Health Service Utilization and Out-Of-Pocket Health Expenditure Among Insured and Uninsured: A Comparative Study in Baglung District, Nepal

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Abstract

Background

Nepal's Interim Constitution of 2007 addresses health as a fundamental right, stating that every citizen has the right to basic health services free of cost. Government of Nepal formed a Social Health Security Development Committee as a legal framework to start implementing a social health security scheme after the National Health Insurance Policy came out in 2013. The program has aimed to increase the access of health services to the poor and the marginalized, and people in hard to reach areas of the country, though challenges remain with financing. Several aspects should be considered in design, learning from earlier community-based health insurance schemes that suffered from low enrollment and retention of members as well as from a pro-rich bias.

Method

A community based cross-sectional comparative study was conducted in Baglung district of Nepal to find out and compare the health service utilization and direct out-of-pocket health care expenditure among the 225 insured and 225 uninsured households under the national health insurance program of Nepal. Insured households were randomly chosen from study area and uninsured households were selected by using neighborhood method.

Result

The study focused that insurance status was strongly associated with health service utilization with odds ratio 1.774 (95% CI = 1.127-2.791, P = 0.013). The study also depicts that insurance status was major determinants of out of pocket health expenditure. The median out-of-pocket health expenditure among insured households Nepalese Rupees 200 while among uninsured was 1225, which was statistically significant (p = <0.001 MW-U test). Among uninsured group, non-dalit were 2.846 times more likely to utilize health services compared to the dalit (p = 0.003) but it was not significant (p = 0.47) among insured group.

Conclusion

Nepal’s Health Insurance Board is responsible for purchasing the quality health care service and make available at possible nearest point of its member. Our study reveals that Occupation, perceived health status, wealth status played significant role with health service utilization among uninsured group while it was not significant among insured group. Among both insured and uninsured group none of the study variables were found significant with out-of-pocket health expenditure.
Background
Out of pocket health expenditure was found highest in South East Asia Region than other region[1-3]. High in out of pocket health expenditure in developing country creates financial barrier to access and utilization of health services[2, 3]. World Health Assembly passed a resolution on social health insurance for considering universal health coverage in 2005. It advocates universal health coverage by sustainable access to the quality health care services[4]. World health report 2010 also advocated for copayment in the health or health insurance. This report also identified health insurance is among one strong mechanism of universal health coverage[5]. To improving access towards quality health care services, several countries have started different type of health insurance program; however the name provision and packages are not similar[1, 3, 6].

In context of Nepal poverty and high OOP health expenditure remains challenging for equitable access to quality health care services[7, 8]. To overcoming above challenges Government of Nepal introduces national health insurance policy in 2013 with objective of ensured universal health coverage[9, 10]. Based on health insurance policy, Government of Nepal started national health insurance program from 2015[10].

**National Health Insurance Program**

National Health Insurance Program (NHIP) is a social protection program of the Government of Nepal that aims to enable its citizens to access quality health care services minimizing the financial burden on them[8-10]. National Health Insurance Program has been rolled out in various districts since 2016[10]. It is a family-based health insurance scheme that aims to address barriers in health service utilization and ensure equity and access of poor and disadvantaged groups as a means to achieve Universal Health Coverage[9, 10]. For the purpose of National Health Insurance Program (NHIP) family was taken as unit. The NHIP currently operates in twenty two districts of the country and the program will be expanded to addition fifteen districts by October 2017[10]. Social Health Security Development Committee (SHSDC) aims to expand NHIP program to all 75 districts by 2020[11].

The vision of the SHSDC is to improve the overall health situation of the people of Nepal and main objectives is to insure the universal health coverage by increasing access to, and utilization of,
necessary quality health services[11].

Methods
A comparative cross-sectional, quantitative study was conducted among 225 insured and 225 uninsured households in Baglung district of Nepal. Primary data were collected from March-April, 2018. Sample size was calculated by using the compare two proportion formulas. Taking the proportion of health service utilization among insured households was 9.27 present and among uninsured households was 3.09 present. The proportion of health service utilization was estimated from pilot study, which was conducted in Pokhara-Lekhnath metropolitan, Kaski, Nepal. From calculation the sample size arrived at 225. For comparative study the 225 sample households from each group were taken (Total 450 households were selected for study). Random sample method was used to select study households. In first stage seven wards were selected from fourteen wards of municipality randomly and based on the proportion of insured households in each selected ward, sample was taken proportionally by lottery method. Uninsured households were selected by using neighborhood control method. For each insured household one nearest uninsured household was chosen for comparison group.

Data were entered in Epi-Data software and exported in Statistical Package for Social Sciences (SPSS) version 16.0 for further analysis. The comparison was made between insured and uninsured households’ characteristics by using cross tabulation. Bi-variate logistic regression was performed to identify the association of insurance status and other variables with health service utilization. And Mann-Whitney U test was performed to compare the out of pocket expenditure among insured and uninsured group.

Data collection was done after pretesting of structured questionnaire by researcher and trained research assistant. In case of participants refused to participate, the household was replaced by similar nearest household.

Results
A total of 225 insured and 225 uninsured households having 1242 and 1218 members were included
in the study. Uni-variate analysis was described on the basis of insurance enrollment status.

According to objective bi-variate analysis was done based on service utilization and OOP expenditure among insurance status.

*Table 1. Descriptive analysis of households characteristics*
| Characteristics                      | Insured n (%) | Uninsured n (%) | p Value |
|--------------------------------------|---------------|-----------------|---------|
| Age in years                         |               |                 |         |
| ≤ 30                                 | 6 (2.7)       | 13 (5.8)        | 0.511   |
| 31-45                                | 61 (27.1)     | 58 (25.8)       |         |
| 46-60                                | 92 (40.9)     | 84 (37.3)       |         |
| 61-75                                | 56 (24.9)     | 61 (27.1)       |         |
| ≥ 76                                 | 10 (4.4)      | 9 (4)           |         |
| Sex                                  |               |                 |         |
| Male                                 | 167 (74.2)    | 154 (68.4)      | 0.175   |
| Female                               | 58 (25.8)     | 71 (31.6)       |         |
| Religion                             |               |                 |         |
| Hindu                                | 175 (77.8)    | 198 (88)        | 0.009**| (#) |
| Buddhist                             | 36 (16)       | 18 (8)          |         |
| Christian                            | 8 (3.6)       | 8 (3.6)         |         |
| Islam                                | 6 (2.7)       | 1 (0.4)         |         |
| Ethnicity                            |               |                 |         |
| Dalit                                | 27 (12)       | 44 (19.6)       | <0.001***| (#) |
| Janajati                             | 66 (29.3)     | 40 (17.8)       |         |
| Muslim                               | 8 (3.6)       | 0 (0)           |         |
| Brahmn/Chhetri                       | 124 (55.1)    | 141 (62.7)      |         |
| Education                            |               |                 |         |
| Illiterate                           | 37 (16.4)     | 38 (16.9)       | 0.320   |
| Literate                             | 38 (16.9)     | 49 (21.8)       |         |
| Basic                                | 54 (24)       | 63 (28)         |         |
| Secondary                            | 72 (32)       | 57 (25.3)       |         |
| Higher                               | 24 (10.7)     | 18 (8)          |         |
| Number of family member              |               |                 |         |
| ≤ 5                                  | 129 (57.3)    | 136 (60.4)      | 0.502   |
| ≥ 6                                  | 96 (42.7)     | 89 (39.6)       |         |
| Occupation                           |               |                 |         |
| Agriculture/Labor                    | 74 (32.9)     | 111 (49.3)      | 0.003** |
| Business                             | 49 (21.8)     | 33 (14.7)       |         |
| Foreign employment                   | 46 (20.4)     | 30 (13.3)       |         |
| Service                              | 56 (24.9)     | 51 (22.7)       |         |
| Wealth Status                        |               |                 |         |
| Lowest quintile                      | 12 (5.3)      | 17 (7.6)        | 0.025*  |
| First quintile                       | 18 (8)        | 28 (12.4)       |         |
| Second quintile                      | 57 (25.3)     | 68 (30.2)       |         |
| Third quintile                       | 59 (26.2)     | 63 (28)         |         |
| Highest quintile                     | 79 (35.1)     | 49 (21.8)       |         |
| Chronic disease/disability           |               |                 |         |
| Yes                                  | 108 (48)      | 96 (42.7)       | 0.256   |
| No                                   | 117 (52)      | 129 (57.3)      |         |
| Perceived health status              |               |                 |         |
| Good                                 | 38 (16.9)     | 41 (18.2)       | 0.597   |
| Average                              | 183 (81.3)    | 177 (78.7)      |         |
| Bad                                  | 4 (1.8)       | 7 (3.1)         |         |
| Health system preferred              |               |                 |         |
| Allopathic                           | 206 (91.6)    | 199 (88.4)      | 0.422   |
| Traditional healer                   | 15 (6.7)      | 18 (8)          |         |
| Ayurveda                             | 4 (1.8)       | 8 (3.6)         |         |
| Time to reach HF                     |               |                 |         |
| <30                                  | 106 (47.1)    | 124 (55.1)      | 0.017*  |
| 30-60                                | 87 (38.7)     | 59 (26.2)       |         |
| >60                                  | 32 (14.2)     | 42 (18.7)       |         |
**Basic Characteristics of Households**

Majority of households were headed by male, which was almost similar among both insured (74.2%) and uninsured (68.4%) households. There was a significant difference in religion of insured and uninsured households; $p = 0.009$. Similarly, ethnicity also found significantly different among the both insured and uninsured group; $p < 0.001$. Occupation $p = 0.003$, wealth status $p = 0.025$ and time to reach health facility $p = 0.017$ were found significantly different among the insured and uninsured households. Most of independent variables like age, education, number of family member, health system preferred, chronic disease/disability and perceived health status were not found significantly different among both insured and uninsured group.

*Table 2. Associated factors with health service utilization*
| Characteristics                                      | Health service utilization | OR (95% CI) | P value |
|------------------------------------------------------|---------------------------|-------------|---------|
|                                                      | Yes                          | No           |         |
| Insurance Status                                     |                             |              |         |
| Insured                                              | 186 (82.70 %)               | 39 (17.30 %) | 1.774 (1.127 – 2.791) | 0.013* |
| Uninsured                                            | 164 (72.90 %)               | 61(27.11 %)  | 0.902 (0.494– 1.647) | 0.738  |
| Religion                                             |                             |              |         |
| Hindu                                                | 289 (77.50%)                | 84 (22.50%)  | 0.902 (0.494– 1.647) | 0.738  |
| Non-Hindu                                            | 61 (79.20%)                 | 16 (20.80%)  | 0.902 (0.494– 1.647) | 0.738  |
| Ethnicity                                            |                             |              |         |
| Non-Dalit                                            | 305 (80.5 0 %)              | 74 (19.50 %) | 2.381 (1.380 – 4.109) | 0.002**|
| Dalit                                                | 45 (63.40%)                 | 26 (36.60 %) | 1.119 (0.711– 1.764) | 0.627  |
| Number of Family                                     |                             |              |         |
| ≤5 members                                           | 204 (77.00%)                | 61 (23.00%)  | 1.119 (0.711– 1.764) | 0.627  |
| >5 members                                           | 146 (78.90%)                | 39 (21.10%)  | 1.119 (0.711– 1.764) | 0.627  |
| Education                                            |                             |              |         |
| Literate                                             | 296 (78.90%)                | 79 (21.10%)  | 1.119 (0.711– 1.764) | 0.627  |
| Illiterate                                           | 54 (72.00%)                 | 21 (28.00%)  | 1.119 (0.711– 1.764) | 0.627  |
| Occupation                                           |                             |              |         |
| Non-agriculture                                      | 224 (84.50 %)               | 4 (15.50 %)  | 2.731 (1.376 – 5.424) | 0.004**|
| Agriculture                                          | 126 (68.1 0 %)              | 59 (31.90%)  | 2.731 (1.376 – 5.424) | 0.004**|
| Wealth Index                                         |                             |              |         |
| IVth & richest quintile                              | 214 (85.60%)                | 36 (14.40 %) | 2.468 (1.341 – 4.540) | 0.004**|
| Middle quintile                                      | 83 (66.40%)                 | 42 (33.60%)  | 2.468 (1.341 – 4.540) | 0.004**|
| Poorest & IInd quintile                              | 53 (70.60 %)                | 22 (29.50%)  | 2.468 (1.341 – 4.540) | 0.004**|
| Perceived Health Status of Family                    |                             |              |         |
| Good                                                 | 65 (82.30%)                 | 14 (17.70 %) | 8.125 (2.091– 31.576) | 0.002**|
| Average                                              | 281 (78.00%)                | 79 (22.00%)  | 8.125 (2.091– 31.576) | 0.002**|
| Bad                                                  | 4 (36.4 0 %)                | 7 (63.60%)   | 8.125 (2.091– 31.576) | 0.002**|
| Chronic health problem/ Disability in the family     |                             |              |         |
| Present                                              | 163 (79.90%)                | 41 (20.10%)  | 1.254 (0.799– 1.968) | 0.324  |
| Absent                                               | 187 (76.00%)                | 59 (24.00%)  | 1.254 (0.799– 1.968) | 0.324  |
| Time to reach commonly used health facility          |                             |              |         |
| <30 minutes                                          | 174 (75.70%)                | 56 (24.30%)  | 0.857 (0.458– 1.610) | 0.632  |
| 30-60 minutes                                         | 118 (80.80%)                | 28 (19.20%)  | 0.857 (0.458– 1.610) | 0.632  |
| >60 minutes                                          | 58 (78.40%)                 | 16 (21.60%)  | 0.857 (0.458– 1.610) | 0.632  |
| Health system preferred                              |                             |              |         |
| Allopathic                                           | 324 (80.00%)                | 81 (20.00%)  | 2.857 (0.884 – 9.235) | 0.079  |
| Non-allopathic                                       | 26 (57.8 0 %)               | 19 (42.20%)  | 2.857 (0.884 – 9.235) | 0.079  |

Odd Ratio(OR) and p value based on binary logistic regression, * p value significant at <0.05, ** p value significant at <0.01.

Health Service Utilization

The overall health service utilization was found 77.8 %. When health service utilization was compared with the insurance status, it was found 82.7 % and 72.9 % among insured and uninsured households respectively. Insured households were 1.774 (95 % CI = 1.127 – 2.791) times more likely to utilize health services in compared to uninsured households; p = 0.013. Similarly, among overall households
beside insurance status ethnicity, occupation, wealth index and perceived health status of the family were found major predictor of health service utilization.

Table 3. Associated factors with out-of-pocket health expenditure

| Variables and it’s category | Median OOP (IQR in NRS) | MW-U value | p value |
|-----------------------------|-------------------------|------------|---------|
| Insurance status            |                         |            |         |
| Insured                     | 200 (1550)              | 17988.50   | <0.001***|
| Uninsured                   | 1225 (5175)             |            |         |
| Religion                    |                         |            |         |
| Hindu                       | 700 (3620)              | 13362.50   | 0.328   |
| Non-Hindu                   | 500 (2250)              |            |         |
| Ethnicity                   |                         |            |         |
| Dalit                       | 1275 (5300)             | 11899.50   | 0.115   |
| Non-Dalit                   | 600 (2800)              |            |         |
| Educational status          |                         |            |         |
| Illiterate                  | 700 (5000)              | 13932      | 0.897   |
| Literate                    | 610 (2500)              |            |         |
| Occupation                  |                         |            |         |
| Agriculture                 | 805 (4000)              | 21294      | 0.016*  |
| Others                      | 400 (2500)              |            |         |
| Wealth status               |                         |            |         |
| Up to middle quintile       | 720 (3791)              | 24013      | 0.463   |
| Fourth & richest quintile   | 500 (2575)              |            |         |
| Time to reach health Facility|                       |            |         |
| ≤60minutes                  | 8617 (3000)             | 13283      | 0.531   |
| >60 minutes                 | 700 (4272)              |            |         |

P value based on Mann-Whitney U (MW-U) test, * p value significant at <0.05, ** p value significant at <0.001.

Out of Pocket Health Expenditure

For measuring association between OOP health expenditure with insurance status and another covariate we perform Mann Whitney U test. Considering one-month preceding period for OOP; among insured households the median OOP health expenditure was found NRS 200 (IQR = 1550) and among uninsured households it was NRS 1225 (IQR = 5175). Among uninsured households median OOP was more than six times higher compared to insured households which was highly significant (p <0.001). Beside insurance status occupation was also found statistically significant with OOP; p = 0.016.

Discussion

Primarily this study focuses to look the influence of national health insurance program on the health
service utilization and out of pocket expenditure among insured group in compare to uninsured group. In addition, some associated factors were also studied to identify their effects on health service utilization and out of pocket health expenditure.

**Health service utilization**

There was positive role of insurance to increase health service utilization rate. In this study insured households found to utilize more health services than those of uninsured, which was statistically significant. Similar finding was reported by the study done in India on comprehensive health insurance program[14]. Similarly findings from our study was consistent with the results of other studies conducted in different types of health insurance program in Ghana, Republic Korea and Chhattisgarh, India[15,16, 17].

We found that insurance status was major predictor of health service utilization. Ethnicity, family occupation, perceived health status of family and wealth status also had significant role in health service utilization among overall households. Similar study conducted in Ghana reported that educational status and monthly income were major determinants of health service utilization among overall study group[15]. The study conducted in Republic Korea reflects educational status and household wealth status had also significant difference in health service utilization[16].

**Out-of-pocket health care expenditure**

Health insurance program of Nepal did not completely reduce the OOP health expenditure among insured households. However, it highly reduces the OOP health expenditure among insured household in compared with uninsured households, which was statistically significant. Similar finding was reported by the study conducted in different area of Ghana and Nigeria[17,18 19, 20]. There was some discrepancy shown between the out-of-pocket costs of different studies conducted in different countries. It might be because of the different policies and provision of the countries and also due to other associated factors. Another reason for discrepancy might be the study conduct in different timeframe of implementation of health insurance.

The variables ethnicity, religion and occupation found to play role in out-of-pocket health care expenditure however these differences were not statistically significant. Beside insurance status only
occupation was found to play significant role in OOP. Similar finding was reported by the Indian study conducted in Uttar Pradesh, stated that education status, religion, ethnicity and wealth status were determinants of out-of-pocket health expenditure[21].

Conclusions
This study found that insurance status had positive role to increasing the health service utilization and reducing the OOP health expenditure among the insured household under National health insurance program of Nepal. With insurance status some other independent variables like ethnicity, family occupation, wealth status and perceived family status were had also role in health service utilization and OOP health expenditure. Despite various positive role of National health insurance program of Nepal on increasing health service utilization and reducing out-of-pocket health expenditure, it did not totally control the out-of-pocket health expenditure among the insured. This study also found that large proportion of insured population were not satisfied with health insurance program due to limited service site, limited package and lengthy process for receiving service at hospital. Finally, the results of this study suggested for government to full phase nationwide expansion of National health insurance program and advised other researcher to conduct similar research in large scale.

List Of Abbreviations
IRC: Institutional Review Committee; HIP: National Health Insurance Program: Out of Pocket; SHSDC: Social Health Security Development Committee

Declarations
ETHICS APPROVAL AND CONSENT TO PARTICIPATE: Ethical Approval was taken from Institutional Review Board of Pokhara University Research Centre (IRB no 173-074-75). Participants Confidentiality was maintained and the information was used for research purposes only. Each participant participated voluntarily in this study. Written consent was taken from all the participants before the data collection.

CONSENT FOR PUBLICATION: Not Applicable

AVAILABILITY OF DATA AND MATERIAL: Due to privacy reason, data are not publicly available, the datasets used and analyzed during the current study are available from the corresponding author.
on reasonable request. Authors can provide study protocol, data and materials under the request. Please redirect the email to laxmanbhattbph@gmail.com for data and study protocols.

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AUTHORS' CONTRIBUTIONS: LDB participated in the conceptualization and design of the study, performed data collection and participated in analysis and preparation of the manuscript. SSD participated in the design and data collection of the study, performed statistical analysis and drafted the manuscript. LDB and SSD both participated in the design of the study, collected the data and drafted the manuscript. All authors read and approved the final manuscript.

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Footnotes

Definitions and Conceptual framework

Health service utilization: Those who reported illness in past 1 month prior to the study. The health care provider visits for outpatient services, inpatient services, laboratory services and delivery services were used to assess health service utilization. Recall period for delivery services was 12 months considering it as rare event. Utilization is defined as seeking healthcare during each episode of illness.

Chronic disease: This includes anyone in the household who was continuously taking medicine before three month or need to take medicine more than three month.

Direct cost: Direct costs represent the costs associated with the health care service utilization. It includes inpatient, outpatient, laboratory and pharmaceutical services.
Disability: It includes blindness/low vision, physical disability, deaf/hard to hearing, speech problem, mental disability, multiple disabilities.

Distress financing: Taking loan or selling any belongings to pay for the healthcare.

Head of household: People who were responsible for financial management and household decision making.

Out of pocket expenditure: It refers to the payment made by household at the point they received health services. Typically, these include doctor’s consultation fees, purchase of medicine, hospital bills laboratory fees, and copayments paid by the respondent.

Insured: This includes the families who were enrolled under the national health insurance program of Nepal.

Uninsured: Family who were not enrolled under the National health insurance program of Nepal.

Sample selection
Initially 7 wards were randomly selected from 14 wards of Baglung municipality by using lottery method. Based on the size of the insured household in each ward, sample was selected proportionately. From each selected ward based on the sample size, insured households were selected randomly by using lottery method. For every enrolled household, one comparison household (non-enrolled) was selected. Uninsured sample was selected from the nearest neighborhood of the insured household until the sample size was met.

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Figure 1

Sampling technique