


OUT-OF-POCKET HEALTH CARE EXPENDITURE AND POVERTY IMPACT IN A FRAGILE INDIAN STATE OF ASSAM

Joel Basumatary,  <https://orcid.org/0000-0002-3944-9003>

Bharathidasan Government College for Women (Autonomous), Government of India/U.T. of Puducherry

Corresponding author: joesinghbasumatary@gmail.com

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Abstract: *Out-of-Pocket (OOP) expenditure on health care is one of the debilitating factors in pushing households into poverty. Households, especially the lower income groups and which do not have security measures like medical insurance, are the worst sufferers when faced with health shocks. Conventional methods of poverty estimation do not take into account health care consumption expenditure, which might understate the poverty headcount. In this study, poverty headcount and impoverishing effects of OOP health care expenditure have been analysed.*

The data have been collected from Chirang district of Indian state of Assam. The state is a fragile state due to ethnic violence, militancy and natural calamities like flood that the region has been experiencing for decades. The recall period for the inpatient care is 365 days, and six months for outpatient care. The poverty headcount is the difference between post Hp and pre Hp. The pre-payment (i.e. pre-OOP) 'poverty headcount' is calculated by comparing household's consumption expenditure gross of payments for health care with the poverty line defined by the planning commission of India (2001). The post-OOP payment 'poverty headcount' is computed by netting out health care payments from a household's consumption expenditure and then comparing with the poverty line. The intensity of poverty has been estimated with the help of the methods introduced by Wagstaff and Doorslaer (2003).

The higher income households make higher OOP expenditure than the lower income households. The burden of OOP is higher on the lower income households because the proportion of OOP expenditure to total income of households is higher amongst the poor households compared to higher income households. OOP expenditure pushed households into poverty. This is more serious with the inpatient care compared to the OOP expenditure on outpatient care. The poverty gap or the intensity of poverty of the overall OOP expenditure is Rs. 279.28, which varies between outpatient and inpatient OOP expenditure.

Keywords: poverty impact, out-of-pocket expenditure, rural health care services, India, ASSAM.

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Introduction. The countries across the world under the umbrella of the United Nations (UN), adopted the Sustainable Development Goals (SDGs) in January 2016. The SDGs superseded the Millennium Development Goals (MDGs) of the UN. The SDGs try to complete the unfinished agenda of the MDGs. Therefore, poverty is one of the primary goals of the SDGs. For instance, the first and the second goals of the SDGs are to end poverty in all its forms and to end hunger, respectively. However, to achieve such ambitious targets, countries across the world especially the developing and underdeveloped economies need to strategize a multipronged approach, because the causes and incidence of poverty itself is very dynamic and multi-faceted. India is a signatory to the SDGs, as it had been to the MDGs. Though SDGs is not a legally binding agreement, it is an opportunity for the participating countries to solve the varied problems that a particular country faces. One of the fundamental causes of poverty is the huge health care expenditure that households incur, which is called out-of-pocket (OOP, henceforth) spending. This is due to the fact that when households incur significant amount of OOP expenditure on health care, they are pushed into poverty and further, those who are already poor are pushed into poverty trap. Thus, it is important that this aspect is taken care when a particular country is focusing on ending the menace of extreme poverty. Due to large OOP expenditure, the living standards of the families get adversely affected. Many households fall into debt trap, and subsequently into poverty trap due to lack of any health insurance coverage.

However, in the conventional method of poverty estimation, a health care expenditure of the households is not taken into account. Thus, this might tend to understate the poverty headcount. Therefore, it is important that consumption of health care is taken into account while estimating poverty. In this study, the OOP expenditure of the households and how many families fall into poverty when expenditure of the consumption of health care (OOP) is incorporated in the poverty estimation are examined. In essence, this will involve the measurement of poverty on the basis of household expenditure net of OOP expenditure on health care. According to Wagstaff and Doorslaer (2003), the poverty impact of OOP expenditure is the difference between the average level of poverty before health care expenditure and that after expenditure. It is measured by comparing both the prevalence (head count ratio) and the intensity of poverty before and after OOP expenditure on health care (Garg and Karan, 2009).

In the North-East India where Assam is located, there is dearth of knowledge in the current literature on OOP expenditure on health care and its economic impact. And the region has been suffering from various ethnic conflicts and militancy problems due to which the problem of poverty is still largely prevalent. Furthermore, the region has scanty health care institutional provisions, especially in the rural areas. Therefore, this study has the potential to throw some knowledge on the household's OOP expenditure, and how this can affect the economy of the households in a fragile socio-economic environment. The paper is arranged as follows: this introduction is followed by a second section on review of similar literatures; the third section is the methodology and research methods; the fourth section is the findings and discussions where the OOP expenditure, poverty headcount, and poverty intensity of OOP expenditure are examined; and the fifth section is the conclusions.

Literature Review. In the course of making OOP expenditure on health care, during health shocks, households resort to different payment alternatives to pay for the health care. For example, some households sell their assets and some borrow from others and the like. Studies have shown that these strategies of financing the health care payments have repercussion on the levels of living of the households. For instance, a study by Van Doorslaer et al. (2005) on poverty impact of OOP spending for health care in Asia found that catastrophic payments of health care were most prevalent in Bangladesh, Vietnam, China, and India. Sometimes, many households have to cut down their consumption levels of other essential goods. Similarly, it has also been found that the number of individuals pushed into poverty by OOP payments was greatest in India and China. Likewise, Garg and Karan (2008) estimated that increase in number of poor after accounting for OOP payments was 3.2 per cent (i.e., 3.5% in rural areas and 2.5% in urban). Further, they found that the additional number of persons falling into poverty was 32.5 million, with 25.5 million in rural and 7 million in urban areas. 79% of the incremental poor were from rural areas and 21 percent were from urban areas. Gopalan and Das (2009) while examining the household's economic impact of an outbreak of Chikungunya in Indian state of Orissa found that almost all the respondents incurred catastrophic health expenditure. Krishna (2011) found that the ill-health and high healthcare expenses were associated with nearly 60 % of all descends into poverty in Rajasthan, 74% in Andhra Pradesh, 71% of the descends into poverty in Uganda, and 67% of all who descended into poverty in Peru was due to ill-health and high OOP spending.

Thakur et al. (2009) found that, although user fees were waived for people below the poverty line, the definition of poor was arbitrary. Therefore, the people who were supposed to be protected from the OOP spending could not be located, and thus, it (OOP spending) pushed the households into below poverty line.

Ghosh (2010) compared the magnitude, distribution and economic consequences of OOP payments in India and found that the new policies on health sector reforms in the 1990s and early 2000s had significant negative impact on the households—both catastrophic expenditure and impoverishment. Berman et al. (2010) found that the health care costs were believed to be one of the important causes of impoverishment in India. Estimating the NSS data, they found that around 63.22 million individuals or 11.88 million households were pushed into below poverty line (BPL) due to health care expenditure in 2004. It has been observed that impoverishment due to OOP payments (73.3%) was because of outpatients' care, which involves relatively small but more frequent payments, and only 20.7% of impoverishment was due to inpatient care. Saksena et al. (2010) found that, between 1.32% and 33.6% of households across different countries suffered from catastrophic health expenditure from all sources of OOP. And the households who had OOP spending on inpatient care services faced higher catastrophic health expenditure relative to outpatient care services. Ghosh (2011) found that the proportion of households facing catastrophic OOP health payments varied widely among Indian states, from 3.46% in Assam to 32.42% in Kerala. It was found that 35 million people in 1993-94 and 47 million people in 2004-05 were pushed into poverty by the need to pay for healthcare services. Similarly, Ladusingh and Pandey (2013) estimated the impoverishing effects of OOP expenditure and found that in rural India 10.1% of households and in urban areas 6.2% of households became poor. They found that OOP increased significantly with inequalities in income distribution and shortage of physicians at the state level.

Lee (2011) found that in 1996, 11.8 percent of households had made OOP expenditure in excess of 10 percent threshold level in Korea. However, it went to 10.2 per cent in 2001, and again went up to 11.8 percent in 2005. Thus, an increasing trend is being observed. Amakom and Ezenekwe (2012) estimated the OOP spending for health care in Nigeria and its implication. They found 24 per cent of households incurred catastrophic health expenditure. About 17 per cent of the households spent more than 15 per cent of total annual expenditure on health care. 2.2 per cent of the households were pushed into poverty due to health care spending. Geoffrey (2013) found that with the threshold of 10 percent of total expenditure the incidence of catastrophic payments was found to be 7.2 percent in Tanzania and with 40 percent threshold level it was 6.5 percent of households facing catastrophic expenditures. Van Minh et al. (2013) examining financial burden of household OOP health expenditure in Vietnam, found that many households encountered catastrophic health expenditure and were pushed into poverty due to health care payments. The factors which impoverished the household due to OOP expenditures were lack of health insurance, having elderly people, children under 6 years old, and households in rural areas.

Bansal (2014) found the incidence of catastrophic payment to be between 33.8 percent and 2.9 percent as the threshold was raised from 5 percent to 25 percent of the total household expenditure. Loganathan et al. (2015) in their study on healthcare expenditure and impoverishment due to rotavirus gastroenteritis requiring hospitalization in Malaysia found that the mean direct and indirect costs for rotavirus gastroenteritis consisted 20% of monthly household income in Kuala Lumpur as compared with only 5% in Kuala Terengganu. 33 per cent of households experienced catastrophic expenditure and 3 percent of households were pushed into poverty in Kuala Lumpur. It was further found that healthcare expenditure due to gastroenteritis had more catastrophic and poverty impact on the urban poor, therefore, the authors concluded that universal vaccination would reduce both disease burden and health inequities in Malaysia. Panikkassery (2020) estimated the impact of OOP health care expenditure on the consumption of the below poverty line households. The study found that the households which had significant OOP expenditures tend to reduce the consumption of non-food items like fuel, education, entertainment, clothing and footwear. However, it was found that the poor households did not usually change the consumption of food, although significant percentage of income was allocated to food items. Wagstaff et al. (2018) found additional number of poverty in many countries due to OOP health expenditures. Further, they found poverty deepening due to OOP. Similarly, Zeng et al. (2018) found that in Zimbabwe 7.6% of households under the study incurred catastrophic OOP expenditure, which was 13.4% in the poorest quantile and 2.8% in the richest quantile. Further, the study found 1.29% of households falling into poverty due to health care related OOP expenditures. Oudmane et al. (2019) found that in Morocco, which primarily depends on OOP for health care financing, a significant number of households faced catastrophic and poverty impact. For instance, the study estimated that 1.77% of households incurred catastrophic OOP expenditure and 12.8% of households incurred catastrophic OOP expenditure when 40% and 10% thresholds of consumption expenditure were taken respectively. Salari et al. (2019) found that in Kenya, around 1.1 million individuals were pushed into poverty due to OOP health care expenditure. In other words, after taking into account OOP expenditure on health care, the poverty head count of individuals increased by 2.2% both in rural and urban areas. Therefore, this indicates that impoverishing effects of OOP is not only in the rural areas but also in the urban areas, especially in the underdeveloped and developing

countries. Bashir et al. (2021) found that in Pakistan, the impoverishing effects of OOP was 1.4% in 2015-16 period and which increased to 3.59% in 2018-19. Therefore, this indicates that the impoverishing effect of OOP is increasing in some countries. This calls for concerted efforts from the policymakers both national and international to look into the menace of OOP expenditures on health care. This would help the world to end the extreme poverty by 2030 enshrined in the SDGs.

The main impacts of OOP measured in the reviewed papers are basically catastrophic impact and the impoverishing effects (poverty impact). The non-poor households fall into poverty due to OOP expenditure, and those who are already poor are pushed deeper into the poverty trap. This impoverishing effect is called medical poverty or medical poverty trap. Inpatient care has been found, to be more catastrophic relative to outpatient care payments.

Methodology and research methods. Assam is located in the North-Eastern part of India. As per the 2011 India census, Assam has a total population of 31,169,272. The density of population of the State as per 2011 census is 397 as against India's density of 382. Assam is ranked 15th position in terms of density of population in the country. In 2011 the literacy rate of the state was 73.18 percent out of which, male literacy rate was 78.81 percent and female literacy rate was 67.27 percent. According to the census report of 2011, 86 percent of the state population lives in rural areas and only 14 per cent lives in urban areas.

The primary data is based on recent survey data from Chirang district of Assam. The total area of the district is 1,169.9 km². It is bordered by Bhutan on the north, by Kokrajhar district on the west, Bongaigaon on the south and by Baksa district on the east. For the livelihood, people mainly depend on agriculture (more than 70 percent), and other activities like fishing, small businesses, construction works, government employees etc. This district has the highest percentage of households living below the poverty line (India Census, 2011). Moreover, Chirang district has only 76 numbers of Sub-Centres, taking the second least number in Assam (RHS, 2011). It has only 24 Primary Health Centres, only 02 number of Community Health Centres, 01 number of District hospital and 0 (zero) number of Sub-divisional hospital. Thus, Chirang district is one of the most backward and the poorest districts in Assam.

Sampling Design. From Chirang district, two major development blocks i.e., Borobazar Block and Sidli Block have been selected. 16 villages and 12 villages were surveyed from Borobazar block and Sidli Block respectively. From each block, 288 households were surveyed, taking the equal number of households from poor and non-poor type of households. Therefore, 576 households were selected. Out of these 576 households, 288 households were poor households and 288 were non-poor households. Thus, 576 households were selected by multistage sampling method. The households were selected purposively, meaning only the households which had made any health care expenditure for the last one year (365 days) preceding the survey date, were selected. It could be either outpatient or inpatient expenditures. For the Inpatient care 365 days of the recall period has been used, and for the outpatient care six months the recall period was used.

Poverty Impact of Out-of-Pocket Health Care Expenditure. Catastrophic headcount captures only the incidence of any catastrophic occurring due to OOP, whereas, catastrophic payment gap also captures the intensity of the occurrence. Therefore, catastrophic payment gap and the intensity of poverty have been estimated with the help of the methods introduced by Wagstaff and Doorslaer (2003) in their work «Catastrophe and impoverishment in paying for health care: with applications to Vietnam 1993–1998». This method has been used widely by many scholars in health care studies. In this method, the poverty impact of OOP expenditure is defined as the difference between the average level of poverty before health care payments and that after payments.

Poverty Headcount. The poverty headcount is calculated through the following formula:

$$H_p = \text{post } H_p - \text{pre } H_p \tag{1}$$

The pre-payment (i.e. pre-OOP) «poverty headcount» is calculated by comparing household's consumption expenditure gross of payments for health care with the poverty line defined by the planning commission of India (2001) i.e.,

$$\text{pre } H_p (\text{pre poverty headcount}) = \frac{1}{N} \sum 1(X_i \leq PL) \tag{2}$$

where, X_i is the per capita consumption expenditure (in rupee), PL is the poverty line (in rupee) and N is the sample size. The Poverty Line is taken as Rs. 828.00 (which is the poverty line used for rural areas of Assam by the Tendulkar Committee in 2011-12).

Similarly, the post-OOP payment ‘poverty headcount’ is computed by netting out health care payments from a household’s consumption expenditure and then comparing with the poverty line, i.e.,

$$\text{Post } H_p (\text{post poverty headcount}) = \frac{1}{N} \sum 1((X_i - OOP) \leq PL) \frac{1}{N} \sum ((X_i - OOP) \leq PL) \quad (3)$$

where, X_i is the per capita consumption expenditure (in rupee), PL is the poverty line, N is the sample size, and OOP is the out-of-pocket payment on health care of the family.

OOP being positive, equation (3) i.e. post poverty headcount results in a higher headcount ratio and greater number of individuals below the poverty line (BPL) compared with that of pre poverty head count for equation (2). Therefore, an additional number of individuals moving below the poverty line because of OOP expenditures is provided by:

$$H_p = \text{post } H_p - \text{pre } H_p \quad (4)$$

Poverty Deepening (Intensity of Poverty). Similarly, poverty deepening or intensity of poverty is measured by calculating the average «poverty gap» as defined by:

$$G = \text{post } G - \text{pre } G \quad (5)$$

where

$$\text{Pre } G = \frac{1}{N} \sum P_i (PL - X_i) \quad (6)$$

$$\text{Post } G = \frac{1}{N} \sum P_i (PL - (X_i - OOP)) - 3 \frac{1}{N} \sum P_i (PL - (X_i - OOP)) - 3 \quad (7)$$

where $P_i = 1$, if $(X_i \leq PL)$ and is Zero otherwise.

Therefore, the «average poverty gap», or poverty deepening in terms of the average amount by which people go below the poverty line because of OOP expenditures is measured by:

$$G = \text{post } G - \text{pre } G$$

Results. Table 1 shows the average annual income of the sample households as Rs. 180426.75 (Median=125000 and Mode=45000) ranging from Rs. 20,000 to Rs. 80, 0000 with the range Rs. 78, 0000. Lower income households with income category up to Rs. 75000 is 49.5 % (N=285). The middle income category is 10.2% (N=59), and they are in the income category of Rs. 7500 – Rs. 200000, and the higher income households with the income category of greater than Rs. 200000 is 40.3 % (N=232). Thus, the majority of the households in the sample are in the lower income category, followed by higher income category. 99.0% (N=285) of the poor households are in the lower income category i.e., income up to Rs. 75000 and only 1.0% (N=3) poor households are in the middle income category of between Rs. 75001 – Rs. 200000 (Table 1). And the distribution of households by type of health care expenditure is shown in Table 2.

Table 1. Income Category of the Households (Annual INR)

Mean	Median	Mode*	Minimum	Maximum	Range
180426.74	125000.00	45000.00	20,000	800000	780000
Income category					
Income category	Frequency	Percent			
Lower (\leq Rs. 75,000)	285	49.5			
Middle (Rs.75,001-Rs.2,00,000)	59	10.2			
Higher (\geq Rs. 2,00,000)	232	40.3			

Note: * multiple modes exist, the smallest value is shown

Sources: developed by the author.

Table 2. Distribution of Households based on Type of Health Expenditure

Type of Expenditures	Households	
	Frequency	Percent
Households who had OOP Expenditure only on Inpatient Care	127	22.0
Households who had OOP Expenditure only on Outpatient Care	278	48.3
Households who had OOP Expenditure both on Inpatient and Outpatient	171	29.7
Total OOP Expenditure of the Households	576	100.0

Sources: developed by the author.

Table 3. Average Total Out-of-Pocket Expenditure by Economic Characteristics

	Medical Expenditure ¹		Associated Expenditure ²		Total Expenditure ³	
	Mean	Median	Mean	Median	Mean	Median
Three Income category						
• Lower (≤ Rs. 75,000)	8903.59	4100.00	1144.38	700.00	9975.31	5000.00
• Middle (Rs.75,001- Rs.2,00,000)	7240.33	4800.00	818.98	200.00	7816.94	5000.00
• Higher (≥Rs. 2,00,000)	19362.32	9950.00	1909.31	1300.00	21654.35	12000.00
Household's Economic Status	Mean	Median	Mean	Median	Mean	Median
• Poor	9086.54	4205.00	1171.01	700.00	10185.64	5000.00
• Non-Poor	16805.00	7700.00	1667.29	1100.00	18730.93	9000.00
Total	12945.77	6200.00	1419.15	900.00	14458.28	7000.00
Maximum			350000			
Minimum			100			
Mean			14458.29			
Median			7000.00			
N			576			

NOTE: ¹= Out-of-pocket expenditure on registration, medicines, diagnostics, blood, doctor's fee & bed charges; ²= out-of-pocket expenditure on food and transportation associated with medical care; ³=aggregate of medical expenditure and associated expenditure
 Sources: developed by the author.

The study found the higher income group of households making higher OOP expenditure compared to lower, and middle income group of households. Likewise, the poor households make lower OOP expenditure compared to non-poor households. For instance, the average OOP expenditure for the poor households is Rs. 10185.64 (Median (M) = 5000.00) as against Rs. 18730.93(M=9000.00) of the non-poor households. Thus, there is a difference of Rs. 8545.29 between the OOP expenditure of the poor and the non-poor households (Table 3). Furthermore, this is also observed in households which had made OOP expenditure only on inpatient, households which made OOP expenditure only on outpatient care, and the households which had made OOP expenditure both on inpatient and outpatient. For instance, the mean OOP expenditure of the households which had expenditure both on inpatient and outpatient cares is Rs. 22554.80(Median (M) 16200.0) which ranges from a minimum of Rs. 1500.00 to a maximum of Rs. 218000.0. The difference in the expenditure between the lowest and the highest group is Rs. 13497.42 (Table 4).

Table 4. Average OOP Expenditure of households who had expenditure both on Outpatient and Inpatient

	Medical Expenditure ¹		Associated Expenditure ²		Total Expenditure ³	
	Mean	Median	Mean	Median	Mean	Median
Family Income Category (INR)						
• Lower (≤ Rs. 75,000)	12970.29	10450.00	1603.71	1400.00	14711.00	12055.00
• Middle (Rs.75,001-Rs.2,00,000)	20505.00	18715.00	3045.00	3350.00	24550.00	22250.00
• Higher (≥Rs. 2,00,000)	25950.21	18700.00	2481.37	2100.00	28208.42	20800.00
Household's Economic Status	Mean	Median	Mean	Median	Mean	Median
• Poor	13243.94	10600.00	1638.87	1400.00	15017.89	12610.00
• Non-Poor	25559.00	18350.00	2499.00	2100.00	27906.00	20900.00
Total	20445.73	14450.00	2141.87	1800.00	22554.80	16200.00
Maximum			218000.0			
Minimum			1500.0			
Mean			22554.80			
Median			16200.0			
N			171			

NOTE: ¹= Out-of-pocket expenditure on registration, medicines, diagnostics and doctor's fee; ²= out-of-pocket expenditure on food and transportation associated with medical care; ³=aggregate of medical expenditure and associated expenditure
 Sources: developed by the author.

Table 5 shows the average OOP expenditure of households which had expenditure only on inpatient care. The average OOP expenditure of the households is Rs. 28916.22 (Median=15000.00). The NSS 71st round's finding on health care expenditure shows the average inpatient expenditure in Assam as Rs.14810 (Rural=Rs. 6966 and Urban=Rs. 47064), against the all India average inpatient OOP expenditure of Rs.

18268(Rural=Rs.14939 and Urban=Rs.24436). Thus, the OOP expenditure found in this study is much higher than the NSS findings, despite the fact that both the surveys used the same recall period for the inpatient treatment (365 days).

Table 5. Average OOP Expenditure of Households which had expenditure only on Inpatient Care

	Medical Expenditure ¹		Associated Expenditure ²		Total Expenditure ³	
	Mean	Median	Mean	Median	Mean	Median
Family Income Category (INR)						
• Lower (≤ Rs. 75,000)	19490.58	10500.00	2715.94	1700.00	21741.45	12000.00
• Middle (Rs.75,001-Rs.2,00,000)	16600.00	17000.00	2355.56	2500.00	17844.44	20000.00
• Higher (≥Rs. 2,00,000)	35095.92	15000.00	3553.06	2200.00	41053.06	17000.00
Household's Economic Status	Mean	Median	Mean	Median	Mean	Median
• Poor	19603.52	10500.00	2738.03	1700.00	21889.58	12000.00
• Non-Poor	32537.50	14900.00	3362.50	2200.00	37825.00	17000.00
Total	25306.69	13000.00	3013.39	1800.00	28916.22	15000.00
	Maximum			35000		
	Minimum			2720		
	Mean			28916.22		
	Median			15000.00		
	N			127		

NOTE: ¹= Out-of-pocket expenditure on registration, medicines, diagnostics and doctor's fee; ²= out-of-pocket expenditure on food and transportation associated with medical care; ³=aggregate of medical expenditure and associated expenditure.

Sources: developed by the author.

This could be due to greater prevalence of poor health status in the study area, or due to huge dependence on private health care. It has been found that out of 127 households which made OOP expenditure only on inpatient, 94.5% had OOP expenditure in the private health care, which includes both poor and non-poor households. Therefore, for the inpatient care, people in the study area depend more on the private health care services. This might be further aggravated by lack of health insurance facilities, because none of the households which were selected for the survey had either private or public health insurance facilities during the time of survey.

Table 6. Average OOP Expenditure of Households which had Expenditure only on Outpatient

	Medical Expenditure ¹		Associated Expenditure ²		Total Expenditure ³	
	Mean	Median	Mean	Median	Mean	Median
Family Income Category (INR)						
• Lower (≤ Rs. 75,000)	1950.38	1000.00	181.4452	50.0000	2144.08	1000.00
• Middle (Rs.75,001-Rs.2,00,000)	3517.05	3000.00	201.1364	150.0000	3484.09	3000.00
• Higher (≥Rs. 2,00,000)	3489.66	2700.00	376.4773	300.0000	3777.39	3000.00
Household's Economic Status	Mean	Median	Mean	Median	Mean	Median
• Poor	1950.38	1000.00	181.45	50.00	2144.08	1000.00
• Non-Poor	3498.79	2800.00	318.03	200.00	3679.62	3000.00
Total	2685.59	1730.00	246.30	100.00	2873.18	2000.00
	Maximum			19000		
	Minimum			100		
	Mean			2873.18		
	Median			2000		
	N			278		

NOTE: ¹= Out-of-pocket expenditure on registration, medicines, diagnostics and doctor's fee; ²= out-of-pocket expenditure on food and transportation associated with medical care; ³=aggregate of medical expenditure and associated expenditure.

Sources: developed by the author.

Thus, it has revealed that the higher income group of households spends higher OOP expenditure than the lower income households. This indicates the positive relationship between income and OOP expenditure, which is in line with the Grossman theory of demand for health, where health is considered as a normal good. This signifies that the higher income groups of people value their health more than the lower income group, and they consider the health expenditure as an investment and not wholly consumption expenditure. Or it

could be that even though the poor people value their health, but since their capacity to spend on health care is lower than the richer income groups, their expenditure is lower than their richer counterparts. This is evident from the poor household's inability to seek treatment (treatment forgo) when they needed health care due to lack of money. Research has shown that the poor are less likely to report illness than the rich. Furthermore, literature shows that 27% of all sick persons in India who do not seek any medical advice cited lack of means (financial constraint) as one of the major reasons, even though facilities were available.

Table 7. Average Out-of-Pocket (OOP) Expenditure as Percentage of Total Annual Income of the Households

Households Characteristics	Percentage of Income spent on OOP expenditure on health care (in %)			
	Total OOP Expenditure	Households Expenditure both on Inpatient and Outpatient Care	Households Expenditure only on Inpatient Care	Households Expenditure only on Outpatient Care
Three Income category				
Lower (\leq Rs. 75,000)	23.60	35.13	50.65	3.49
Middle (Rs.75,001-Rs.2,00,000)	4.79	15.32	12.03	1.66
Higher (\geq Rs. 2,00,000)	6.08	7.91	11.27	1.00
Household's Economic Status				
Poor	23.68	35.15	49.99	3.49
Non-Poor	5.57	8.07	10.82	1.11
Total	14.62	19.31	32.72	2.30

Sources: developed by the author.

However, although the absolute expenditure of the higher income group of households is higher than the lower income groups, there is a negative relationship between the income of the households and the burden of OOP expenditure. This is because the lower income households' OOP expenditure in proportion to income is found to be higher than the higher income group of households (Table 7). For instance, in the case of total OOP expenditures, the lower income households' (up to Rs. 75000) OOP expenditure in proportion to income is 35.13% as against 15.32% of the middle income households, and 7.91% of the higher income households (Table 7). Similar situation is seen for the households which had OOP expenditure both on inpatient and outpatient. The OOP expenditure in proportion to income is 35.15 as against 8.07 of the non-poor households. The same situation is seen in the case of households with OOP expenditure only on outpatient care (Table 6), and the households which had OOP expenditure only on inpatient (Table 7). Thus, this clearly shows that the burden of OOP expenditure falls more on the lower income group of households than the higher income groups. This negative relationship between income and OOP expenditure is regressive in nature. This phenomenon is the regressive consequence of the health care system, where OOP expenditure is considered as the major means of financing health care. The poor households are hit harder than the non-poor households. Thus, this regressive effect of OOP expenditure makes the lower income households and the poor households to bear higher burden of OOP expenditure than their richer counterpart.

Composition of Out-of-Pocket Expenditure. Figure 1 shows that the major share of OOP expenditure both in the case of outpatient and inpatient health care is on medicines (46.19% in case of inpatient care and 57.58% in the case of outpatient care). This is followed by doctor's fee (22.55%) and diagnostic (11.14%) in case of inpatient care, and 18.02% for diagnostic tests, and 14.23 for the doctor's fee in case of outpatient care. The least is on blood transfusion (1.51%) and registration with 2.0% leaving out bribes (which was also included but no one reported to have paid bribe). Thus, expenditure on drugs is the highest component of for both inpatient and outpatient care. Similar findings have been shown by other studies. For instance, 72 percent of OOP expenditures (74 percent in rural areas, 67 percent in urban) are drug-related (Levinson, 2016). Further, Garg and Karan (2008) found that purchase of drugs constitute 70 percent of the OOP expenditure in the rural areas and 60 percent in urban areas in India. Therefore, this finding is in line with the other findings (Levinson, 2016 and Garg and Karan, 2008). Expenditure on drugs is the most catastrophic expenditure which pushes households into poverty.

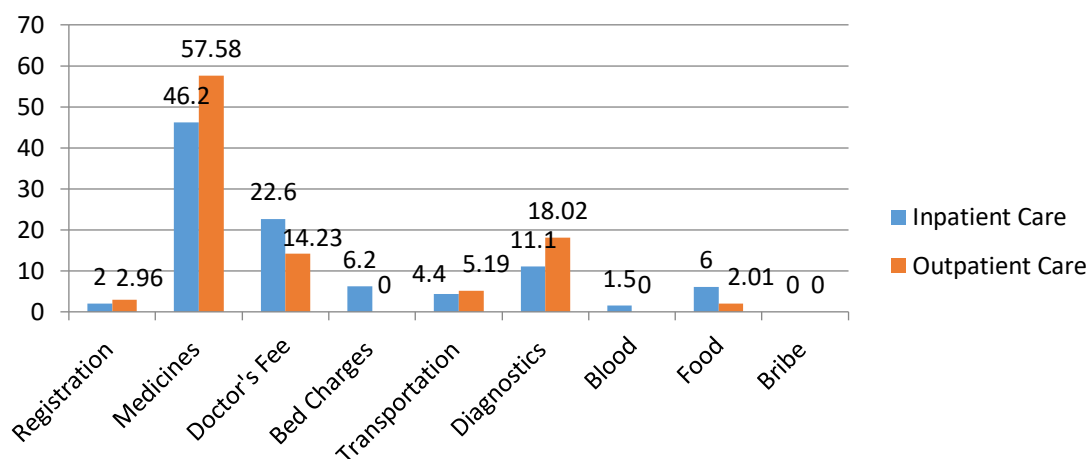


Figure 1. Composition of OOP Expenditure for households (Inpatient and Outpatient) (%)
Sources: developed by the author.

Poverty Estimates. Table 8 shows the poverty impact of OOP expenditure. The pre-expenditure poverty headcount (pre Hp) is 5.4 percent (N=15) and the post-expenditure headcount (post Hp) after deducting the OOP expenditure on outpatient health care from total consumption expenditure is 6.5 percent (N=18). In other words, there is an increase of poverty headcount after OOP expenditure accounting, by over four times to 1.1 percent (N=3). Thus, the additional number of households falling into poverty is 3 (1.1percent). The increase in the poverty headcount (post Hp) for the households which had OOP expenditure only in the inpatient health care expenditure is 15.8 percent (N=20). The pre-expenditure poverty headcount before OOP expenditure on inpatient was 5.5 percent (N=7). After the OOP expenditure has been taken into account, poverty headcount (post OOP poverty) increased to 21.3percent (N=27). Therefore, due to inpatient OOP expenditure, 20 more households fell below the poverty line.

Table 8. Poverty Impact Estimation of out-of-pocket Health Expenditure

	Households with only Outpatient Expenditure*		Households with only Inpatient Expenditure [#]		Households with only both on Outpatient and Inpatient Expenditure ²		Total Health Expenditure ⁴	
Poverty Headcount	Number	Percent	Number	Percent	Number	Percent	Number	
Pre-expenditure Headcount (pre-Hp)	15	5.4	7	5.5	10	5.8	32	5.6
Post-expenditure Headcount (post-Hp)	18	6.5	27	21.3	31	18.1	76	13.2
Poverty Impact (post Hp-pre-Hp)	3	1.1	20	15.8	21	12.3	44	7.6

Sources: developed by the author.

With regard to the households which had OOP expenditure both on outpatient and inpatient, prior to OOP expenditure, 10 households were found to be poor, and when the OOP expenditure has been taken into account, 31 (18.1percent) households are found to be poor. Thus, the poverty impact of the OOP expenditure made on both inpatient and outpatient is 12.3 percent, (N=21). In other words, 21 households became poor due to OOP expenditure on inpatient and outpatient. Furthermore, 44 additional households became poor due to total OOP expenditure. Prior to OOP expenditure, out of 576 households, only 5.6percent (N=32) households were found to be living below Rs. 828 (official poverty line for Assam). However, after OOP expenditure has been accounted, 13.2percent (N=76) households are found to be living below Rs. 828. Thus, 7.6percent more households became poor due to OOP expenditure. Thus, sizable increase in poverty has been seen due to OOP expenditure on health care. The phenomenon is more pronounced in the case of inpatient

care and total OOP expenditure than the OOP expenditure on outpatient. This shows that OOP expenditure on health care is one of the important causes of creating additional poverty. This has been also found by earlier studies made by Krishna (2010), Wagstaff and Doorslaer (2003), Garg and Karan (2009), Rashad and Sharaf (2015). In India, the planning commission also admitted that around 39 million Indians are pushed into poverty because of OOP expenditure every year. The incidence of catastrophic expenditure due to health care costs is increasing and is one of the major contributors to poverty (Levinson, 2016).

Poverty Deepening (Intensity of Poverty) of OOP Expenditure. The poverty gap or deepening refers to the aggregate of shortfalls from the poverty line due to OOP expenditure. The method of estimation has been adopted from the work of Wagstaff and Doorslaer (2003) and which has also been used by Garg and Karan (2009) in India. Several studies have been done on poverty intensity, or by how much a household move down from the poverty line (Wagstaff and Doorslaer, 2003, Doorslaer et al., 2006, Garg and Karan, 2009, Ghosh, 2010 etc.). The estimation of poverty gap requires setting of the threshold level of poverty line, for this purpose the official poverty line Rs. 828.00 (which is the poverty line used for rural areas of Assam by the Tendulkar Committee in 2011-12) has been used.

Table 9. Estimation of Poverty Intensity due to OOP Expenditure on Health Care (Rs)

	Households with only Outpatient Expenditure*	Households with only Inpatient Expenditure [#]	Households with both on Outpatient and Inpatient Expenditure ²	Total Health Expenditure ⁴
Pre-expenditure Gap (pre-G)	136.33	156.17	136.02	140.57
Post- expenditure gap (post-G)	153.53	762.94	275.68	419.85
Poverty Impact –Gap (post G - pre G)	17.20	606.77	139.66	279.28

Sources: developed by the author.

In the case of only outpatient OOP expenditure, the average poverty gap increased to Rs. 153.53 from Rs. 136.33. The poverty impact gap (difference between pre-G and post-G) is Rs. 17.20 (Table 9). The intensity of poverty in the case of OOP expenditure only on inpatient care is more than the outpatient OOP expenditure. For instance, the average gap without OOP expenditure taken into consideration is Rs. 156.17. This increased to Rs. 762.94 when the OOP expenditure is taken into account. In other words, the poverty impact gap (pre-Gap minus post-Gap) is Rs. 606.77. For the households which had OOP expenditure both on inpatient and outpatient, the poverty gap prior to OOP expenditure is Rs. 136.02, which increased to Rs. 275.68 after OOP expenditure has been accounted. Thus, there is an increase of gap by Rs. 139.66. The aggregate of OOP expenditure (total OOP expenditure of 576 households) has poverty gap of Rs. 140.57. This increased to Rs. 419.85, after the OOP expenditure has been taken into account. The poverty impact gap of the overall OOP expenditure is Rs. 279.28.

Thus, the most severe OOP expenditure has been observed in the case of the households which had OOP expenditure only on inpatient where the poverty impact is the highest i.e., Rs. 606.77, followed by the total OOP expenditure where the poverty impact is Rs. 279.28. The least severe is found to be in the case of OOP expenditure for only outpatient, where the poverty impact (intensity of poverty) is only Rs. 17.20.

Conclusions. The OOP expenditure is large in the study area, especially in case of inpatient health care. The burden of OOP expenditure is more on the poor and low income households compared to higher income households. This is regressive in nature. And the expenditure on medicines (drugs) dominates both in case of inpatient and outpatient health care. This is followed by fee payments to doctors for consultations or services rendered. It has been found that OOP expenditure pushes households into poverty. However, it is observed that hospitalization (inpatient care) treatment has more serious effect on the economy of the household compared to the OOP expenditure on non-hospitalization or outpatient care. The poverty gap of the overall OOP expenditure is Rs. 279.28, which varies between outpatient care and inpatient care. For instance, it is Rs. 17.20 for households which had OOP expenditure only on outpatient care as against Rs. 606.77 for the households which had OOP on inpatient care only. For the households which had OOP expenditure both on outpatient and inpatient, the poverty gap is Rs. 139.66. Thus, it reveals that OOP expenditure on inpatient care is more severe and has the higher potential to push the households into poverty relative to the OOP expenditure on outpatient care. The Pradhan Mantri Jan Arogya Yojana launched in 2018, also known as Ayushman Bharat and which is the India's commitment to Universal Health Coverage, will be a great relieve for the poor

households when implemented effectively. This will go a long way in facilitating the achievement of the ambitious goals of the SDGs like ending poverty in all its forms and to end hunger.

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Джоел Басуматарі, PhD, асистент, Урядовий коледж Бхаратідасана для жінок

Витрати на охорону здоров'я та їх вплив на бідність у вразливому штаті Ассам в Індії

Витрати домогосподарств на охорону здоров'я є одним із виснажливих факторів, що спричиняють явище бідності серед населення. Малозабезпечені представники суспільства, що не підключені до програм медичного страхування, є найбільш вразливими верствами, яким важко протистояти шоківим станам в сфері громадського здоров'я. Звичайні методи оцінювання рівня бідності не враховують витрати охорони здоров'я, що може занижувати цей рівень. Автором цього дослідження проаналізовано рівень бідності та негативні наслідки витрат на охорону здоров'я щодо зростання рівня бідності. Дані були зібрані з району Чіранг індійського штату Ассам. Аналізована територія є високовразливою через етнічне насильство, войовничість та природні лиха, такі як, наприклад, повені, які переживає регіон десятиліттями. Період відкликання стаціонарної допомоги становить 365 днів і шість місяців для амбулаторної допомоги. Рівень бідності оцінений як різниця між поточним рівнем бідності та попереднім рівнем бідності. Попередній рівень бідності розрахований шляхом порівняння витрат на споживання домогосподарств валових платежів за охорону здоров'я за допомогою лінії бідності, визначеної Комісією з планування Індії від 2001 р. Оплата після оплати «Головна бідність» обчислена шляхом виведення виплат охорони здоров'я з витрат на споживання домогосподарства, а потім через порівняння з межею бідності. Інтенсивність бідності була оцінена за допомогою методів, введених Вагстафом та Doorslaer у 2003 р. Домогосподарства з вищим доходом більше витрачають на охорону здоров'я, ніж домогосподарства з нижчим доходом. Тягар витрат на охорону здоров'я вищий для домогосподарств з нижчим доходом, оскільки частка витрат на охорону здоров'я до загального доходу домогосподарств вища серед бідних домогосподарств порівняно з домогосподарствами з більшим доходом. Завищені витрати підштовхують домогосподарства до бідності. Ще більш складною є ситуація зі стаціонарною допомогою порівняно з витратами на амбулаторну допомогу.

Ключові слова: вплив на бідність, витрати домогосподарств, система охорони здоров'я в сільській місцевості, Індія, Ассам.