **(54.6%)**	150 (13.9%)	81 (7.5%)	222 (20.6%)	37 (3.4%)

Source: Compiled by the Author

Statistics have confirmed that healthcare costs are not affordable for most of the rural households, and the families believe that the family earnings are often not enough to pay for healthcare. It is now essential to understand how these high healthcare expenses have affected these households. The frequency distribution (Table 68) shows that for a sizable number of families, healthcare expenses have depleted their savings level (33.4% "Agree" and 13.7% "Strongly Agree"). Similarly, a considerable number of households have experienced an increase in financial debt levels over the years (28.6% "Agree" and 13.1% "Strongly Agree"). The sale of assets due to the high costs of healthcare is not very

noticeable among rural households. In the previous chapter, it has been found that borrowing from different sources (friends/relatives, moneylenders, SHG/MFIs) is the most preferred source of finance for households when household income and saving are no longer enough to pay the bills. So, the depletion of saving money and the increased debt level, and in certain extreme cases, selling off assets are inevitable. But the extent of these repercussions of high healthcare costs varies across the households. Hence, it is crucial to find out the scale as well as the causes of these variations.

The Spearman's rho values confirm that the high cost of health share a positive relationship with the three potential consequences, i.e., decrease in savings level, increase in debt, and sale of assets. According to the correlation test results, when healthcare is high for households, they are likely to experience any of these consequences. When the costs are high, the possibility of depletion of savings is strong. In the case of high healthcare costs, the chances of increment in debt are moderate, and the likelihood of asset selling is weak. On the other hand, both affordability and household income sufficiency for healthcare costs have a negative relationship of similar magnitude with these three consequences. As healthcare costs become affordable for families or household earning are sufficient to pay for healthcare, the chances of these consequences declines. In the case of high affordability or sufficiency of household incomes, chances of asset selling are the least, followed by the increase in debt and then savings exhaustion.

Table 69: Rank Correlation Result (2)

Spearman's rho		Health care expenses have depleted the household savings level.	Health care expenses have increased the financial debt of the family.	The health care cost caused family asset depletion.
The health care cost is very high.	Correlation Coefficient	0.722	0.618	0.317
	Sig. (2-tailed)	.000	.000	.000
Health care expenses are affordable.	Correlation Coefficient	-0.747	-0.666	-0.370
	Sig. (2-tailed)	0.000	0.000	0.000
Household income is sufficient to cover health care costs.	Correlation Coefficient	-0.741	-0.683	-0.308
	Sig. (2-tailed)	0.000	0.000	0.000

Source: Compiled by the Author

Table 70: OLR Results for Statement V

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	1.213	0.183	43.750	1	0.000	3.362
		Rs. 60001 to Rs. 90000	0.925	0.182	25.911	1	0.000	2.521
		Rs. 90001 to Rs.129600	0.619	0.181	11.740	1	0.001	1.856
		Rs.129601 to Rs.231000	0.903	0.181	24.891	1	0.000	2.467
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Caste	General	0.000	0.198	0.000	1	0.999	1.000
		OBC	-0.190	0.214	0.787	1	0.375	0.827
		SC	0.849	0.347	5.986	1	0.014	2.337
		ST (Ref.)	0			0		1.000
3	Incidence of IP cases in the household	Yes	1.167	0.122	91.450	1	0.000	3.213
		No (Ref.)	0	-	-	0	-	1.000
	Incidence of OP cases in the household	Yes	0.528	0.125	17.708	1	0.000	1.695
		No (Ref.)	0	-	-	0	-	1.000
	Presence of chronic conditions in the households	Yes	0.761	0.139	29.977	1	0.000	2.140
		No (Ref.)	0	-	-	0	-	1.000
4	Availed IP treatment in a public facility	Yes	0.844	0.130	41.888	1	0.000	2.326
		No (Ref.)	0	-	-	0	-	1.000
	Availed IP treatment in a private facility	Yes	1.276	0.190	44.930	1	0.000	3.581
		No (Ref.)	0	-	-	0	-	1.000
5	IP treatment pattern of the household (based on provider selection)	Public	-0.908	0.420	4.688	1	0.030	0.403
		Private	-0.408	0.445	0.839	1	0.360	0.665
		Both (Ref)	0	-	-	0	-	1.000
6	Insurance Enrolment Status	Yes	0.363	0.139	6.782	1	0.009	1.437
		No (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

The depletion of household savings is not the same across all the households (Table 68). To uncover the causes for these variations, a series of six simple ordinal regressions is carried out. The odds ratios for the significant variables are calculated to scale the impact of the different factors.

i) The urge to pay for healthcare out of household earnings and savings is strong among rural households. In comparison to the highest income category, houses from all the remaining income levels have claimed to use up their savings excessively for healthcare. The lowest-income households are most likely to consume their savings first (OR = 3.362); it may be because these families don't hold a rather large amount of savings in their hands. The likelihood of exhausting saving money fluctuates for the rest of the income groups.

ii) Out of the four social groups of our society, only the households from the SC group are more likely to believe that household savings levels have depleted because of healthcare costs in comparison to the houses from ST social group. According to the Table 70, the odds of the households from the SC group, believing they have exhausted their savings on healthcare is 2.337 times the odds of the reference social group (ST).

iii) The presence of IP, OP, as well as chronic cases in a household, families prefer to pay the treatment costs from households' earning, including saving money; as a result, the household savings declines. The chances of reduction in savings levels are highest in the presence of IP cases (OR = 3.213), followed by chronic cases (OR = 2.140), and OP visits (OR = 1.695).

iv) IP treatment in both public and private facilities can inflict depletion of household savings on rural households. But the chances are higher when the family went to a private facility for IP treatment (OR = 3.581). The probability of a significant reduction in saving money is comparatively less when families availed IP treatments in public facilities (OR = 2.326).

v) The households that solely relied on public facilities for IP treatments are less likely (OR = 0.403) to use up their savings due to healthcare costs, compared to the households that have availed treatment from both public and private facilities.

vi) Surprisingly the families enrolled under some health insurance schemes are more likely to encounter reductions in savings because of healthcare expenses (OR = 1.437).

Out of the several financing strategies adopted by rural households to pay for healthcare expenses, three measures are likely to increase the debt level of the families. The Chi-square test also confirmed that households' opinions on the impact of healthcare costs on the debt level of the families are strongly associated with borrowings from relatives/friends [value = 100.187, df = 4, sig = 0.000, Cramer's V value = 0.305], borrowing from moneylenders [value = 97.114, df = 4, sig = 0.000, Cramer's V value =

0.300], and micro-credits from SHG/MFIs [value = 354.267, df = 4, sig = 0.000, Cramer's V value = 0.573]. But the impact varies widely across the household groups. Including these three financing measures, several other variables are also responsible for the financial debt levels of the rural houses. We have carried out nine OLRs to pinpoint these determinants, and the odds ratios for the respective OLRs are interpreted accordingly.

Table 71: OLR Results for Statement VI

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	0.998	0.181	30.450	1	0.000	2.714
		Rs. 60001 to Rs. 90000	1.022	0.183	31.185	1	0.000	2.778
		Rs. 90001 to Rs.129600	0.553	0.182	9.236	1	0.002	1.738
		Rs.129601 to Rs.231000	0.777	0.181	18.448	1	0.000	2.175
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Caste	General	0.057	0.196	0.084	1	0.772	1.058
		OBC	-0.208	0.213	0.951	1	0.329	0.813
		SC	0.922	0.337	7.478	1	0.006	2.515
		ST (Ref.)	0	-	-	0	-	1.000
3	Religion	Hindu	-0.328	0.115	8.068	1	0.005	0.720
		Muslim (Ref.)	0	-	-	0	-	1.000
4	Death of earning member (count)	-	1.603	0.510	9.884	1	0.002	4.968
5	Incidence of IP cases in the household	Yes	1.116	0.119	88.132	1	0.000	3.052
		No (Ref.)	0	-	-	0	-	1.000
	Incidence of OP cases in the household	Yes	0.526	0.124	18.094	1	0.000	1.692
		No (Ref.)	0	-	-	0	-	1.000
6	Death of a household member due to medical conditions or during/post-treatment	Yes	0.656	0.248	6.986	1	0.008	1.927
		No (Ref.)	0	-	-	0	-	1.000
7	Availed IP treatment in a public facility	Yes	0.746	0.125	35.410	1	0.000	2.108
		No (Ref.)	0	-	-	0	-	1.000
8	Availed IP	Yes	1.409	0.521	7.314	1	0.007	4.091

	treatment in both type of facilities	No (Ref.)	0	-	-	0	-	1.000
9	Availed OP treatment in a public facility	Yes	0.439	0.127	12.037	1	0.001	1.551
		No (Ref.)	0	-	-	0	-	1.000
	Availed OP treatment in a private facility	Yes	0.452	0.140	10.482	1	0.001	1.572
		No (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

i) In comparison to the highest-income households, the households from the rest of the categories are more likely to suffer from increased debts caused by healthcare charges. Amidst that, the odds ratios also confirmed that the bottom two income groups, i.e., Rs 60000 or less p.a. (OR = 2.714) and the annual earning between Rs 60000 and Rs 90000 p.a. (OR= 2.778) are most likely to end up with excessive debts. The chances of the financial burden for these families increase by almost three folds.

ii) Similar to the previous case of depleted savings, out of the four social groups of our society, only the households from the SC group are more likely to believe that their debt levels have gone up due to healthcare costs in comparison to the ST houses. According to the Table 71, the odds of the households from the SC group, thinking that healthcare has generated a large pool of debt are 2.515 times the odds of the reference social group (ST).

iii) The odds of Hindu households believing that healthcare expenses have increased their debts is less compared to Muslim households (OR = 0.720).

iv) The death of an earning member of the family during or post-treatment increases the chances of financial debt by 4.968 times.

v) According to the OLR, both IP and OP cases have the potential to induce high financial debt for rural households. Although both are influencing the matter, the households believe that chances are higher for IP treatment (OR = 3.052) than the OP visits (OR = 1.692).

vi) In the event of the death of any family member due to medical conditions, the likelihood for rural households agreeing to an escalation in financial debt almost doubles (OR = 1.927).

vii) The households that have availed IP treatments in public facilities are more likely to experience a rise in household's debt levels compared to houses without any IP treatment in public facilities (OR = 2.108). On the other hand, their opinion suggests that

the odds of the increase in debt levels doubles if the family had to avail IP treatment in both public and private facilities (OR = 4.091).

viii) The OP visits to the public, as well as private providers, are expected to contribute to increasing household debts. The odds of households agreeing that they have experienced an increment in debt due to healthcare are almost similar for both public (OR = 1.551) and private (OR = 1.572) providers.

When healthcare cost goes far beyond households' capacity to pay, families are forced to sell off their assets at times, but it is often the last resort for the houses. The frequency distribution (Table 68) also reveals that the share of households that have undergone asset depletion is relatively very less. Only 3.4% of the households strongly agreed, and 20.6% agreed that the health care cost caused family asset depletion. To find out what are the different rare circumstances that resulted in such occasional sale of family assets, another set of OLRs comprising of five simple OLRs and two multiple OLRs have been carried out.

Table 72: OLR Results for Statement VII

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	1.059	0.214	24.379	1	0.000	2.882
		Rs. 60001 to Rs. 90000	0.561	0.223	6.313	1	0.012	1.752
		Rs. 90001 to Rs.129600	0.466	0.227	4.226	1	0.040	1.593
		Rs.129601 to Rs.231000	0.730	0.220	11.050	1	0.001	2.076
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Caste	General	-0.770	0.210	13.499	1	0.000	0.463
		OBC	-0.538	0.228	5.567	1	0.018	0.584
		SC	-0.701	0.358	3.843	1	0.050	0.496
		ST (Ref.)	0	-	-	0	-	1.000
3	Death of earning member (count)	-	1.918	0.453	17.947	1	0.000	6.810
4	Incidence of IP cases in the household	Yes	0.834	0.133	39.508	1	0.000	2.303
		No (Ref.)	0	-	-	0	-	1.000
	Incidence of OP cases in the household	Yes	0.609	0.148	16.900	1	0.000	1.839
		No (Ref.)	0	-	-	0	-	1.000

			B	S.E.	Wald	df	Sig.	Exp(B)
5	Death of a household member due to medical conditions or during/post-treatment	Yes	1.105	0.248	19.883	1	0.000	3.021
		No (Ref.)	0	-	-	0	-	1.000
6	Availed IP treatment in a public facility	Yes	0.692	0.141	24.134	1	0.000	1.998
		No (Ref.)	0	-	-	0	-	1.000
	Availed IP treatment in a private facility	Yes	0.714	0.185	14.946	1	0.000	2.042
		No (Ref.)	0	-	-	0	-	1.000
	Availed IP treatment in both type of facilities	Yes	1.354	0.452	8.967	1	0.003	3.874
		No (Ref.)	0	-	-	0	-	1.000
7	Availed OP treatment in a public facility	Yes	0.397	0.147	7.244	1	0.007	1.487
		No (Ref.)	0	-	-	0	-	1.000
	Availed OP treatment in a private facility	Yes	0.592	0.158	13.962	1	0.000	1.807
		No (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

For each of these OLRs, the respective odds ratios are estimated and the following interpretations are drawn from these odds ratios.

i) Compared to the highest income category, households from the bottom income group are most likely to go through severe asset level depletion (OR = 2.882), followed by the houses from the second-highest income group (OR = 2.076). The asset count for the lowest income families is usually very limited in contrast to the higher-earning families; higher-income households also have regular earnings to support the necessities. Hence, although both these groups share similar odds ratios, we can't say the consequences will be almost the same for both. The families earning between Rs 60000 and Rs 90000 in a year are 1.752 times more likely to dissipate their assets than the richest. For households with earning between Rs 90000 and Rs 129600, the chances are a little less (OR = 1.593).

ii) In comparison to the ST households (reference group), houses from general/forward and OBC categories are less likely to witness any significant reduction in asset levels due to healthcare costs. The likelihood of a general household to experience asset depletion 0.436 times of that for the ST category. Similarly, the odds of a family from the OBC group to undergo asset depletion are 0.584 times the odds of that for ST families.

iii) The death of an earning member of the family during or post-treatment raises the chances of asset depletion by 6.810 times.

iv) In the event of both IP and OP treatments, rural households are likely to experience a reduction in family assets. However, the chances of such depletions are higher for IP treatment (OR = 2.303) than for OP visits (OR = 1.839).

v) In the event of the death of any family member due to medical conditions, the likelihood for rural households experiencing an escalation in financial debt increases three-fold (OR = 3.021).

vi) A rural household can avail IP treatments in a public facility or a private facility or both, depending on the circumstances. Each of these treatments can induce a reduction in household assets. The odds of experiencing such asset depletion is higher in case IP treatments in private facilities (OR = 2.042) than in public facilities (OR = 1.998). The likelihood of households witnessing a noticeable reduction in household assets is highest if the family has to avail IP treatments from both types of providers (OR = 3.874).

vii) According to the OLR, OP visits can also result in asset depletion irrespective of the type of provider visited. But the chance of asset depletion is higher for OP treatments in private facilities (OR = 1.807) than that in public ones (OR = 1.487).

Table 73: Frequency Distribution Table for Statement VIII, IX and X

	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
VIII	The health care costs compel the family to compromise proper and complete treatment at many times.	**319 (29.5%)**	224 (20.7%)	168 (15.6%)	216 (20.0%)	153 (14.2%)
IX	To cover the health care expenses, the family has to compromise with the food consumption and food-related expenses	99 (9.2%)	276 (25.6%)	**416 (38.5%)**	254 (23.5%)	35 (3.2%)
X	To cover the health care expenses, the family has to cut off other non-food expenditures from the household budget.	102 (9.4%)	282 (26.1%)	**464 (43.0%)**	198 (18.3%)	34 (3.1%)

Source: Compiled by the Author

At times the households also have to resort to cost prevention strategies when they cannot cope up with the high cost of healthcare. In such situations, families either ignore the illness or delay the needed treatments. If not, sometimes to cope up with these costs, families make adjustments with their food and non-food expenses. Compromising

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therapies might further worsen the health conditions of the family members, increasing the overall health risks for the family. The study shows that the number of households that have given up the treatments due to high costs is approximately one-third of the total sample (Table 73). On the other, around one-fourth of the households admitted that to cover the health care expenses, they have compromised with the food consumption and food-related costs; one-fifth have cut off other non-food expenditures from the household budget.

Although the fraction of households that have given up healthcare midway or delayed it is relatively less, it cannot be ignored. It is important to know in what rare circumstances a house decided to do so. With the help of six independent OLRs, the study attempted to identify the different determining factors that force a family to compromise with the required treatments.

Table 74: OLR Results for Statement VIII

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	2.011	0.207	94.453	1	0.000	7.474
		Rs. 60001 to Rs. 90000	1.521	0.206	54.335	1	0.000	4.579
		Rs. 90001 to Rs.129600	1.204	0.208	33.426	1	0.000	3.333
		Rs.129601 to Rs.231000	1.167	0.207	31.833	1	0.000	3.213
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Availed IP treatment in a private facility	Yes	-0.422	0.174	5.862	1	0.015	0.656
		No (Ref.)	0	-	-	0	-	1.000
3	Visited public facility for OP consultation	Yes	0.349	0.118	8.796	1	0.003	1.418
		No (Ref.)	0	-	-	0	-	1.000
4	Visited private facility for OP consultation	Yes	-0.278	0.131	4.486	1	0.034	0.757
		No (Ref.)	0	-	-	0	-	1.000
5	Insurance Enrolment Status	Yes	0.327	0.138	5.613	1	0.018	1.387
		No (Ref.)	0	-	-	0	-	1.000
6	Borrowed money from friends/relatives for healthcare	Yes	0.651	0.120	29.415	1	0.000	1.917
		No (Ref.)	0	-	-	0	-	1.000

purpose							
Availed credit from SHG/MFI for healthcare purpose	Yes	0.675	0.120	31.871	1	0.000	1.964
	No (Ref.)	0	-	-	0	-	1.000

Each of the variables considered for the different OLRs is statistically significant at the 95 percent confidence interval. The interpretations of the odds ratios for each of these variables are listed below.

i) Compared to the highest-income households, chances of compromising on treatment are more for the other houses. The possibility is highest for the lowest-earning families (OR = 7.474). As the household moves up the income hierarchy, the chances of compromising decreases (OR = 4.579, 3.333, 3.213).

ii) A household that has gone to a private facility for IP treatment is less likely to give up treatment midway. According to the odds ratios, the odds of a family compromising with healthcare treatment are 0.656 times the odds of a household without such IP treatments.

iii) A household that has visited a public facility for OP consultation is more likely to give up treatment halfway (OR = 1.418). Contrastingly, families that have gone to private facilities for OP treatments are less likely to compromise with their therapies (OR = 0.757).

iv) The health insurance enrolment couldn't restrain the rural households from delaying or giving up treatments. The families enrolled under some health insurance schemes are even more likely to comprise their treatments (OR = 1.387).

v) The households that have borrowed money from relatives/friends and SHG/MFIs for healthcare are more likely to give up treatments. The chances of compromising with treatments almost doubles in the presence of such borrowings (OR = 1.917, 1.964).

Similarly, to find out the antecedents that compel the households to make adjustments in food consumption and food-related expenses for covering the medical bills, another four OLRs are conducted. We have used the odds ratios to assess the influence of the various determinants on the matter. The odds ratios for the significant variables (at the 95% confidence interval) are discussed below.

i) In comparison to the highest-earning families, the other households are likely to compromise with their food consumption patterns to cover healthcare costs, if needed. According to the odds ratio, the lowest-earning houses are most prone to making such

adjustments (OR = 9.803), followed by the second low earning group of households with the odds reduced by one-third (OR = 6.273). For the moderate and high-income families, the chances further reduce by half (OR = 3.823, 3.327). So, we can say that with the increase in households' annual earnings, the chances of such adjustments decline.

Table 75: OLR Results for Statement IX

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	2.283	0.196	136.094	1	0.000	9.803
		Rs. 60001 to Rs. 90000	1.836	0.194	89.981	1	0.000	6.273
		Rs. 90001 to Rs.129600	1.341	0.192	48.632	1	0.000	3.823
		Rs.129601 to Rs.231000	1.202	0.190	39.854	1	0.000	3.327
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Family size of the household	Single/ 1 member	2.079	0.570	13.285	1	0.000	7.996
		2 members	1.278	0.301	18.100	1	0.000	3.591
		3-4 members	0.506	0.165	9.377	1	0.002	1.659
		5-6 members	0.357	0.174	4.194	1	0.041	1.429
		7 or more members (Ref.)	0	-	-	0	-	1.000
3	Caste	General	0.418	0.196	4.524	1	0.033	1.518
		OBC	-0.199	0.214	0.862	1	0.353	0.820
		SC	1.143	0.321	12.660	1	0.000	3.137
		ST (Ref.)	0	-	-	0	-	1.000
4	Religion	Hindu	-0.569	0.115	24.317	1	0.000	0.566
		Muslim (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

ii) Compared to households with large families (7 or more members), the other houses are more likely to compromise their food consumption patterns. The odds are highest for single-member households (OR = 7.996), followed by two-member families; as the family grows in size, the chance of compromising their food consumption decreases.

iii) Among the different social groups of the society, general class, as well as SC households, are significantly more likely to compromise their food expenses to cover medical fees compared to ST category houses. Between these two groups, the odds for SC household to undergo such adjustments (OR = 3.137) is almost thrice the odds for general group houses (OR = 1.518).

iv) The odds ratio indicates that Hindu households are less likely to compromise their food consumption because of healthcare costs than Muslim houses. The odds of Hindu families compromising with food to cover health expenses are 0.566 times the odds of Muslim families making such adjustments.

Table 76: Rank Correlation Result (3)

Spearman's rho		To cover the health care expenses, the family has to cut off other non-food expenditures from the household budget.
To cover the health care expenses, the family has to compromise with the food consumption and food-related expenses	Correlation Coefficient	0.904
	Sig. (2-tailed)	0.000

Source: Compiled by the Author

Spearman's rho value (0.904) shows that the households' opinion about healthcare expenses forcing to compromise the food consumption patterns shares a strong positive monotonic relation with the views on cutting off non-food expenses because of healthcare costs (Table 76). It means that the households that have compromised with their food-related expenses also had made adjustments with their different non-food expenditures; such settlements go hand-in-hand with one another. We have identified the various factors that push a household towards making such adjustments with the help of eight OLRs. The odds ratios for the significant variables (at the 95% confidence interval) are discussed below in details.

Table 77: OLR Results for Statement X

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	2.163	0.196	122.414	1	0.000	8.701
		Rs. 60001 to Rs. 90000	1.705	0.194	77.295	1	0.000	5.500
		Rs. 90001 to Rs.129600	1.248	0.193	41.729	1	0.000	3.482

			B	S.E.	Wald	df	Sig.	Exp(B)
		Rs.129601 to Rs.231000	1.253	0.192	42.811	1	0.000	3.501
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Religion	Hindu	-0.541	0.116	21.639	1	0.000	0.582
		Muslim (Ref.)	0	-	-	0	-	1.000
3	Incidence of IP cases in the household	Yes	0.502	0.115	19.086	1	0.000	1.652
		No (Ref.)	0	-	-	0	-	1.000
4	Presence of chronic conditions in the households	Yes	0.270	0.135	3.999	1	0.046	1.310
		No (Ref.)	0	-	-	0	-	1.000
5	Insurance Enrolment Status	Yes	0.370	0.136	7.362	1	0.007	1.447
		No (Ref.)	0	-	-	0	-	1.000
6	Sold off assets to pay medical bills	Yes	0.828	0.135	37.471	1	0.000	2.289
		No (Ref.)	0	-	-	0	-	1.000
7	Money taken from friends/relatives for healthcare purpose	Yes	0.709	0.118	36.371	1	0.000	2.032
		No (Ref.)	0	-	-	0	-	1.000
8	Money taken from friends/relatives for healthcare purpose (with interest)	Yes	0.855	0.209	16.735	1	0.000	2.351
		No (Ref.)	0	-	-	0	-	1.000
	Money taken from friends/relatives for healthcare purpose (without interest)	Yes	0.463	0.136	11.563	1	0.001	1.589
		No (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

i) In comparison to the highest-income households (reference group), all other houses are more likely to compromise with their non-food expenses to cover the healthcare costs. Like always here as well, the lowest-income households are most likely to adjusts their non-food expenses according to the healthcare requirements (OR = 8.701), accompanied by the second low earning families (OR = 5.500). As the households' income level increases, the odds of such compromises decrease. For the moderate and high-earning families, the odds of compromising non-food expenses are almost thrice the odds for highest-earners (OR = 3.482, 3.501).

ii) The odds ratio indicates that Hindu households are less likely to compromise their non-food consumption because of healthcare costs than Muslim houses. The odds of

Hindu families compromising with other expenses are 0.582 times the odds of Muslim families making such adjustments.

iii) The odds of rural households compromising the non-food expenditures in their budget are high if the houses have undergone IP treatments for any of the members. With the incidence of IP cases, the chance of compromising the non-food expenses for a family increase by 1.652 times.

iv) According to the odds ratio, rural households are more likely to compromise the other expenses of households' annual budgets in presence of chronic patients in the family. A family with chronic patients is 1.310 times more likely to make such adjustments to cover the medical costs than the houses with any chronic cases at all.

v) The health insurance enrolment also couldn't restrain the rural households from giving up other household essentials. Surprisingly families enrolled under some health insurance schemes are even more likely to make such adjustments (OR = 1.447).

vi) The households that have already sold off household assets to pay medical bills are more likely to compromise the non-food related expenses to cover the healthcare costs. The chances of such compromises are almost double for these families (OR = 2.289).

vii) Similarly, the houses that have relied on relatives/friends for financial help for healthcare purposes are also 2.302 times more likely to give up on the non-food related necessities, as well to make ends meet. However, the chances of such adjustments are higher for households who have borrowed with interest (OR = 2.351); the chances of houses with interest-free borrowings are relatively lower (OR = 1.589).

In light of the rapid epidemiological transitions and high healthcare costs, the health risks and the associated financial risks are very prominent at the current times. Most of the respondents have also accepted (29.6% agree, 25.6% strongly agree) that such high expenses of treatments are likely to affect the household's economic situations in the long run. 85.2% of the respondents have admitted (35.2% agree, 51% strongly agree) that they feel the for protection against the unknown health care cost at present times. Around 89.2% of rural households believe that the government should bear all the costs of health care.

Table 78: Frequency Distribution Table for Statement XI, XII & XIII

	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
XI	With such a level of health care	14	139	**330**	320	277

	cost, the economic condition of the family is likely to deteriorate in the future.	(1.3%)	(12.9%)	**(30.6%)**	(29.6%)	(25.6%)
XII	Protection against the unseen health care cost is very essential at present times.	0 (0.0%)	11 (1.0%)	138 (12.8%)	380 (35.2%)	**551 (51.0%)**
XIII	The government should bear all the costs of health care.	0 (0.0%)	3 (0.3%)	114 (10.6%)	369 (34.2%)	**594 (55.0%)**

Source: Compiled by the Author

The Spearman's rho values (Table 79) confirm that deterioration of a household's economic condition shares strong associations with the high costs of healthcare, affordability, the sufficiency of income level, and families' reliance on saving money for healthcare. A family is more likely to believe that their financial situation will deteriorate if they feel that their annual healthcare cost is very high. Contrastingly, when healthcare expenses are affordable for the families or the income is sufficient to pay for these expenses, the households' economic situation is not likely to get affected. When the household's savings got exhausted because of healthcare, the family becomes highly prone to economic deterioration.

Table 79: Rank Correlation Result (4)

Spearman's rho		With such a level of health care cost, the economic condition of the family is likely to deteriorate in the future.
The health care cost is very high.	Correlation Coefficient	**0.708**
	Sig. (2-tailed)	0.000
Health care expenses are affordable.	Correlation Coefficient	**-0.737**
	Sig. (2-tailed)	0.000
Household income is sufficient to cover health care costs.	Correlation Coefficient	**-0.748**
	Sig. (2-tailed)	0.000
Health care expenses have depleted the household savings level.	Correlation Coefficient	**0.710**
	Sig. (2-tailed)	0.000

Source: Compiled by the Author

Although most of the rural houses agree that if the current level of health expenses sustains longer, it will hinder their economic status, the agreement levels are unevenly scattered across the sample. To find out the causes for such variations in opinions, we have again carried out eight OLRs and interpreted the significant variables (at the 95% confidence interval) using the respective odds ratios. The interpretations are as follows:

Table 80: OLR Results for Statement XI

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Income Group of the household	Up to Rs. 60000	1.313	0.193	46.297	1	0.000	3.717
		Rs. 60001 to Rs. 90000	0.868	0.186	21.742	1	0.000	2.382
		Rs. 90001 to Rs.129600	0.461	0.182	6.388	1	0.011	1.586
		Rs.129601 to Rs.231000	0.743	0.184	16.313	1	0.000	2.101
		Rs. 231001 and more (Ref.)	0	-	-	0	-	1.000
2	Caste	General	0.172	0.204	0.705	1	0.401	1.187
		OBC	-0.402	0.220	3.339	1	0.068	0.669
		SC	1.055	0.383	7.597	1	0.006	2.871
		ST (Ref.)	0	-	-	0	-	1.000
3	Religion	Hindu	-0.307	0.121	6.422	1	0.011	0.736
		Muslim (Ref.)	0	-	-	0	-	1.000
4	Incidence of OP cases in the household	Yes	0.522	0.124	17.626	1	0.000	1.685
		No (Ref.)	0	-	-	0	-	1.000
5	Presence of chronic conditions in the households	Yes	0.925	0.137	45.320	1	0.000	2.521
		No (Ref.)	0	-	-	0	-	1.000
6	Availed IP treatment in a private facility	Yes	0.569	0.185	9.446	1	0.002	1.767
		No (Ref.)	0	-	-	0	-	1.000
	Visited private facility for OP consultation	Yes	0.347	0.136	6.511	1	0.011	1.415
		No (Ref.)	0	-	-	0	-	1.000
7	Insurance Enrolment Status	Yes	0.328	0.145	5.080	1	0.024	1.388
		No (Ref.)	0	-	-	0	-	1.000
8	Money taken from friends/relatives for healthcare purpose (with interest)	Yes	1.202	0.266	20.348	1	0.000	3.326
		No (Ref.)	0	-	-	0	-	1.000
		Neutral	-2.476	0.167	220.500	1	0.000	0.084
		Agree (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

i) Among all the income groups, the lowest-earning families felt most vulnerable to the financial consequences of high healthcare costs (OR = 3.717), in comparison to the highest-earning households, followed by the houses with the second-lowest earnings (OR

= 2.382). Surprisingly, the second-highest families also felt a strong possibility to witness economic deterioration in the future (OR = 2.101). The households with moderate earning felt least exposed to such financial declines (OR = 1.586).

ii) Here as well, among the different social groups of our society, it has been witnessed that only the households from the SC groups to be significant in the matter. The odds of feeling exposed to economic deterioration of household conditions because of healthcare expenses for SC households are almost thrice (OR = 2.871) the odds of that for families from the ST group.

iii) The odds ratio indicates that Hindu households are less likely to feel insecure about the future because of healthcare costs than Muslim houses. The odds of Hindu families believing that their financial conditions might deteriorate in the long run are 0.736 times the odds of Muslim families feeling helpless.

iv) With the incidence of OP visits, the odds of a family believing that their economic condition is likely to deteriorate in the future due to the high healthcare costs increases by 1.685 times.

v) Households with chronic patients are more likely to think that due to the high healthcare costs, their economic conditions will worsen over time. The odds of believing that is almost 2.521 times for these families.

vi) The households that availed IP, as well as OP treatments from private facilities, are more likely to believe that high treatment costs will result in a decline in the financial situation of the families. In the case of such IP treatments, the odds of such beliefs are 1.767 times, while in the case of OP visits to private providers, the odds are slightly less (OR = 1.415).

vii) Despite the enrolment under health insurance policies, the household felt vulnerable to the financial consequences of high healthcare costs. The houses registered under such schemes are more likely to believe that they will have to suffer from worsening of their economic condition over time (OR = 1.388).

viii) The burden of credits from relatives and friends is highly likely to make rural households feel insecure about their future. The families that have borrowed money from relatives/friends on interest for healthcare purposes are more likely to think that it will affect their financial situation in the long run. With such borrowing, chances of feeling insecure can increase three times (OR = 3.326).

Table 81: OLR Results for Statement XII

OLR Test No	Variable		Estimates	Std. Error	Wald	df	Sig.	Exp(B)
	Description	Category						
1	Incidence of IP cases in the household	Yes	0.720	0.190	14.341	1	0.000	2.054
		No (Ref.)	0	-	-	0	-	1.000
2	Incidence of OP cases in the household	Yes	0.642	0.179	12.875	1	0.000	1.900
		No (Ref.)	0	-	-	0	-	1.000
3	Presence of chronic conditions in the households	Yes	0.872	0.186	21.867	1	0.000	2.392
		No (Ref.)	0	-	-	0	-	1.000
4	Death of a household member due to medical conditions or during/post-treatment	Yes	-0.787	0.301	6.847	1	0.009	0.455
		No (Ref.)	0	-	-	0	-	1.000
5	Availed IP treatment in a public facility	Yes	0.403	0.204	3.904	1	0.048	1.496
		No (Ref.)	0	-	-	0	-	1.000
6	Availed IP treatment in a private facility	Yes	0.762	0.326	5.442	1	0.020	2.142
		No (Ref.)	0	-	-	0	-	1.000
7	Used household savings to pay for healthcare	Yes	0.630	0.237	7.075	1	0.008	1.878
		No (Ref.)	0	-	-	0	-	1.000
8	Borrowed money from moneylenders for treatment	Yes	1.108	0.374	8.759	1	0.003	3.029
		No (Ref.)	0	-	-	0	-	1.000
9	Availed credit from SHG/MFI for healthcare bill	Yes	2.736	0.369	54.932	1	0.000	15.423
		No (Ref.)	0	-	-	0	-	1.000

Source: Compiled by the Author

In light of high OOP expenses, the majority of the rural households have felt the need for protection. To find out the different factors that have forced these families to believe that financial security against health risk is a necessity, a set of nine simple OLRs with relevant variables are carried out.

Nine out of nine variables are statistically significant at the 95 percent confidence interval. The interpretations of the odds ratios for these variables are listed below.

i) The households with IP cases are more likely to admit that they need financial protection against unseen healthcare risks. In the presence of IP cases, the chances of houses feeling the need for financial security doubles (OR = 2.054).

ii) The odds of households agreeing to the necessity of financial security against health risk are 1.900 times with OP visits, compared to the houses without any OP cases.

iii) Households with chronic patients are highly likely to believe that their family urgently need some financial protection against probable health costs. With chronic cases, the chances increase by 2.392 times for rural households.

iv) Surprisingly, in the event of the death of family members due to medical reasons, households are less likely to consider financial security against health risks to be necessary. In such cases, the odds for rural houses reduce by half (OR = 0.455).

v) The households that have availed IP treatment in public facilities are 1.496 times more likely to accept that they have felt the need for financial security. When the families opted for the private facility for IP treatments, the chances of families agreeing to the need for protection get double (OR = 2.142). Based on the types of providers visited for IP treatments, the IP treatments in private facilities have a more powerful influence on convincing the families that financial protection against healthcare costs is very crucial than when treatment received from a public facility.

vi) The families have strongly relied on households' savings for medical bills are more likely to consider the necessity of financial assurance against unseen risks of health (OR = 1.878).

vii) The households that have borrowed money from informal channels (e.g., moneylenders) are highly likely to accept the necessity of financial security against high costs of treatments. The odds for the families agreeing on the matter triples when they have relied upon borrowings from moneylenders (OR = 3.029).

viii) The households that have taken loans from SHG/MFIs for healthcare purposes are highly likely to believe in the need for security from unknown healthcare costs (OR = 15.423).

Table 82: Rank Correlation Result (5)

Spearman's rho		The government should bear all the costs of health care.
Protection against the unseen health care cost is very essential at present times.	Correlation Coefficient	0.776
	Sig. (2-tailed)	0.000

Source: Compiled by the Author

Spearman's rho value from Table 82 further confirms that the opinion on the need for financial protection against unknown health risks and household's view about government bearing all the costs of healthcare shares a strong positive monotonic association with one another. The families that have felt the necessity for security against unknown health risks are more liable to accept that the government should be responsible for the healthcare of its people. The strong association also implies that health conditions of the household members, healthcare utilization and financing pattern strongly influence the rural households' belief that the government should be responsible for their healthcare expenses.

5.3. Summary

This chapter have attempted to thoroughly review the repercussions of high costs of treatments in the rural settings of Assam from two standpoints; (a) extent of financial hardship caused because of healthcare costs based on the incidence of catastrophic health expenses and (b) household's opinion about their annual health expenses.

(a) Financial Hardship due to healthcare costs

It is a general notion that the death of an earning member of the family eventually could take a severe toll on the financial stability of the family with high debts, depletion of savings as well as family assets. On the other hand, the existing literature suggests the odds of a family suffering from catastrophic health expenditure (CHE) are always higher in the event of IP cases (Misra, et al., 2015; Sinha, et al., 2015; Kastor, & Mohanty, 2018; Akhtar, Ahmad, & Roy Chowdhury 2020). But the study shows that CHE is most likely to occur because of the OP visits, followed by the IP treatments. As the count of these different medical events increases, the CHE grows more plausible. As we know that ailments leading to IP treatments usually signify the severity of the condition with the need for costly treatments, but such event are rare in count. On the other hand, ordinarily, OP treatments are quite frequent in occurrences and relatively cheaper. The study insinuates that both ailment severity, as well as the frequency of visits to healthcare facilities for different types of treatments, could take a toll at households' economic conditions. Interestingly, according to the study findings, the odds of incidence of CHE is independent of the family size and income; while literatures available from the previous studies claims otherwise (Section 2.2.3, Table 7). According to the previous studies, these two variables the most common determinants of the CHE incidence. Such deviation from the general notion is a matter to ponder upon. The rapid epidemiological transition

happening in India could be one plausible reason behind this violation in findings. According to Yadav and Arokiasamy (2014) Indian population is suffering from double burden of communicable and non-communicable diseases, significant structural changes in disease patterns and continued reductions in mortality for the past decades. Such changes are bound to have some significant long-term impacts.

The healthcare utilization pattern also plays a vital role in the incidence of CHE. The study has already noted a vast difference between the costs of treatments in public and private healthcare facilities. IP Treatments in private facilities cost is more than twice in private facilities, and for the different costs associated with OP consultations in private providers are almost 15 times of that in public facilities. Consequently, the treatments received from private providers have proven to be more harmful from the financing standpoint. The study finding also substantiated the previous findings (Pradhan and Bahera, 2021; Sriram, & Albadrani, 2022) suggesting that for both IP and OP cases, the financial risk rises multifold when treated in a private facility. The different financing alternatives adopted by rural households also shared a close association with the CHE incurrence. Logit models showed that the chances of financial catastrophe grow further when the healthcare costs force the families to sell assets, borrow money from formal and informal channels (SHG/MFI, moneylenders, and relatives/friends). Conversely, one can say that the extreme situation of CHE pushes rural households to adopt the mentioned financing tactics.

(b) Household Perception about Healthcare Cost

The detailed analysis of rural households' views on the different aspects of healthcare costs has unveiled how household demographics, treatment, and financing patterns have molded these views. Although households' economic settings are insignificant in predicting the incidence of CHE, the poor always suffers the most because of high cost of treatments (Hardeman, et al., 2004; Li, et al., 2016), and it is also evident from the study that the financially weaker section of the rural population suffered the most because of high health care spendings and the after-effects are devastating for them. Evidences from the past have revealed that the public health have been extensively influenced by religion, culture, and tradition in both positive and negative ways (Blevins et al., 2019) such as their understanding of health and its significance, health care practices, decision regarding their health. Adding to that, the study revealed that religious and social beliefs are responsible for the variations in their views about healthcare

expenses as well. The study findings show that the backward and minority segment of the society have negative outlook about their healthcare spendings and the consequences out of it. According to the latest Oxfam report, one in four Indians still have to face discrimination while accessing health services because of their caste and religion (Abhishek et al., 2021). Such prejudice could also be the reason behind the narrow mindset of the rural people about the health system, the cost of treatments and also their financing decisions to pay their medical bills. According to the latest Pew Research Center report, around half of Indians still trust the religious ritual to treat their health problem, and concentration of such population significantly high in the northeastern states of the country and backward classes are relatively more inclined in such cases (Sahgal et al., 2021). The prevailing discrimination based on the caste and religion could also be the reason behind such preferences in these modern times, which is quite alarming considering the rapid and complex epidemiological transition.

From the rural households' perspectives, the study has also confirmed the common notion that for severe cases like IP/hospitalization cases, death of family member post/during treatments, the consequences of high healthcare costs always outweigh the issue of affordability. But based on the existing literatures, it can be understood that even OP cases and chronic diseases can also have an adverse effect on the households and at times force them to impoverishments (Vellakkal, 2009; Berman, et al., 2010). OP visits and chronic conditions are more prevalent among rural households, and families mostly pay for them from their regular earnings or savings (Joe, 2015). Thus, with more such events, the healthcare costs could become unaffordable for families, and study also found that at times, the monthly income of the houses also fails to suffice these needs. The odds of suffering from OOP health spending intensifies whenever households have received the required treatments from private facilities. But oddly, despite the high costs, the study showed that rural households barely compromise their healthcare remedies. Moreover, NSS survey data on health (75th round, 2017-18) has revealed that only 33 per cent of the rural population opt for treatments from public healthcare facilities. The expensive healthcare service from private providers makes the families highly vulnerable to different financial consequences, but majority of the population are still inclined to go for the private healthcare facilities across the country. Moreover, in case of OP visits, the role of the provider is not very significant, as drugs and diagnostics costs added to the OP visits a key in such cases (Gupta & Chowdhury, 2015). These, in

turn, is actually fueling the issue of high OOP health expenses of the country against the various initiatives by taken by government at different levels.

High healthcare costs have often forced rural households to draw money from several other sources. Most of the rural households depend on micro-credits and borrowings from their relatives or friends for various medical needs, and they end-up with over-indebtedness (Section 4.1.3); this in the long-run often forces to either give up the treatments halfway through or compromise with their food/non-food expenses or both. Although the health insurance policies are considered to be one effective alternative to provide safety net against uncertain health-related financial risks, literatures have demonstrated a mixed outcome from different government-funded health insurance policies in India (Mahapatro et al., 2017; Reshmi, et al., 2021). Mohapatro, et al. (2017) also highlighted the existing rich-poor economic disparity in this context as well. The study also highlighted that the health insurance policy enrolments have not been able to provide any sense of security to the rural population. The policy makers must take a note of this as it has raised questions regarding the administration of these policies.

Understanding the dynamics of public opinion on healthcare can aid in identifying the shortcomings in the healthcare system and the gap in awareness and knowledge of existing policies (Jacobs & Mettler, 2011). In light of the findings of this chapter, it is evident that India's pro-poor approach in healthcare financing has not very effective till now. Despite various initiatives, the vulnerable section of the society is feeling defenseless in the face of health-related adversities. The noticeable negative remarks by the minority/backward classes of the society identified by the study also needs to explored in depth. It is crucial to confirm whether the discrimination based on demographics is actually the sole reason behind it. In such cases, it will be essential to eradicate such discriminations from the system though proper administration to ensure easy, equitable and affordable access to healthcare services. Moreover, it is also important to explore if the social and religious belief system of these people is somehow contradicting with the country's public health system, as in the event of such cases, policymakers will have to take extra measures to realign the focus the of the policies without hurting the social/religious sentiments of the people. In the face of distressed financing, health insurance policies could be to utilized for effective delivery of financial protection to the mass. But considering the people's preferences regarding the healthcare providers as well as the disease burden profile of the country, policymakers will have to

rephrase the existing policies, emphasizing on three fronts; (i) extensive coverage of both public and private healthcare facilities, (ii) extension of treatment coverage from IP case to significant OP visits as well as selective chronic illnesses, and (iii) upgradation of public healthcare infrastructure for quality service delivery. The newly launched comprehensive health coverage scheme, Ayushmann Bharat (AB), is expected to be game changer for India in the health sector with a holistic approach to maximize coverage. These finding could be used to develop an operational guideline for the effective implementation of AB scheme and any other future health scheme. Similar studies could also be carried out in the remaining states as well to get detailed insights about the health system at the regional level.

Reference

Abhishek, S., Taneja, A., Vyas, A., & Jadhav, N. (2021). Securing Rights of Patients in India: Lessons from rapid surveys on peoples' experiences of Patient's Rights Charter and the COVID-19 vaccination drive. New Delhi: Oxfam India.

Akhtar, A., Ahmad, N., & Roy Chowdhury, I. (2020). Socio-economic inequality in catastrophic health expenditure among households in India: a decomposition analysis. *Indian Economic Review*, 55(2), 339-369.

Berman, P., Ahuja, R., & Bhandari, L. (2010). The impoverishing effect of healthcare payments in India: new methodology and findings. *Economic and Political Weekly*, 65-71

Blevins, J. B., Jalloh, M. F., & Robinson, D. A. (2019). Faith and Global Health Practice in Ebola and HIV Emergencies. *American journal of public health*, 109(3), 379–384.

Bucur, E., Danet, A. F., Lehr, C. B., Lehr, E., & NitaLazar, M. (2017). Binary logistic regression—Instrument for assessing museum indoor air impact on exhibits. *Journal of the Air & Waste Management Association*, 391-401. doi:10.1080/10962247.2016.1231724

Gupta, I., & Chowdhury, S. (2015). Financing for health coverage in India: issues and concerns (IEG Working Paper No. 346). Institute of Economic Growth, Delhi, India.

Hardeman, W., Van Damme, W., Van Pelt, M., Por, I. R., Kimvan, H., & Meessen, B. (2004). Access to health care for all? User fees plus a Health Equity Fund in Sotnikum, Cambodia. *Health policy and planning,* 19(1), 22-32

Jacobs, L. R., & Mettler, S. (2011, December). Why Public Opinion Changes: The Implications for Health and Health Policy. *Journal of Health Politics Policy and Law, XXXVI*(6), 917-933.

Joe, W. (2015). Distressed financing of household out-of-pocket health care payments in India: incidence and correlates. *Health policy and planning*, 30(6), 728-741.

Kastor, A., & Mohanty, S. K. (2018). Disease-specific out-of-pocket and catastrophic health expenditure on hospitalization in India: do Indian households face distress health financing?. *PloS one,* 13(5), e0196106.

Li, Q., Jiang, W., Wang, Q., Shen, Y., Gao, J., Sato, K. D., ... & Lucas, H. (2016). Non-medical financial burden in tuberculosis care: a cross-sectional survey in rural China. *Infectious diseases of poverty*, 5(1), 1-7.

Mahapatro, S. R., Singh, P., & Singh, Y. (2018). How effective health insurance schemes are in tackling economic burden of healthcare in India. *Clinical Epidemiology and Global Health,* 6(2), 75-82.

Misra, S., Awasthi, S., Singh, J. V., Agarwal, M., & Kumar, V. (2015). Assessing the magnitude, distribution and determinants of catastrophic health expenditure in urban Lucknow, North India. *Clinical Epidemiology and Global Health*, 3(1), 10-16.

Pradhan, J., & Behera, S. (2021). Does choice of health care facility matter? Assessing out-of-pocket expenditure and catastrophic spending on emergency obstetric care in India. *Journal of Biosocial Science*, 53(4), 481-496.

Prinja, S., Jagnoor, J., Sharma, D., Aggarwal, S., Katoch, S., Lakshmi, P. V. M., & Ivers, R. (2019). Out-of-pocket expenditure and catastrophic health expenditure for hospitalization due to injuries in public sector hospitals in North India. *PloS one*, *14*(11), e0224721.

Reshmi, B., Unnikrishnan, B., Rajwar, E., Parsekar, S. S., Vijayamma, R., & Venkatesh, B. T. (2021). Impact of public-funded health insurances in India on health care utilisation and financial risk protection: a systematic review. *BMJ open,* 11(12), e050077.

Sahgal, N., Evans, J., Salazar, A. M., Starr, K. J., & Corichi, M. (2021). Religion in India: Tolerance and Segregation. Washington DC: Pew Research Center

Sinha, R. K., Chatterjee, K., Nair, N., & Tripathy, P. K. (2015). Out-of-pocket and catastrophic health expenditure: a cross-sectional assessment of a rural district of the state of Jharkhand in India. *J Disease Global Health*, 4, 130-40.

Vellakkal, S. (2009). Economic implications of chronic diseases in India. *South Asia Netw Chronic Dis*.

Xu, K. (2005). *Distribution of Health Payments and Catastrophic Expenditures Methodology (Discussion Paper).* World Health Organization, Health System Financing. Geneva: World Health Organization.

Yadav, S., & Arokiasamy, P. (2014). Understanding epidemiological transition in India. *Global health action*, *7*(1), 23248.