

# Social Health Insurance and Its Role in Catastrophic Health Expenditure: A Cross-Sectional Study in Illam District, Nepal

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**Abstract:** Nepal remains committed to achieving universal health coverage, to ensure that government introduced social health insurance program in Illam district with objective that everyone should get health services they need and in doing so they should not go under the financial hardship. The study aims to assess the achievement of the program objective by determining the catastrophic health expenditure. A cross-sectional study was conducted in Illam district of Nepal, among 300 insured households whose date of service had come into effect. Face to face interview was done to collect the data using pretested semi-structured questionnaire with the sample selected through multi-stage random sampling technique. Binary logistic regression analysis was used to identify the factors associated with catastrophic health expenditure. The prevalence of catastrophic health expenditure was 13.2%. Additionally, univariate analysis showed household income and saving were mostly used for coping with out-of-pocket health payment while multivariate analysis revealed that No. of working Member in household, Presence of Under five children, Presence of chronic illness, Poverty line of household were significant factors associated with catastrophic health expenditure. Despite of the high utilization, social health insurance has not reduced the catastrophic health expenditure however, it has contained it. Thus, to further decrease the financial hardship, government needs to redesign the benefit package with wider scope and control the provider side moral hazard.

**Keywords:** Social Health Insurance, Catastrophic Health Expenditure, Illam, Nepal

## 1. Introduction

Health financing is fundamental function of health system that protects the population against the financial risk associated with ill health. [1] Health insurance is one of the methods of health care financing. In 2005, for the concept of universal coverage, World Health Assembly appealed the countries to design the health care financing that tries to achieve the concept which is also called Universal Health Coverage. It has mentioned that health care financing should

be such that everyone should have accesses to health services and not be subject to financial hardship. The question is how the health system should be financed for such purpose? [2] WHO put forward social health insurance (SHI) as a strategy for achieving UHC in low- and middle-income countries. [3] Social health insurance is financing mechanism that is based on comprehensive social contributory scheme with government subsidies for poor. Social health insurance program which is also known as Social Health Security program (SHS) is prioritized government program of Nepal introduced in 2016. [4].

It has been estimated that world's 1.3 billion poor people have no access to health service because they cannot afford to pay for it. [5] There is a tremendous gap between rich and poor countries with respect to health spending and health needs. Developing countries account for 84 percent of global population and 90 percent of global disease burden but only 20 percent of global gross domestic product and 12 percent of all health spending. [6].

In some countries up to 11% of population are facing severe financial hardship each year and 5% forced into poverty. Globally, about 150 million people suffer financial catastrophe annually while 100 million are pushed below the poverty line. Only one in five people in the world has broad based social security program and more than half the world's population lacks any type of formal social protection according to ILO. [7] In low and middle income countries (LMIC), most of the domestic health care expenditure is out-of-pocket payment rather than prepaid insurance. [8].

Despite of various treatment subsidies like incentives program and pilot insurance scheme, out-of-pocket payment (OOP) is still the main way to finance the health care which accounts for 48% of total health expenditure. [9] Major source of health financing in Nepal is private sector (60%) which is followed by government (21%) and rest by donor and charity (19%). More than 90% of private financing comes from household OOP expenditure. [10] As most of the health care in Nepal is paid OOP often incurring a significant portion of income of individual household leading to catastrophic health expenditure. Studies have shown that 13.8% of study household had experience catastrophic expenditure on health in Nepal. [11] Considering these facts this study aims to find out whether the social health insurance program in Nepal has made any difference in household OOP catastrophic expenditure on health among the insured household. Detail on social health insurance program of Nepal is mentioned elsewhere. [27].

## 2. Methods

### 2.1. Study Design

A cross-sectional quantitative study was conducted in Ilam district of Nepal, among 300 insured households from September 2018 to February 2019 and whose date of service had come into effect.

### 2.2. Sample Size and Sample Selection

Samples of 300 were selected through 4 stages random sampling technique (district, municipality, ward and household) using population proportionate method. Detail on sample size and sampling is document elsewhere. [27].

### 2.3. Data Collection

Pretested semi-structure questionnaire was used to collect the data which was extracted from previous study done in Kathmandu Nepal. [18] Some modification on questionnaire was done according to research objective, methodology and

findings from pre-testing. Modification made were on out of pocket expenses (health expenditure) was asked for 12 months before the interview and social health insurance related questions were added along with the household characteristics. Those households whose date of service has come into effect were eligible for the interview which was verified by the social health insurance card. Any one of the household member more than 18 years of age present at house was interviewed to get the required information. Data was collected by researcher himself through face to face interview.

### 2.4. Data Analysis

Collected data were entered in Microsoft Excel 2010 and was analyzed in Statistical Package for Social Science 11.5. Descriptive analysis was performed using frequency, percentage, mean, and standard deviation. Chi-square test was used to test the association between catastrophic health expenditure as dependent variable and household characteristics as independent variable at 0.05 level of significance ( $P=0.05$ ) for categorical data. Variables with  $P$  value  $<0.2$  and cell count more than 5 were included for the binary logistic regression to estimate the Odds Ratio at 95% Confidence Interval. Catastrophic Health Expenditure (CHE) was calculated using WHO recommended method with variables, Out-of-Pocket health expenditure, household consumption expenditure, household subsistence expenditure and household's capacity to pay. [12] Total household expenditure and food expenditure were calculated using for 12 months by taking reference from one month and out of pocket expenses was also calculated for 12 months before the interview.

### 2.5. Ethical Consideration

Ethical approval was provided by Institutional Review Committee (IRC) of BPKIHS (Code No. IRC/1275/018) for this study after reviewing the proposal. Informed written consent was taken from respondents.

## 3. Results

### 3.1. Household Characteristics

Of 300 households, none of the household had subsidies card provided by insurance board for ultra-poor, poor and marginalized. Other households characteristics (ethnicity, family type, presence of under five children, presence of elderly member, presence of chronic illness, no. of working members in family, poverty line of household) findings and utilization rate of social health insurance has been reported in previous paper. [27].

### 3.2. Status of Household Catastrophic Health Expenditure

From 300 households 220 households (73.3%) were considered for household catastrophic health expenditure as they reported their out of pocket health expenditure of last

twelve month and rest 80 household had no out of pocket health expenditure. The median out-of-pocket health expenditure was NRs. 13380. Among 220 households, 13.2% of households had to experience catastrophic health expenditure. (Table 1).

**Table 1.** Status of Household catastrophic health expenditure (n=300).

Characteristics	Frequency	Percent (%)
Presence of out-of-pocket health expenditure		
Yes	220	73.3
No	80	26.7
Median	13380	
Presence of catastrophic health expenditure (n=220)		
No	191	86.8
Yes	29	13.2

### 3.3. Coping Mechanism for Out-of-Pocket Payment

Among 220 households most commonly used coping mechanisms to out-of-pocket health expenditure was use of household income to pay for illness (91.4%), followed by use of household saving for illness (44.5%). About 6.4% obtained ex-gratia from relatives, friends or neighbor to pay for illness, 5.9% borrowed money from bank or commercial money lender to pay for illness and 4.5% borrowed money from relatives, friends and neighbor to pay for illness. Only 0.5% of household sold their assets to pay for illness (Table 2).

**Table 2.** Coping mechanism for out-of-pocket health expenditure by household (n=220).

Characteristic	Frequency	Percent (%)
Used household income to pay		
Yes	201	91.4
No	19	8.6
Used household saving to pay for illness		
No	122	55.5
Yes	98	44.5
Obtained ex-gratia from relative, friends or neighbor to pay for illness		
No	206	93.6
Yes	14	6.4
Borrowed money from relatives, friend and neighbor to pay for illness		
No	210	95.5
Yes	10	4.5
Borrowed money from bank or commercial money lender to pay for illness		
No	207	94.1
Yes	13	5.9
Sold assets to pay for illness		
No	219	99.5
Yes	1	0.5

### 3.4. Factors Associated with Catastrophic Health Expenditure

The households having only one working member were 3.283 times more likely to have catastrophic health expenditure than two or more than two working member. Catastrophic health expenditure was found by 0.280 and 0.360 time less likely to happen in household who have under five children and chronic illness respectively. Those household who were above the poverty line were 6.188 time

more likely to face catastrophic health expenditure. (Table 3).

**Table 3.** Factors associated with catastrophic health expenditure.

Characteristics	Adjusted Odds Ratio (#)	95% CI	P-value
Family type			
Nuclear	0.331		
Extended	Reference	0.97-1.127	0.208
No. of working Member in household			
1	3.283		
≥2	Reference	1.135-9.494	0.028*
Presence of Under five children			
Yes	0.280		
No	Reference	0.109-0.718	0.008*
Presence of elderly member >60			
Yes	0.745		
No	Reference	0.264-2.100	0.578
Presence of chronic illness			
Yes	0.360		
No	Reference	0.130-0.997	0.049*
Poverty line of household			
Above poverty line	6.188		
Below poverty line	Reference	2.248-.17.033	<0.001*

\*significant association (p-value<0.05).

# Adjusted for family type, no. of working member in household, presence of under five children, presence of elderly member>60, presence of chronic illness, poverty line of household

## 4. Discussion

### 4.1. Status of Catastrophic Health Expenditure

This is first study to assess the role of the social health insurance on the household catastrophic health expenditure among the insured people in Nepal. The household catastrophic health expenditure was found to be 13.2% among the insured households which is lower than from a study in India (22.3%), chine (14.4%) and Tanzania (18%). [13-15] However, the discussion paper from three African countries; revealed that the percentage of household with catastrophic health expenditure was lower among the insured household in all three countries, South Africa 8%, Kenya 3% and in Senegal 11%. [16] In addition to that, incidence of catastrophic health expenditure was lower among public insurance beneficiary i.e. 4.2% according to study of Chile. [17] The studies in Nepal previously have shown similar prevalence of catastrophic health expenditure 13.8% and 13% in non-insured population. [18, 19] This shows that social health insurance has contained the increment of CHE.

### 4.2. Coping Mechanism for Out-of-Pocket Payment

Use of household income and use of household saving was most commonly used coping mechanism for out-of-pocket health expenditure in this study. Obtained ex-gratia from relatives, friends or neighbor, borrowed money from bank or commercial money lender and selling household assets were least commonly used coping mechanism. This finding is consistence with the results from Vietnam, Bangladesh, Kyrgyzstan and India where commonly used coping mechanisms for health care payment were use of household

saving and use of household income. [20-23].

#### 4.3. Factor Associated with Catastrophic Health Expenditure

In contrast to finding from China and Tanzania, this study reveals that household having chronic illness was less likely to face catastrophic health expenditure with odds of 0.360 (0.130-0.997). [13, 24, 14] This study found that household with under five children as protective factor from CHE which was supported by the study in China and three studies from systemic review study from Malaysia. [13, 25] However from same systemic review study, seven papers found the presence of children under five years old is risk factor for CHE. [25] The study discloses that the households with only one working member were 3.283 (1.135-9.494) times more likely to have catastrophic health expenditure than two or more than two working member. One of the surprising finding of this study is that household above the poverty line were 6.188 (2.248-17.033) time more likely have catastrophic health expenditure than those below the poverty line. Similar condition was found in China and Vietnam which reported that CHE did not decline with increased household socio-economic status. [13, 26] This might be because rich household has less financial concern to seek health care but could end up with CHE. In contrast to that poor may choose not to seek health care when needed due to their inability to direct resource in health from other basic needs.

## 5. Limitations

The study has limitation that the sample size calculated has used prevalence of utilization of social health insurance as this study is part of it. [27] Thus sample size estimation could have been larger or smaller than the current if we had used the prevalence of catastrophic health expenditure. Moreover, the recall period of morbidity and out-of-pocket health expenditure was 12 month before the interview. Though it was verified with medical bills and report wherever provided but was not applicable in each household. Therefore, recall bias might have occurred.

## 6. Conclusion and Recommendation

To conclude, social health insurance has not made much difference in reducing catastrophic health expenditure. However, it has containment the increase of CHE which is positive sign. But, this does not show a progressive result towards achieving the goal of protecting from financial risk. Social health insurance small benefit package with limited scope and provider side moral hazard deserves greater attention from government. Social health insurance is envisioned to decrease the inequities and financial barrier and increase access to service. Thus government should redesign the social health insurance by amassing the benefit package with wider scope of drug and diagnostic facility and controlling the provider side moral hazard. The government

should speed up the distribution of poverty card so to bring in-effect of policy, providing subsidies to ultra-poor, poor and marginalized people by insurance board on enrollment fee to meet the equity in health. Further, the study builds up base for monitoring the achievement of the social health insurance program in other implemented districts of our nation and other nations too.

## List of Abbreviation

CHE: Catastrophic Health Expenditure  
ILO: International Labour Organization  
LMIC: Low and Middle Income Country  
OOP: Out-of-Pocket Payment  
SHI: Social Health Insurance  
UHC: Universal Health Coverage

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## Appendix

### Operational Definition

#### I. Out-of-Pocket Health Expenditure (OOP) [12]:

- A) Payment made by household for their health services (modern medicine, alternative medicine) with/without compensation from third party during last 12 month before interview.
- B) It was estimated by asking the respondents how much their household has spent separately on:
  - 1) Direct cost: Consultation or diagnosis fees, drugs other medical supplies and hospitalization costs, travel accommodation and extra food expenses for patient, cost of traditional healers, homeopathic treatments ayurvedic treatments and home remedies.
  - 2) Indirect cost: Work day loss (average wages was considered).

#### II. Household Consumption Expenditure (EXP) [12]:

Payments and in-kind contribution made by household for all goods and services, including the monetary value of home-made products during 12 months before the interview.

#### III. Household Subsistence Expenditure (SE) [12]:

Food expenditure as a share of total household consumption expenditure during 12 months before the interview.

#### IV. Household's Capacity To Pay (CTP) [12]:

Non-subsistence spending of household as a share of total household consumption expenditure during 12 months before the interview.

### V. Catastrophic Health Expenditure (CHE) [12]:

- a) OOP payment equal or exceeding 40% of household's capacity to pay during 12 months before the interview.
- b) Let "OOP" be Out-Of-Pocket payment for health care, "EXP" be Household Consumption Expenditure, "SE" be Household Subsistence Expenditure and "CTP" be Household's Capacity to Pay. Then, a household is said to have incurred Catastrophic Health Expenditure (CHE) if  $OOP/CTP \geq 40\%$  where  $CTP = EXP - SE$ .
- c) This model was based on Model of WHO and Ke Xu. 2003.

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