

# THE IMPACT OF SOCIAL HEALTH INSURANCE ON HOUSEHOLD CATASTROPHIC HEALTHCARE EXPENDITURES ASSOCIATED WITH CHRONIC DISEASES IN SUNDARHARAINCHA MUNICIPALITY, MORANG

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## ABSTRACT

**Introduction:** Catastrophic health expenditure (CHE) is the condition of paying for health care that exceeds a defined family income or consumption level. Households who spend CHE may have to forego the consumption of other goods essential to their well-being. Chronic diseases require ongoing and often expensive healthcare services and treatments, which can be financially devastating for households without adequate health insurance coverage. Social health insurance programs can provide financial protection and access to healthcare services for individuals and families with chronic diseases. This study aims to assess the impact of the social health insurance program on household catastrophic healthcare expenditures associated with chronic diseases in Sundarharaincha Municipality, Morang.

**Method:** A Retrospective Cross-sectional research design was adopted to collect the data from 424 households by cluster and probability simple random sampling technique. A semi-structured questionnaire was developed based on an intensive literature review. The investigator himself after the approval of the PUSHHS-IRC (Purbanchal University School of Health Sciences Institutional review committee) collected data. Before data collection, formal permission was obtained from the Municipality office of Sundarharaincha. Written and verbal consent was obtained from each literate and illiterate household respondent respectively before the interview and observation. The findings were described in descriptive and inferential statistics.

**Results:** The data show that various socio-demographic characteristics are associated with catastrophic healthcare expenditures. A significant impact is seen

between social health insurance and catastrophic healthcare expenditures associated with chronic diseases. The majority of the respondents (93.4%) stated that health insurance protects their financial crisis from catastrophic healthcare expenditure. Most (93.7%) of the respondents who expressed reduced economic burden and others as benefits of the enrolment, were compared to health service from specialized hospitals (92.9%) among those who were protected from catastrophic healthcare expenditures by the health insurance program. Similarly, 94.7 % of the respondents said the economic burden was a problem if not enrolled in the health insurance program and 83.3 percent said tension and others as problems if not enrolled. This study also shows that 87.8 percent of the insured respondents who were protected against CHE by the health insurance program had less than 5000 NPR costs per visit ( $<0.001$ ). Out of the total respondents who were protected against CHE by the health insurance program, 93.6 percent were satisfied with health insurance and 92.9 percent want to continue health insurance in the coming days.

**Conclusion:** By providing adequate coverage and support for households with chronic illnesses, social health insurance could significantly reduce the incidence of catastrophic healthcare expenditure, contributing to poverty reduction and improved health outcomes. Policymakers related to social health insurance program and the concerned government should implement measures to increase health insurance coverage among households having chronic diseases to reduce the burden of healthcare expenditure.

## KEYWORDS

Catastrophic healthcare expenditures, Chronic diseases, Social health insurance, Sundarharaincha Municipality

## INTRODUCTION

Chronic diseases are a major challenge for healthcare systems worldwide, and their prevalence is increasing in low- and middle-income countries, including Nepal. These diseases often require long-term treatment and management, resulting in substantial healthcare expenditures for affected individuals and their families. Such catastrophic healthcare expenditures can lead to financial hardship and even impoverishment, particularly for low-income households. In response, many countries have introduced social health insurance programs as a means of providing financial protection against catastrophic healthcare expenditures. (Acharya et al, 2019) The Social Health Insurance Program (SHIP) was introduced in Nepal in 2016 to address this issue. However, the impact of SHIP on reducing catastrophic healthcare expenditures associated with chronic diseases has not been fully evaluated.

## METHOD

A retrospective Cross-sectional research design was used to find out the impact of Social health insurance on household catastrophic healthcare expenditures associated with chronic diseases. This study was carried out among people living in all 12 wards of Sundarharaincha Municipality, Morang. Each household was selected as a sampling unit during data collection. The sample size was 424. Cluster and simple random sampling

techniques were used to select the household in each ward of the sampling area. Semi-structured questionnaires were developed based on intensive literature reviewed to obtain necessary information. The research instrument was divided into three parts. Part I consisted of questions related to socio-demographic information, Part II consists of questions related to information about social health insurance and Part III consists of questions related to chronic diseases associated with catastrophic healthcare expenditures. The data collection period was one month (25<sup>th</sup> February 2023 to 25<sup>th</sup> March 2023) by the investigator himself, after approval of the institutional review board, Purbanchal University School of Health Sciences (PUSHS-IRC). Before data collection formal permission was obtained from the Municipality office of Sundarharaincha Municipality. Then after written and verbal consent was obtained from each respondent. The researcher visited the community, explained the objectives and procedure of the study to the participant, requested the time of the respondents, and explained to the participant their participation in the study was voluntary and written and verbal consent was obtained. Respondents were interviewed using the Nepali version interview schedule. Precaution was taken throughout the study at every step to safeguard the right and welfare of all respondents in the study. Respondents were ensured that their confidentiality and privacy would be maintained. Obtained information would be used for research purposes only. The average time required to interview was 20 - 25 minutes. Only one respondent was interviewed in a household while the data collection. If there is more than one person during the data collection, the head of the household was interviewed, who meets the inclusion criteria. The obtained data was analyzed and interpreted according to the objectives of the study and research questions. Then data were edited, coded and analyzed by using Statistical Package for Social Science (SPSS) version 16. Frequency distribution and percentage of all relevant variables were presented in the table, and relevant significance was calculated by using the Chi-square test.

## RESULT

**Table 1**

### **Socio-Demographic Characteristics of Households and the Respondents**

<b>Characteristics</b>	<b>Attributes/ esponses</b>	<b>N</b>	<b>%</b>
Gender of the respondents	Male	203	47.9
	Female	221	52.1
Head of the household	No	276	65.1
	Yes	148	34.9
The age of the respondents*	Under 25 years	96	22.6
	26 to 45 years	166	39.2
	46 to 65 years	123	29.0
	Above 65 years	39	9.2

Marital status	Unmarried	68	16.0
	Married	352	83.0
	Divorced/Separated	4	0.9
	Widow/Widower	0	0
Cast	Dalit	15	3.5
	Adibsi/Janajati	168	39.6
	Madhesi	68	16.0
	Muslim	4	0.9
	Brahmin/Chhetri	165	38.9
	Others/Dasnami/Sanyasi	4	0.9
Religion	Hindu	380	89.6
	Buddhist	8	1.9
	Islam	4	0.9
	Christianity	28	6.7
	Others	4	0.9
The main sources of income <sup>^</sup>	Agriculture	185	43.6
	Service	127	30.0
	Laborer	72	17.0
	Business	142	33.5
	Remittance	43	10.1
	Pension	31	7.3
	Others	30	7.1
Educational status	Illiterate	19	4.5
	Literate	114	26.9
	Primary Education	71	16.7
	Secondary Education	124	29.2
	Higher Education	96	22.6
Family type	Nuclear	179	42.2
	Joint	241	56.8
	3-Generation	4	0.9
Size of family	Up to 4 members	107	25.2
	5 to 8 members	283	66.7
	Above 8 members	34	8.0

Economically active member(s)	Up to 1	88	20.8
	2 to 3	245	57.8
	4 and above	91	21.5
U 5 age children	Up to 1	88	20.8
	2 to 3	336	79.2
	Above 3	0	0.0
Senior citizen (> 65 years of age)	Up to 2	417	98.3
	Above 2	7	1.7
Monthly income (in NRS)	Up to 10000	47	11.1
	11000 to 20000	118	27.8
	21000 to 30000	85	20.0
	Above 30000	174	41.0
Monthly expenses (in NRS)	Up to 10000	73	17.2
	11000 to 20000	146	34.4
	21000 to 30000	139	32.8
	Above 30000	66	15.6
Title of the main expenses <sup>^</sup>	Food	420	99.1
	Cloths	346	82.1
	Education	354	83.5
	Healthcare	321	75.7
	Communication	48	11.3
	Transportation	173	40.8
	Others	4	0.9
Income/Production adequate to feed	Throughout the year	194	45.8
	9 to 12 months	4	0.9
	6 to 9 months	23	5.4
	3 to 6 months	28	6.6
	Less than 3 months	175	41.3
Total		424	100.0

Note: <sup>^</sup> = Percent may exceed 100 due to multiple responses. \* = Under 18 years of old were not to be selected.

Table 1 depicts that, out of 424 households, females occupied more than half (52.1%) and males were a little less than half (47.9%). Of the respondents, nearly one-third (34.9%) were household heads. The mean age of the respondents was 41 years and the age group of 26 to 45 years occupied 39.2 percent and most of them (83%) were married. The cast of the respondents accounting 39.6% percent were from Adibasi/Janajatis per the definition of Ministry and Health and Population, Nepal. 38.9 and 16 percent were from Brahman/Chhetri and Madhesi respectively. Approximately nine

(89.6%) out of 10 respondents were from Hinduism. The main source of income was agriculture which accounted for 43.6 percent. Approximately, one-third of the respondents (29.2%) completed secondary education, and 4.5 percent were illiterate. More than half (56.8%) of the total respondents belonged to a joint family. Two-thirds (66.7%) of the total families had 5 to 8 members in their homes. More than half (57.8%) of families had 2 to 3 economically active members. The majority of the families (79.2%) had 2 to 3 under-five children and the rest (20.8%) families had up to one or no under-five child. Similarly, 98.3 percent of families had up to 2 senior citizens (above 65 years old) and only 2.7 percent had more than 2 senior citizens. Forty-one percent families had above Rs. 30 thousand monthly income followed by 11000 to 20000 (27.8%), 21000 to 30000 (20%) and less than 10000 (11.1%) respectively. More than one-third of the families (34.4%) had 11000 to 20000 monthly expenses, 32.8 percent had 21000 to 30000, 17.2 percent had up to 10000 and 15.6 percent families had above 30000 monthly expenses. The main expenditure of the respondents was in food followed by education, cloths, healthcare, transportation, communication and others respectively. Similarly, less than half of the respondents (45.8%) were sustainable to feed their family throughout the year whereas 41.3 percent expressed they could feed their family for three months or less.

**Table 2****SHI and CHE related information of Households and the Respondents**

Characteristics	Attributes/Responses	N	%
Faced financial problems with healthcare expenditure	No	336	79.2
	Yes	88	20.8
Management of financial problem*	Sale of asset	8	1.9
	Borrowed from Neighbors / Friends	64	15.1
	Remittance	4	0.9
	Insurance policy	8	1.9
	Others	4	0.9
Benefits of enrollment^	Service from a specialized hospital	254	59.9
	Reduce economic burden	304	71.7
	Reduce tension	131	30.9
	Early treatment	155	36.6
	Quality services	95	22.4
	Others	20	4.7

Disadvantages of not enrolled ^	Economic burden	376	88.7
	Tension	238	56.1
	Delay treatment	134	31.6
	Lack of quality services	61	14.4
	Others	4	0.9
Get services before enrollment ^	Health Post	169	39.9
	PHC	169	39.9
	Government Hospital	159	37.5
	Private Pharmacy	152	35.8
	Private Hospital	225	53.1
	Community Hospital	8	1.9
	Private Medical Colleges	65	15.3
Go for treatment after enrolment ^	Others	8	1.9
	Health Post	159	37.5
	PHC	221	52.1
	Government Hospital	343	80.9
	Private Pharmacy	59	13.9
	Private Hospital	124	29.2
	Community Hospital	12	2.8
Received health service after enrolment	Private Medical Colleges	141	33.3
	Others	8	1.9
Quality of health service after enrolment ( <i>among 393 respondents</i> )	No	31	7.3
	Yes	393	92.7
	Not improved than before	51	12.0
	Improved then before	287	67.7
Protect financial crisis from catastrophic healthcare cost	Worse than before	23	5.4
	Unknown	32	7.5
Protect financial crisis from catastrophic healthcare cost	No	28	5.6
	Yes	396	93.4
Total		424	100.0

Note: ^ = Percent may exceed 100 due to multiple responses. \* = Among 88 households who faced financial difficulties

Table 2 shows that more than two (20.8%) out of 10 of the total respondents had experienced financial problems with healthcare expenditure. More than two-thirds (71.7%) of the total respondents said health insurance helps them to reduce economic burden as a benefit of enrolling in health. Similarly, the majority of the respondents said economic burden (88.7%) was a disadvantage of not enrolled in health insurance. More

than half of the respondents (53.1%) got health services from private hospitals before enrolling in health insurance. After enrolling in health insurance, eight (80.9%) out of 10 respondents were goes to Government hospitals for health services. The majority of the respondents (92.7%) received health services after enrolling in health insurance. Similarly, more than two-thirds (67.7%) of the respondents expressed the quality of health services ware improved than before. The majority of the respondents (93.4%) stated that health insurance protects their financial crisis from catastrophic healthcare expenditure.

**Table 3****Chronic diseases and SHI associated with protection against CHE**

Variables	Category	Protection against Catastrophic Healthcare Expenditure				Chi-Square	P value
		No		Yes			
		N	%	N	%		
Family member with chronic disease	No	8	13.1	53	86.9	9.19	<b>0.010</b>
	Yes	16	7.2	205	92.8		
No. of chronic patient	Up to 2	28	6.8	381	93.2	17.57	<b>0.002</b>
	Above 2	3	20.0	12	80.0		
Duration of illness	< 5 years	12	6.8	164	93.2	1.45	0.484
	6 to 10 years	4	4.1	93	95.9		
	> 10 years	4	3.9	98	96.1		
Average visit of HF in a year	< 10 times	16	5.9	258	94.2	0.78	0.680
	> 10 times	8	7.1	105	92.2		
Faced financial problems	No	20	71.4	8	28.6	1.63	0.441
	Yes	316	79.8	88	19.2		
Satisfied with HI	No	4	11.1	32	88.9	2.54	0.638
	Yes	24	6.5	349	93.6		
Continue HI in the coming days	No	4	25.0	12	75.0	2.12	0.714
	Yes	28	7.1	368	92.9		

P value significance at <0.05 level of significance

Table 3 demonstrated the association between chronic diseases and CHE on SHI with the family member and the number of chronic diseases was found significant as *p*-value <0.05 whereas the association duration of illness, financial problem, satisfaction with HI and continuation HI in the coming days were found insignificance as the *p*-value >0.05.



## DISCUSSION

In our study, major sociodemographic factors associated with catastrophic healthcare expenditure include income, education, household size, health insurance coverage, and chronic disease status. Lower income households, larger households, and households with members who had chronic diseases were more likely to experience catastrophic healthcare expenditure. Higher education and health insurance coverage were associated with a lower likelihood of experiencing catastrophic healthcare expenditure. These findings also supported by the studies conducted in China and Thailand by (Xu et al., 2017, and Tangcharoensathien et al., 2015)

Based on the findings of our study, social health insurance can reduce household catastrophic healthcare expenditure associated with chronic diseases. Social health insurance provides financial protection to individuals and households against the high cost of healthcare services, particularly those associated with chronic diseases. These findings are supported by the studies conducted in China and Vietnam and by (Li et al., 2019 and Shumet et al., 2021)

Overall, on the basis of findings of this study suggest that social health insurance can minimize out-of-pocket expenditure and reduce household catastrophic healthcare expenditure associated with chronic diseases by providing financial protection, increasing access to healthcare services, containing healthcare costs, and pooling resources to spread the risk of healthcare costs across a large population. These finding are also supported by the studies conducted in China by (Zhang et al., 2017 and Liu et al., 2018)

The proportion of the healthcare expenditure covered by social health insurance among households associated with chronic diseases in our study was found to be 98.2 percent by providing financial protection, increasing access to healthcare services, containing healthcare costs, and pooling resources to spread the risk of healthcare costs across a large population. This is supported by the study conducted in Vietnam and China by (Nguyen et al., 2012 and Zhang et al., 2017)

## CONCLUSION

The findings of this study underscored the importance of addressing chronic diseases in the context of healthcare financing and social health insurance. By providing adequate coverage and support for households with chronic illnesses, social health insurance could significantly reduce the incidence of catastrophic healthcare expenditure, contributing to poverty reduction and improved health outcomes. Therefore, policymakers should implement measures to increase health insurance coverage among households having chronic diseases to reduce the burden of healthcare expenditure.

## LIMITATION

The limitations of this study was a relative small size, accuracy and completeness of data collection, selection bias, causality between SHI and reduction of CHE and subject bias on self-reported data may not have accurately reflected the true extent of catastrophic healthcare expenditure associated with chronic diseases.

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