Factors Affecting Health Insurance Utilization among Insured Population: Evidence from Health Insurance Program of Nepal

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Research Article

Keywords: health insurance, insured, Nepal, service utilization

Posted Date: April 27th, 2022

DOI: https://doi.org/10.21203/rs.3.rs-1543440/v1

Abstract

Background: The Government of Nepal introduced the family-based health insurance program in 2016 to increase financial protection and improve access to health care services. The aim of the study was to assess factors associated with the utilization of health insurance among insured population in an urban district of Nepal.

Methods: A cross-sectional survey using face-to-face interviews was conducted in 224 households of Bhaktapur district of Nepal. Household heads were interviewed using a structured questionnaire. Logistic regression with weighted analysis was done to identify predictors of service utilization among the insured residents.

Results: The prevalence of health insurance service utilization at the household level in the Bhaktapur district was 77.2% (n= 224). The number of elder members in the family (AOR 2.7, 95% CI 1.09-7.07), having family member with chronic illness (AOR 5.10, 95% CI 1.48-17.56), willingness to continue health insurance (AOR 2.18, 95% CI 1.47-3.25) and membership duration (AOR 1.14, 95% CI 1.05-1.24) were significantly associated with the utilization of the health insurance at the household level.

Conclusion: The study identified a particular group of the population who were more likely to utilize health insurance services, including the chronically ill and elderly. Health insurance program in Nepal would benefit from strategies to increase population coverage in health insurance, improve quality of health services, and retain members in the program.

Background

The movement towards achieving Universal Health Coverage (UHC) is mounting attention worldwide, and health insurance has been instrumental in this attempt. In health insurance with prepaid mechanism, it ensures the risk pooling and redistribution of financial resources to secure financial protection against treatment costs.[1] Many countries in the world have established the principle of UHC via social health insurance (SHI).[2] The SHI has a substantial potential for improving financial protection by reducing out of pocket payment, and enhancing health care utilization among the insured population by promoting social inclusion in health care.

The insured citizens in countries with strong health care system have improved health outcomes due to access to prompt health care and consequently suffer less financial burden.[3] Many countries like Germany, United Kingdom, South Korea, and Thailand were able to obtain full coverage of their population through an effective health insurance system.[4] However, low and middle-income countries (LMICs) have rarely utilized this approach and mostly depend on general revenues and direct out-of-pocket payments (OOP) for seeking health care.[5] Even countries where health insurance has been implemented, the scheme is performing poorly than anticipated leading to the wastage of the resources and loss of trust among the enrolled members.[3]

The Government of Nepal has the vision to improve the health of all Nepalese people by increasing their access to health care services with health insurance program as an important strategy.[6] Nepal's National Health Policy 2019 has envisioned providing specialized services to the population through health insurance while ensuring basic health services through general taxation.[7] The implementation of health insurance in Nepal was started in April 2016 by enrolling the informal sector (household level) at the district level.[8, 9] By April 2021, 3.9 million people (around 13% of the total population) have been enrolled in health insurance program in Nepal, and the geographical coverage is 69 out of 77 districts.[10] The Health Insurance Board (HIB) - the government purchasing agency has set a flat contribution amount of Nepalese Rupees (NPR) 3,500 (around 30 USD) for a five-member household with an additional contribution amount of NPR 700 (about 6 USD) for each additional member. The government has provided a full waiver in contribution amount for elderly above 70 years and family members of ultra-poor households (poor household identified in 26 out of 77 districts), people living with HIV, drug-resistant tuberculosis patients, leprosy patients, and those with complete disability.[11] The benefits package is comprehensive and covers outpatient, inpatient, and emergency services and 1133 types of drugs. However, the benefits package is limited to a ceiling of NPR 100,000 (around 900 USD) for a five-member family. An additional benefit of NPR 20,000 (about 180 USD) is covered for each additional member. A total of 366 service sites registered with the HIB provide service, including primary health centres, government hospitals, and private and community hospitals.[11, 12]

In the early stage of implementing health insurance, the retention of membership is an important indicator of the sustainability and quality of the health insurance program. The programmatic review has suggested the quality of service as an essential factor influencing the dropout of insured members. [13–15] However, a research gap exists in understanding the factors affecting service utilization among the insured members. Assessment of these factors assists in timely improvement in the performance of the program as wells as revise current implementation modalities. In this context, this study aims to identify the factors associated with the utilization of health insurance services among insured population.

Methods

Study design and settings

A cross-sectional household-based study was conducted in the Bhaktapur district of Nepal. Bhaktapur is an urban area and is one of the three districts of Kathmandu valley; the other two are Lalitpur and Kathmandu. Bhaktapur district consists of four municipalities. Enrolment in health insurance started in the district from June 2017. The households enrolled till December 2018 were included in the sampling frame. Out of total 68557 household, 16623 were enrolled in health insurance.

Sample size and sampling method

We calculated the sample size using the formula for the cross-sectional survey.[16] The proportion of health insurance service utilization was taken as 9.7% considering the proportion of population enrolled in health insurance in the district in 2016/17.[17] The minimum sample size obtained was 222. A total of

224 insured households were visited for data collection. Two-stage probability sampling was done to identify the households for data collection. The list of a total number of the enrolled families in Bhaktapur district was obtained at the ward level of all 38 wards of four municipalities. The 10% of the total 38 wards from the whole district, i.e., four wards were selected by Population Proportionate to Size sampling technique. Then systematic random sampling was done to select households from the selected wards. As the minimum sample size was 222, total 56 households were taken equally from four wards. Hence, 224 households were selected in total. Household head of the household was selected for the interview.

Operational Definition

Insured Household

The family who ever enrolled in the Health Insurance Program till December 2018 (6 month prior data collection).

Insurance Service utilization

Those families who have ever utilized or claimed the health insurance services, after getting a valid card.

Membership duration

The time duration since getting membership card in the program.

Study variables

The study variables of this study are presented in Table 1.

Table 1
Study variables

S.N.	Variables	Categories of variables
A	**Dependent variable**	
1	Utilization of health insurance	Yes, No
B	**Background variables**	
1	Age of household head	Years
2	Gender of household head	Male, Female, Others
3	Ethnicity	Dalit, Janajati, Madhesi, Muslim, Brahmin/ Chhetri, Others (based on Health Management Information System classification)
4	Literacy	Illiterate, Literate
5	Family size	Number
6	Family type	Nuclear, Joint Family /Extended
7	Number of children in a family	Number
8	Number of elderly (≥ 60 years of age) in the family	Number
9	Average annual income	Amount
10	Major source of expenditure	Household general expenditure, Health, Education
11	Expenditure in Health	Amount
12	Socio economic status	Upper, middle, lower (calculated by using Modified Kuppuswamy scale)[18]
C	**Mediating Variables**	
1	Conditions of seeking health care	Regular during illness, Only after not responding to other treatment, Only in emergency / severe condition, Regular check-up, Other
2	Presence of chronic illness	Yes, No
3	Presence of family member with a disability	Yes, No
4	Comprehensive knowledge in health insurance	Yes, No

S.N.	Variables	Categories of variables
5	Current membership status	Currently insured (has valid ID card), Previously insured (non-renewal)
6	Enrolled in other modes of health insurance	Privately purchased commercial insurance, Health Insurance through the employer
7	Last annual contribution amount paid	Amount
8	Total family members enrolled in health insurance	Number
9	Willingness to continue	Yes, No
10	Membership Duration	Years

Table 1: **Study variables**

Data collection

The field survey was carried out from September 2019 to November 2019. The researchers visited the sampled households which were identified with the help of the district health insurance board office and enrolment assistants. Face-to-face interview was done with the household head of the family after obtaining written informed consent. Data collection was done by using the semi-structured questionnaire divided into three parts: socio-demographic characteristics, knowledge about health insurance and membership, and insurance service utilization. The questionnaire was pre tested before administration for the local validity and reliability. The questionnaire was translated to Nepali language for collecting the data which was further back translated to ensure the validity of the tool.

Data analysis

Data were entered, coded, and edited in Epi Info 7. The cleaned data were then analysed using the STATA 13 software. Firstly, we did bivariate analysis between dependent and background variables. The variables that showed significant association at a 25% level of significance in bivariate analysis: ethnicity, literacy, type of family, number of elder members in the family, and expenditure in health, were included in multivariable logistic regression model. Likewise, we conducted bivariate analysis between the dependent variable and the mediating variables. The variables that showed significant association at a 25% level of significance: family members with chronic illness, family members with comprehensive knowledge of health insurance, last annual premium paid, willingness to continue and membership duration, were also included in multivariable logistic regression analysis.

Further, we checked the multicollinearity test through variance inflation factor (VIF) among all the variables which were eligible for multivariate logistic regression. [19, 20] Those variables showing VIF less than two were only taken for regression analysis.[21] All the variables except ethnicity showed VIF

less than two and were fitted in the final multivariable logistic regression model. We set the level of significance at 5%.

Results

Background Characteristics of Participants

Among the total 224 participants, Eighty-three percent of the household heads were male. The median age of the household head was 54 years. Eighty-three percent of household heads were literate, two out of three had nuclear families, and the average number of family members was 5.6. Among the total households, 45% of households had elderly members in their family, and a quarter of households had children below five years in their family. Nearly half of the families major expenditure was on household general expenses, while 30.8% and 24.1% of the participants reported that their major expenditure was on education and health, respectively. On average, one-fifth (20.4%) of their income was spent on health. While assessing the family's socioeconomic status, more than half of the participants had lower socioeconomic status. The proportion of households having at least one member with chronic illness in their family was 56.3% and among those, nearly two-thirds (64.3%) had only one member with chronic illness in the family. Around three percent had a member with disability in their family.

Table 2: **Socio-demographic characteristics of the study participants**

Table 2
Socio-demographic characteristics of the study participants (N = 224)

Variables	Frequency	Percentage
Mean age (± SD) of household head 54 .8 (± 13.12) years		
Gender of Household head		
Male	192	85.7
Female	32	14.3
Ethnicity		
Janajati	150	67.0
Brahmin/ Chhetri	65	29.0
Dalit	9	4.0
Literacy Status		
Literate	188	83.9
Illiterate	36	16.1
Types of Family		
Nuclear Family	152	67.9
Joint and Extended	72	32.1
Average member (± SD) in family 5.6 (± 1.93)		
Elderly member in the family		
No	123	54.9
Yes	101	45.1
Number of elderly members in the family (n = 101)		
1	58	57.4
2	39	38.6
3	3	3.0
4	1	1.0
Children in Family		
No	167	74.6
Yes	57	25.4
Number of children in the family (n = 57)		

Variables	Frequency	Percentage
1	47	82.5
2	9	15.8
3	1	1.8
Chronic illness in the family		
No	98	43.7
Yes	126	56.3
Number of family members with Chronic Illness in the family (n = 126)		
1	81	64.3
2	38	30.2
3	7	5.6
Family members with a disability		
No	218	97.3
Yes	6	2.7
Major expenditure		
Household	101	45.1
Education	69	30.8
Health	54	24.1
Socioeconomic status of household		
Lower	126	56.3
Middle	95	42.4
Upper	3	1.3
Average family annual income = NRS 553200		
Average expenditure in health (in percentage) = 20.4 ± 16.2		

Knowledge about health insurance

Comprehensive knowledge about health insurance services was referred to as knowing contribution amount, benefit ceiling, time of renewal, and service availability. Less than one in five (18.8%) of the participants had comprehensive knowledge about health insurance services (Table 3).

Table 3
Distribution of insured residents having comprehensive knowledge about Health Insurance in Bhaktapur District

Comprehensive Knowledge on health insurance	Frequency	Percentage
Yes	42	18.75
No	182	81.25
Total	224	100

Membership status and utilization of health insurance

Among study participants, 11.2% had dropped out from the health insurance program. Around seven percent had enrolled in other modes (private health insurance, other insurance through an employer) of health insurance schemes. The majority (91.5%) of the study participants were willing to continue the membership in the health insurance program. The household proportion of utilization of health insurance services was 77.2%.

Reasons for non-utilization of health insurance services

Common reasons for not utilizing health insurance services were having no health problems (22.99%), seeking other treatment (22.99%), and hearing poor experiences of utilizing insurance services from service users (19.54%). In addition, the participants reported other reasons as long waiting lines in the health facility, bothersome procedures to get treatment, lack of time, and being unaware of where to go for treatment, as the reasons for non-utilization of health insurance (Table 4).

Table 4
Reasons behind non-utilization of Health Insurance among insured resident in Bhaktapur district, (N = 51)*

Reasons for non-utilization	Response	Response rate
No Health problem (No need)	20	22.99
Seek other treatment	20	22.99
Long distance to health facility	2	2.30
Do not address the health need by services	6	6.89
Heard bad news about service delivery	17	19.54
Do not like the staff at the health facility	8	9.20
Other	14	16.09
Total	**87**	**100.00**
* Multiple response		

Factors associated with utilization of health insurance among households

In the adjusted analysis of the association between the dependent and background variables, the number of elder members in the family showed a statistically significant association with service utilization of health insurance benefits. Similarly, while assessing the association between mediating and dependent variables, three mediating variables, i.e., presence of chronic illness in the family, willingness to continue, and membership duration, were significantly associated with service utilization of health insurance benefits .

After including variables which showed significant association in the final regression model, increase in the number of elder members in the family had higher odds (AOR = 2.70; 95% CI: 1.09–7.07) for service utilization. Likewise, family having a member with chronic illness were five times more likely (AOR = 5.10; 95% CI: 1.48–17.56) to utilize services compared to the family having no members with chronic illness. Additionally, the utilization of the insurance services increased by 2.1 times among those willing to continue in the health insurance program (AOR 2.18; 95% CI: 1.47–3.25) than those who did not want to continue the membership. Similarly, with the increase in the number of months of membership duration in the program, the utilization of health insurance services was also significantly higher (AOR 1.14; 95% CI: 1.05–1.24) (Table 5).

Table 5
Multivariate Analysis of factors associated with utilization of health insurance services

Variables	Category	Utilization of health insurance N (%)	OR (95% CI)	AOR (95% CI)
Literacy	Illiterate	30 (17.3%)	Ref	Ref
	Literate	143(82.7%)	0.63 (0.24–1.64)	1.75 (0.48–6.3)
Types of family	Joint/Extended	58 (33.5%)	Ref	Ref
	Nuclear	115(66.5%)	0.75 (0.44–1.25)	1.64 (0.74–3.63)
Number of Elderly			2.86 (2.39–3.43) *	2.7 (1.09–7.07) *
Expenditure in Health			1.02 (0.98–1.06)	1.00 (0.96–1.05)
Presence of Chronic Illness	No	57 (32.9%)	Ref	Ref
	Yes	116(67.1%)	8.3 (4.32–16.09) *	5.10 (1.48–17.56) *
Knowledge about health insurance	No	136 (78.6%)	Ref	Ref
	Yes	37 (21.4%)	2.44 (0.47–12.7)	2.02 (0.51–8.02)
Last annual contribution amount Paid			1.00 (1.00–1.00)	1.00 (0.99-1.00)
Willingness to continue	No	12(6.9%)	Ref	Ref
	Yes	161(93.1%)	2.13 (0.76–5.99)	2.18 (1.47–3.25) *
Membership duration			1.15 (1.05–1.24)	1.14(1.05–1.24) *

* Statistically significant at $p < 0.05$

Discussion

The current study showed a higher number of elderly members in the family was significantly associated with utilization of health insurance services. We found similar results in a study done in China and Taiwan.[22, 23] An increase in age elevates the vulnerability of getting ill-health, which leads to generating more health needs, resulting in high utilization of health care benefits.[24] The another reasons for high

utilization could be full waiver in contribution amount for the elderly above 70 years in health insurance program. This could motivate them to utilize the health insurance services.

Households with members suffering from chronic illness were also more likely to utilize health insurance service in this study. The higher proportion of service utilization might be because of increased health care needs for chronically ill people. Similar finding was observed in a previous study done in three districts of Nepal, which showed higher service utilization among patients suffering from chronic illnesses like diabetes and hypertension after the program's inception in the district.[25] Also, families with chronically ill people were more likely to join the health insurance program, as evident from a study done in Illam, Nepal.[9] Studies from the Community Based Health Insurance (CBHI) program of India [24] and rural China however [26, 27] did not show any association between the presence of chronic illness and health insurance utilization. In our context, a higher tendency of health insurance service utilization among chronically ill people exists. The government should address the possible selection bias by increasing population enrolment in health insurance and ensuring a larger risk pool for financial sustainability of the health insurance program.[28]

Our study showed a significant association between health insurance utilization and membership duration of the health insurance program. The possible reason might be that members with longer duration are aware of the benefits of the health insurance program. However, the membership duration showed no association with the utilization of health insurance benefits of out-patients services in the Vietnam household living standard survey.[29] Another study in St. Louis, USA revealed a reduction in utilization rates with increased membership duration over five years. The reasons behind this were due to centralizing health care system and long waiting lines which involved travel and time cost .[30]

Additionally, willingness to continue the program was a significant predictor for health insurance utilization in this current study. The possible explanation for this might be the insured’s positive experience in getting health insurance benefits. High dropout rates put challenges in the reduction of insurance pool size and the negative impact on the new enrollment rate. Around 90% of the participants were willing to continue the program in the future. Given that the prevalence of service utilization was only 77.2%, this means some household are not using the service, but are willing to continuous the program. The figure showed the motivation of these subgroup .The figure is consistent with the study conducted in three districts (Kailali, Baglung and Illam) of Nepal.[25] Similar findings were identified in a study in Ethiopia.[31] Literature has demonstrated that the decision to continue in the program reflects the individual's risk aversion and demand for certainty as the certainty level regarding relatively good health reduces acceptance for insurance uptake and vice versa.[32–34]

In our study, family's education status, socioeconomic status, and comprehensive knowledge regarding health insurance were not significantly associated with service utilization. This study also examined the prevalence of the utilization of health insurance program, which was 77%. The dropout rate was measured as 11%, which was very low compared to the national rate, i.e., (44.5%).[35] Although the overall performance indicator was remarkably good compared to the national rates, the comprehensive

knowledge on health insurance (18.8%) was lower than the study conducted in two districts (Baglung and Kailali) of Nepal where health insurance was first implemented.[36]

The study showed various reasons for the non-utilization of the health insurance service which included not being ill, seeking other treatment, and hearing previous bad experiences from the service users. The other reasons were having long waiting lines and over crowdedness in the health facility, bothersome procedure to get treatment and being unaware about where to go for treatment. We identified similar reasons for the non-utilization of health insurance services in studies conducted in different countries.[37–42]

The study has some limitations. The cross-sectional study was conducted in an urban setting, thus, the findings derived from this study cannot be generalized to the whole country. Similarly, the study might have encountered respondent bias despite the study team's effort to explain the purpose of the study. Nevertheless, this study is the first of its kind in Nepal, exploring the factors affecting the utilization of health insurance among the insured population.

Conclusion

The prevalence of utilization of health insurance services at the household level was 77.2%. The number of elder members in the family, presence of chronic illness in the family, willingness to continue and membership duration were significantly associated with the utilization of health insurance services. As families with elderly and chronically ill members have more tendency to utilize health insurance services, government should focus on increasing population coverage in health insurance for adequate risk pooling. Similarly, policy makers should focus on the strategies to retain the existing member in the health insurance program and implementation of health insurance literacy programs targeting the community people. The findings guide stake holders to redesign the existing health insurance scheme, which is voluntary and family-based and with limited risk pooling due to the exclusion of the formal sector in the health insurance program. The findings could be more important for the health insurance stakeholders to guide policy makers in Nepal as well as other low -middle income countries to set up strategies in the perspective of scaling up the health insurance coverage and adherence.

Declarations

Ethics approval and consent to participate

The research protocol was approved by Institutional Review Board at Patan Academy of Health Science (Reference Number: PHP1908091288). Approval letter from all municipalities was also obtained.

Consent for publication

Not Applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

The authors received no specific funding for this work.

Authors' contributions

SG1 conceptualised, designed and led the study and drafted the manuscript. SG1 and SG2 conducted fieldwork and analysed the data. PK provided important critical revision of the manuscript for important intellectual content. All authors read and approved the final manuscript. RAS and SP participate in conception and design of the study and provided important critical revisions of the manuscript.

Acknowledgments

The researchers thank the participants, Health Insurance Board, Municipalities of Bhaktapur District, and Health Insurance Board for their immense contributions to the successful conduction of research in the entire process.

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