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Determinants of Self-Reported Illness: An Experience from Social Health Insurance Program in Nepal

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ABSTRACT

Even though the ultimate goal of social health insurance program is to increase the utilization of health services and reduce the health care expenditure, individuals in developing countries generally do not visit a healthcare provider or spend on healthcare unless they perceive themselves as ill. Thus, the determinants of such illness reporting could have practical significance in a setting, where the social health insurance program was first being implemented in Nepal.

Philosophically, this study follows a post-positivism or empiricism research paradigm. The ontological assumption of this study is a singular reality and regarding the epistemological assumption, this study considers an objective reality, a deductive method of quantitative inquiry. A cross-sectional survey was performed among 6480 individuals from 1048 households located in 26 wards of Kailali district after twenty-one months of the implementation of health insurance program in Nepal. The sample was selected in two stages, first being the selection of wards and second being the households. Data analyses were mainly based on chi-square test and logistic regression analysis.

The study revealed that out of total 6480 surveyed individuals, 1590 (24.5%) individuals reported illness and the most commonly self-reported illness was cold/cough/fever in the month prior to the survey. The logistic regression analysis revealed that a number of socioeconomic factors such as health insurance coverage, gender, education level, economic status and employment status are significant predictors of illness reporting. Being insured, household members were more likely to report illness compared to their counterparts (Odds ratio= 1.40, 95% Confidence Interval=1.24-1.59). Females were more likely to report illness compared to males. Members with secondary level of education were significantly less likely to have illnesses than the members with no formal education. Household members from higher household economic status and employed were significantly less likely to have an illness.

The findings from this study could inform policy in the ongoing national health insurance debate in Nepal and elsewhere. Since individuals having health insurance are more likely to report illness compared to uninsured, there is need to expand the health insurance program thought the country. Despite some methodological constraints, this study delivers new information on the occurrences of self-reported illnesses among the Nepalese population. This can help policy makers to formulate proper interventions to protect the poor from the financial burden associated with poor-health.

Keywords: Illness reporting, Health insurance, Poverty

1. INTRODUCTION

Illness is a health shock but it is perceived differently by individuals according to their various socioeconomic status. Ill health could reduce household investment in human capital, physical capital, and other consumptions that are critical to human well-being (Wang et al., 2006). Even small costs for common illnesses can be financially disastrous for poor households with no insurance coverage (Xu et al., 2003).

Poverty and ill-health are often correlated, creating a vicious circle (Wagstaff, 2002). Ill-health often intensifies poverty, especially in the absence of effective social health protection and poor people tend to have worse health than the better-off do (Gwatkin et al., 2007). Despite considerable improvements in the health sector, access to affordable and effective health care remains a problem in Nepal. For example, household health care expenditure in Nepal constitutes a large share (55.4%) of the total current health expenditure (Ministry of Health and

Population [MOHP], 2018). This indicates that financial burden on households due to health care is high in Nepal. Considerable progress in measuring the impact of ill-health on household welfare has been made in Nepal, such as expansion of health insurance coverage in the recent years. However, there are still knowledge gaps. Despite these initiatives, the country still faces significant challenges in scaling up health insurance schemes to ensure access to health services, especially for the poor, and prevent financial burden associated with illness-related healthcare costs. To develop appropriate policies to protect households against impoverishing effects of ill-health, there is a need of an understanding of the multiple and a complex pathway for the wellbeing of persons of poor health.

Though the ultimate aim of social health insurance program is to increase the utilization of health services and reduce the health care expenditure, individuals in developing countries generally do not visit a healthcare provider or spend on healthcare unless they perceive themselves as ill. Thus, it is difficult to assess the utilization of health services and to estimate health care expenditure for several reasons. First, individuals in developing countries generally do not visit a healthcare provider or spend much on healthcare unless they perceive themselves as either ill or injured (Rous & Hotchkiss, 2003). Second, expenditure is likely to be a function of the type of provider visited (Rous & Hotchkiss, 2003). Since the type of provider visited and expenditure are conditional upon the individual's illness reporting, this study tries to estimate the level of such illness reporting and its possible determinants.

In order to address the financial constraint in health services due to ill-health, the Government of Nepal has implemented the Social Health Insurance Program (SHIP) in 2016. However, the program has been facing many challenges and only small segments of the population are enrolled under Social Health Insurance (SHI) scheme (Pokharel & Silwal, 2018; World Bank, 2017). Despite the fact that the research pertaining to illness reporting, out of pocket health expenditure and utilization is sporadically observed in the past, limited research papers have been published with respect to SHI scheme, particularly, in Nepalese context. Moreover, there are substantial evidences that ill-health is a key cause of poverty especially in developing countries (Ir et al., 2010). However, available methods for measuring the impact of ill-health on household welfare display several shortcomings and new studies are thus needed (Ir et al., 2010; Ross & Vaughan, 1986). In the light of above discussion, in order to understand the prevalence of illness and its

potential determinants, this study was conducted in Kailali, where social health insurance program was first time implemented in Nepal, as a part of doctoral research project.

2. METHODS

2.1 A Brief Introduction of Social Health Insurance Program of Nepal

The Social Health Insurance Program (SHIP) is a social protection program of Government of Nepal, which aims to enable its citizens to access health care services without having a financial burden. The program expects to prevent people from falling into poverty due to health care costs. The SHIP is a family-based health insurance scheme initiated by the Social Health Security Development Committee (SHSDC). The program was first implemented in Kailali district of Nepal and it is currently at the stage of expansion.

2.2 Study Design and Setting

A cross-sectional household survey was conducted between November 2017 and January 2018 in Kailali district after 21 months of the implementation of SHIP in Nepal. Kailali is the district where SHIP was first implemented in Nepal. In Kailali, there are approximately 142 thousand households with an average family size of 5.44 (Central Bureau of Statistics [CBS], 2012). The district has significantly higher poverty level as compared to national average (34% versus 24%) (CBS/The World Bank, 2013).

2.3 Sample Size, Cluster Size and Number of Clusters

The sample size was calculated using United Nations (2008) applying multistage cluster sampling. Assuming 50% of proportion of success of a key indicator, 95% desired level of confidence, 5% margin of error, 3 as design effect, and 7.5% as non-response rate, the sample size was 1066 households. Normally, 50% is an optimum value for proportion of key success indicator. The value of design effect usually ranges from 1.5 to 4.5 (Shackman, 2001), so, an average value was assumed. Non-response rate of 5% to 10% is most common for household surveys especially in developing countries (United Nations, 2008). Thus, an average value of 5% and 10% was assumed.

The value of the design effect depends on cluster size and intra-class correlation coefficient(Ross, 2005). Assuming design effect as 3 and intra-class correlation coefficient as 0.05, the cluster size was 41. In practice, the value of intra-class correlation coefficient ranges from 0.05 to 0.50 (Ross, 2005). A higher value indicates more similarity within the individuals'

characteristic whereas smaller value indicates less similarity. Thus, less similarity has been assumed. Finally, using sample size as 1066 and dividing it by cluster size of 41, the number of clusters or wards was 26. However, only 1048 households were surveyed in this study, with a non-response rate of 1.7%.

2.4 Sampling Procedure

A two-stage cluster sampling design was employed. At the first stage, 26 wards comprising at least ten insured households from a total of 126 wards were randomly selected. The rationale behind selecting only wards comprising at least ten insured households was similar to the 2017 World Bank study regarding Nepal's SHIP (World Bank, 2017). Further, since Kailali had less than 5% of insurance enrollment, and as the main objective of the study was to find the effect of SHIP on health care expenditure, so wards with relatively higher number of enrollments were selected. At the second stage, 41 households were randomly sampled from each ward. In each ward, about 25% of the insured households were selected such that comparison in health expenditure was meaningful. In other words, the case-control ratio was approximately 1:3 and the design protocol was approved by Kathmandu University (KU). The information regarding ward level insurance enrollment was obtained from the local office, Social Health Security Development Committee (SHSDC), Kailali district. The households from each ward were selected across the radius of ward office as per the latest census of Nepal.

2.5 Questionnaire Design and Data Collection Procedures

An initial version of a structured survey questionnaire was developed based on an intensive review of previous related studies and similar surveys conducted in Nepal. The final version of the instrument was prepared after incorporation of comments and feedbacks from subject experts, field testing to the potential respondents, presenting the questionnaire to a group of experts and Ph.D. thesis supervisors, receiving suggestions from concerned ethical bodies and pilot testing the draft versions. Adopting these procedures, the instrument ensured reliability and all types of validity as well as contextualized it in Nepalese context.

The study considered the household head or the most knowledgeable adult in a selected household an eligible respondent. Seven enumerators were assigned in the fixed number wards. Supervision was insured by the principal investigator. Enumerators were given intensive training and they also had experiences of collecting the data of large-scale surveys. A simulation exercise

among the enumerators was conducted in order to minimize the plausible error. The respondents were informed about the purpose of the study and were assured about the confidentiality of their responses.

2.6 Variables

The dependent variable in this study is the illness reporting. The independent variables include different factors such as household and community as suggested by earlier research (Beogo et al., 2016; Masiye & Kaonga, 2016; Wang et al., 2012). Household economic status was constructed by summing all food as well as non-food expenditures and consumer durable items (Deaton & Zaidi, 2002).

2.7 Data Analysis

First, background characteristics of study participants and the percentage of self-reported illness have been presented by means of descriptive statistics. Second, bivariate analysis has been carried out between each of socio-demographic factors and illness reporting using chi-square test. Finally, logistic regression analysis was employed to find the determinants of illness reporting. Before logistic regression was applied, the multicollinearity among the independent variables was assessed and none were highly correlated. The fitted model displays the estimated adjusted odds ratios (AORs) along with 95% confidence interval (CI). Survey data was entered into Census and Survey Processing System (CSPro) version 7.0 software. Statistical analysis was performed with STATA 12.0 (StataCorp, 2012).

2.8 Ethical Approvals

The study was supported by the University Grants Commission of Nepal under Ph.D. Fellowship. Ethical clearance was obtained from the Nepal Health Research Council (the protocol registration number 398/2017) and Pokhara University Research Center, Nepal. The data collection approval was received from SHSDC, Nepal. The study was approved by Kathmandu University School of Education (KUSOED) as a part of Ph.D. research project.

3. RESULTS

3.1 Illness Reporting, Disease Types and Perceived Severity of Illness

Illness reporting was analyzed among the usual members in the household. Out of total 6480 surveyed household members, nearly one in four members (24.5%) reported that they were ill in the month prior to the survey (Table 1). If an illness was reported during the month prior to the

survey, the members were asked about the type of most recent reported illness and its severity. Each reported illness that had been diagnosed by an allopathic or ayurvedic doctor and the symptoms of an undiagnosed illness were coded according to a disease list that we based on the results of a previous study conducted in Nepal (Saito et al., 2014).

The most commonly self-reported illness in the month prior to the survey was cold/cough/fever followed by gastritis/abdominal pain. This result is consistent with the latest national survey, which found that cold/cough/fever was the most prevalent illness throughout the year in Nepal (CBS, 2011). Besides, the 2014 district health insurance assessment report also revealed the similar findings suggesting that cold and fever were the most commonly reported illness

Table 1. *Illness Reporting, Disease Types and Perceived Severity of Most Recent Illness*

Characteristics	**Number**	**Percent**
Illness reporting (n=6480 individuals)		
Yes	1590	24.5
No	4890	75.5
Self-reported diseases/symptoms type of most recent illness(n=1590)		
Cold/Cough/Fever	474	29.8
Gastritis/Abdominal pain	166	10.4
Arthritis/Appendicitis	136	8.6
Respiratory/Asthma	110	6.9
Skin disease	102	6.4
Headache/Migraine	74	4.7
Eye/Nose/Teeth (ENT)	71	4.5
Muscle/Bone/Paralysis	70	4.4
Anemia	55	3.5
Pressure	54	3.4
Stone/Hernia	45	2.8
Gynecological/Pregnancy	44	2.8
Diarrhoea	43	2.7
Heart disease	38	2.4
Injury	37	2.3
Diabetes	32	2.0
Other health problems	39	2.5
Perceived severity of most recent reported illness (n=1590)		
High severe	174	10.9
Severe	493	31.0
Little severe	680	42.8
Not severe	243	15.3

(KOICA-Nepal Health Insurance Support Project [NHISP], 2014). Diseases such as arthritis, respiratory problems were also most common in the study area. More than two-fifths (42%) of illnesses were perceived as severity or high severity category.

3.2 Illness Reporting by Individual Characteristics

Out of 6480 surveyed individuals, 1590 (24.5%) reported illness in the month prior to the survey. Table 2 shows that large disparities are apparent across the subgroups of household members, being ill in the month prior to the survey. Females were more likely to report illnesses and injuries compared to males, and the differences are significant using chi-square test ($p< 0.01$). Being household heads, respondents were no more statistically likely to report an illness.

The variable age showed a significant variation in the reported illness ($p<0.01$). For example, the proportion of reported illness was higher among individuals aged 60 or more and children under 5 years (44%, 40%) as compared to the individuals 5 to 59 years (21%). Individuals' education level showed large differentials in the reported illness with the highest among pre-schooling children (37%). The proportion of respondents being ill fell from 31% among those with no education to 18% among those with tertiary level of education ($p<0.01$).

With regard to marital status, the divorcee /separated individuals are more likely to report the illness as compared to the unmarried or currently married individuals and the differences are statistically significant using chi-square test at 1% level of significance. People not engaged in work were more likely to report illness than people with occupations. Students were less likely to report illness as compared to other occupational groupings. For example, only 18% of students reported that they were ill in the month prior to survey, whereas 26% of the individuals were sick among those who worked in the formal sector, and the relationship is statistically significant between occupation status and being sick during the past month at less than 1% level of significance as per the chi-square test.

Table 2. *Illness Reporting by Individual Characteristics in the Month Prior to the Survey*

Characteristics	**Number of cases in each category**	**Percent of illness**
Gender***		
Male	3207	21.7
Female	3273	27.3
Being head or not head		

Characteristics	Number of cases in each category	Percent of illness
Head	1048	25.9
Not head	5432	24.3
Age group in years***		
Less than 5 (Child)	446	39.9
5 to 59 (Neither child nor senior)	5507	21.4
60 or more (Senior)	527	44.1
Education level *** [a]		
No formal education	1892	31.1
Early childhood development	336	37.2
Primary	1270	21.7
Secondary	2076	20.9
Tertiary	906	18.4
Marital status*** [b]		
Unmarried	2914	21.7
Married	3347	25.8
Divorced/Separated	219	42.9
Occupation status*** [c]		
Not working	1952	31.0
Working in informal sector	2235	22.8
Student	1465	18.1
Working in formal sector	828	25.5
Total of each variable	6480	24.5

** **p< 0.01. **p< 0.05. *p< 0.10. p- value is based on Pearson's χ^2 statistic. a= Head's education if aged < 3 years. b= Unmarried if < 10 years. c= Head's occupation if aged < 10 years.*

3.3 Illness Reporting by Household Characteristics

Table 3 presents the illness reporting of household population according to their household characteristics. Individuals in households headed by females were statistically more likely to report illness than individuals in households headed by males (28% vs. 24%). The age of head did not show any significant association with the illness reporting of individual household member. Education level of household head showed a significant positive association with reporting illness in the month prior to the survey. The proportion of individuals reporting illness rose from 21% among those whose head had no education to 31% among those whose head had tertiary level education (p<0.01).

Table 3. *Illness Reporting by Household Characteristics in the Month Prior to the Survey*

Characteristics	Number of cases in each category	Percent of illness
Head's gender **		
Male	5838	24.2
Female	642	27.7
Head's age in years		
Less than 60 (Economically active)	5407	24.3
60 or more (Senior citizen)	1073	26.0
Head's education level ***		
No formal education	2756	21.0
Primary	1361	25.3
Secondary	1861	27.6
Tertiary	502	30.5
Head's occupation status ***		
Not working	621	27.5
Working, informal sector	4617	22.2
Working, formal sector	1242	31.6
Head's caste/ethnicity ***		
Tharu	3152	22.6
Brahmin/Chhetri	1876	30.9
Other castes	1452	25.1
Head's religion		
Hinduism	6110	24.5
Non-Hindu	370	25.9
Enrollment in health insurance ***		
Enrolled	1747	28.5
Not enrolled	4733	23.1
Family size***		
4 or less	1071	26.8
5 to 8	3628	26.0
9 or more	1781	20.2
Household economic status/Wealth index**		
1st quintile (Poorest)	964	25.1
2nd quintile (Poorer)	1145	26.1
3rd quintile (Middle)	1328	21.4
4th quintile (Richer)	1465	25.5
5th quintile (Richest)	1578	24.8
Total of each variable	6480	24.5

** **p< 0.01. **p< 0.05. *p< 0.10. p- value is based on Pearson's χ^2 statistic*

Individuals were more likely to report illness among those whose head worked in the formal sector as compared to those whose head worked only in the informal sector (32% vs. 22%). The illness reporting also varied according to occupation status of household heads. The proportions

of individuals reporting illness was highest among those whose heads were employed in modern sectors. Individuals whose heads were employed in informal sectors (such as agricultural sector, unskilled laborer) were least likely to report illness. With regard to caste/ethnicity, Brahmin / Chhetri were more likely to report illness compared to other ethnic groups. Religion of household head did not show any significant association with regard to reporting illness of individual household member.

Individuals were more likely to report illness if their household got enrolled in the health insurance program compared to those whose household was not enrolled in the health insurance program. The percentage of reported illness was 29% among those who were insured, whereas it was only 23% among those who were not insured, and the difference is statistically significant ($p<0.01$). Individuals from smaller family size were more likely to report illness compared to larger family size. Significant differentials were also found according to the economic status of households. Individuals who were from the second quintile group were more likely to report illness compared to the individuals from other quintile groups. Comparatively, poorer groups were more likely to report illness than wealthier groups.

3.4 Illness Reporting by Community Characteristics

Table 4 shows the distribution of reported illness of individuals according to the health service accessibility factors. Though not significant, higher proportions of urban individuals than of rural individuals reported illness in the month prior to the survey.

The health service accessibility factor revealed significant variation with reporting illness of individuals. Particularly, 27% of individuals reported illness among those whose distance to modern health care facilities was within half an hour, while it was only 21% if their distance to a health facility was more than half an hour. Similarly, accessibility in terms of access to motorable road also increases the likelihood of reporting illness. For example, 25% of individuals who had access to motorable road within 30 minutes reported illness, while it was only 17% among those who had access to motorable road more than 30 minutes.

Table 4. *Illness Reporting by Accessibility Factors in the Month Prior to the Survey*

Characteristics	**Number**	**Percent**
Urban/rural status		
Urban municipality	4758	24.8
Rural municipality	1722	23.8
Access to health facility ***		

Characteristics	Number	Percent
Within half an hour	4118	26.7
More than half an hour	2362	21.0
Access to motorable road ***		
Within half an hour	6303	24.8
More than half an hour	177	16.9
Total of each variable	6480	24.5

** **p< 0.01. **p< 0.05. *p< 0.10. p- value is based on Pearson's χ^2 statistic*

3.5 Results from Logistic Regression Analysis: What Determines Illness Reporting?

In this section, the results of logistic regression analysis predicting the illness reporting of household members in the month prior to the survey are discussed. To control for the confounding influence of the socio-demographic and other factors, a model was fitted for the outcome variable to identify the independent associations between the socio-demographic indicators and illness reporting. The multicollinearity among the independent variables was assessed by using both correlation matrix and Variance Inflationary Factor (VIF). The correlation matrix showed that none of the explanatory variables were highly correlated. A rule of thumb indicating the multicollinearity is such that if the correlation between the independent variables is more than 0.70, then there is reason to suspect the problem of multicollinearity (Marquardt, 1980). Furthermore, it was found that VIF was less than 5 for each of the independent variables (Table 5). According to Gujarati (2003), the VIF value greater than 5 indicates the problem of multicollinearity. Some other researchers suggest that if VIF is greater than 10, there is too much correlation among the independent variables (Marquardt, 1980). In this study, there were not any problems of multicollinearity; and thus, a full block of independent variables was included in the logistic regression model.

Table 5. *VIF among the Independent Variables for Checking Multi-Collinearity*

Explanatory variables	VIF
Head working, formal sector	4.25
Head working, informal sector	3.93
Being married	3.20
Age in completed years	3.12
Being student	2.53
Working, informal sector	2.29
Head education in completed school years	2.12
Working, formal sector	1.98
Being widow or separated	1.88

Explanatory variables	VIF
Being head	1.69
Being Brahmin/Chhetri	1.66
Education of individuals in completed school years	1.65
Head age in completed years	1.48
Being female head	1.48
Being other castes	1.41
Being female	1.40
Natural log of income per capita	1.30
Living in urban area	1.23
Family size	1.23
Access to health facility within half an hour	1.20
Access to motorable road within half an hour	1.17
Have health insurance	1.15
Have own dwelling	1.06
Being Hindu	1.05

Note. Age, Education, Head age, Head education, Family size, Natural log of income per capita were measured in interval scale and others are dummy variables: 1= Yes; 0= No

The results from Logistic regression analysis showing the adjusted odds ratios (AORs) of reporting illness in the month prior to the survey have been presented in Table 6. Only full model consisting of all potential confounders have been discussed since it has the highest predictability among other equivalent models. A number of individual, household, and accessibility characteristics emerged as significant predictors for reporting illness.

Individual characteristics such as gender revealed that females were 34% more likely to report illness as compared to males, after controlling other potential confounders (Odds ratio =1.34, 95% CI=1.19-1.52). As expected, an individual's age was found to be significantly associated with reporting of illnesses and injuries. Children aged less than 4 years and senior citizens aged 60 years or above were more likely to report illness as compared to the individuals aged 5 to 59 years. It is known from earlier research that an individual's age influences the likelihood of illness. In developing countries, we would expect a U-shaped relationship between age and morbidity, implying that the health risks are highest for infants and elderly (Heller, 1982).

Table 6. *Determinants of Reporting an Illness in the Month Prior to the Survey*

Explanatory/ Independent variables	Categories/ Attributes	Odds Ratio	95% CI	
			Lower	Upper
Gender (Male =R)	Female	1.34***	1.19	1.52
Being head (Not head=R)	Head	1.31***	1.09	1.57
Age group in years (5 to 59 =R)	0 to 4 (Child)	3.12***	2.43	4.03

Explanatory/	Categories/	Odds	95% CI	
	60 or more (Senior)	2.46***	1.92	3.15
Marital status (Unmarried =R)	Married	1.32***	1.11	1.57
	Widow or other	1.40*	1.08	1.95
Head's gender (Male=R)	Female	1.22*	1.02	1.45
Head's age in completed years		0.99	0.99	1.00
Head's caste/ethnicity (Tharu=R)	Brahmin/Chhetri	1.01	0.85	1.19
	Other castes	0.86	0.71	1.04
Head's religion (Non-Hindu=R)	Hindu	1.09	0.86	1.36
Family size		0.91***	0.89	0.93
Education level (No education =R)	Primary	0.82	0.65	1.05
	Secondary	0.58***	0.46	0.74
	Tertiary	0.49***	0.37	0.65
Occupation status (Not working=R)	Working, informal sector	0.63*	0.53	0.74
	Student	0.99	0.81	1.22
	Working, formal sector	0.65***	0.52	0.81
Head's education (No education =R)	Primary	1.28**	1.12	1.45
	Secondary	1.17*	1.01	1.34
	Tertiary	1.27*	1.02	1.59
Head's occupation (Not working =R)	Working, informal sector	1.25	0.99	1.58
	Working, formal sector	1.16	0.88	1.53
Health insurance (Not enrolled =R)	Enrolled	1.40***	1.24	1.59
Household economic status (Poorest= R)	Poorer	0.87	0.72	1.05
	Middle	0.69***	0.57	0.83
	Richer	0.76***	0.63	0.91
	Richest	0.60***	0.49	0.74
Rural urban (Rural municipality=R)	Urban municipality	1.13*	1.02	1.26
Access to health facility (More than half an hour =R)	Within half an hour	1.22***	1.09	1.38
Access to motorable road (More than half an hour =R)	Within half an hour	1.34***	1.02	1.81
Total number of household members		6480		

** **p< 0.001, **p< 0.01, *p< 0.05, R= Reference category, Model correctly classified= 65.5%,*

Pseudo R^2= 0.0896, LR(χ^2)=802.79, Model sig. p value< 0.001, Unit of analysis=Household members.

An individual's education was only significant for secondary and tertiary levels. Individuals with secondary level of education were 42% less likely to have illnesses than individuals with no formal education (Odds ratio= 0.58). Similarly, individuals with tertiary level of education were 51% less likely to have illnesses than the individuals with no education (Odds ratio= 0.49). Married and widowed people were significantly more likely to have illness compared to their unmarried counterparts. Being employed or occupied either in formal or informal sector, individuals were less likely to have illness compared to the individuals who were not working.

Concerning to household characteristics, a number of key indicators, such as head's gender, head's education, health insurance coverage, family size, economic status, had effect on reporting illness. The odds of illness reporting were 22% higher in female-headed households than male-headed households. Being insured, individuals were more likely to report illness, whereas individuals from larger family size were less likely to report illness. The study found that individuals from higher household economic status were significantly less likely to have an illness.

Individuals in urban households were more likely to report an illness than their rural counterparts after controlling for other factors. Individuals who had access to modern health facilities and motorable road within half an hour of distance were more likely to report an illness than individuals who lived in a community far more than half an hour.

4. DISCUSSION

Illness is a health shock but it is perceived differently by households according to various socioeconomic status. For instance, less educated and poorer households are less likely to report simple illnesses. So, the level of awareness could be the significant predictor of illness reporting. This survey relied upon respondents' self-assessment of illness indicating the methodological constraints in interview-based health surveys (Ross & Vaughan, 1986). The reliance on self-recall may be somehow problematic. Respondents could not always recall the illness and there could be the possibility of reporting biases (Ross & Vaughan, 1986). Thus, the findings presented here should be treated with caution. This study aimed at identifying households with an illness where the social health insurance program was first piloted in Nepal.

To collect information on illness/injury, respondents were asked to report all household members affected by illness or injury in the month prior to the survey, by interviewing mainly the household heads or spouses. There are methodological limitations or constraints regarding reporting of illnesses. The widely used limitations mentioned in the literature are recalled and selection biases, commonly found in interview-based health surveys (Fabricant & Harpham, 1993; Ir et al., 2010; Ross &Vaughan, 1986). For example, talking about possible recall bias, the respondent may indeed not accurately remember the illness history of all household members. In

this study, the recall bias was minimized because the study focused on illness that occurred within a short period of time, which was only one month prior to the survey. Also, the data collection was carried out by a group of experienced and well-trained field enumerators or by the principal investigator. Selection bias may also be limited given the relatively big sample size. Furthermore, the sex, age, ethnic, religious, family size, and urban-rural structure of this survey population was also more or less similar to that of the studied district population. The probability of reporting a perceived illness does not only depend on its incidence or prevalence in the survey population, but also on the respondent's awareness and perceptions and several such studies of illness were based on reported or perceived illness (McIntyre et al., 2006; Russell, 2004). This suggests that despite some methodological limitations in reported illness, careful analysis and interpretation of the findings could still yield useful information for further understanding of the self-reported illness.

The main purpose of this study was to estimate the level of illness reporting and factors associated with it. The findings show that out of 6480 surveyed individuals, nearly one in four (1590 individuals or 24.5%) reported illness in the month prior to the survey. The most commonly self-reported illness in the month prior to the survey was cold/cough/fever followed by gastritis/abdominal pain.

The hypothesis testing from the logistic regression model showed education as a significant predictor of illness reporting following a post-positivism research paradigm, a deductive method of quantitative inquiry. This result is consistent with Grossman's theory indicating that better educated persons are, through healthier lifestyles, expected to be more efficient producers of health (Grossman, 1972). Being females, they were more likely to report illness after controlling for socio-demographic and other potential confounders. This result is parallel to the previous studies conducted in Nepal and Georgia indicating the widespread assumption that women experience considerably more ill-health than men (Rous & Hotchkiss, 2003; Gotsadze et al., 2005). Rodgers (2009) also pointed out that women were more likely to be sick than men in Cambodia. Furthermore, many health indicators exhibit considerable gender differences according to an individual's social position and role (Berhane et. al, 2002). A possible explanation for this high frequency of reported illness among women could be that women in this sample were proportionally older than men while the prevalence of diseases correlates with age. Out of 527 enumerated household members aged 60 or more years in the study sample, 52%

were females and 48% were males. Children aged less than 5 years or senior citizens aged 60 years or above were more likely to have illness. This implies that the health risks are higher for infants and the elderly as found in the earlier research (Heller, 1982).

Concerning household characteristics, a number of key indicators, such as gender of household head, household health insurance enrolment status, family size, economic status have effect on illness reporting. Individuals in households headed by females were more likely to report illness than individuals in households headed by males. The study found that individuals from higher household economic status were significantly less likely to have an illness. This result is in line with the findings of Sen (1999), which states that richer people have fewer illnesses and live longer. This could be the reason that with a higher wealth status and thereby a higher budget, the individuals can increase their investment in health (Grossman, 1972). The significant poor-rich difference could be due to the higher risk of illness and vulnerability to health shocks among the poor, as poor people often have worse health and suffer more often from severe health problems than the rich do (Gwatkin et al., 2007). Individuals from poor household economic status were more likely to have illness. The poor-rich difference could be due to the higher risk of illness and vulnerability to health shocks among the poor, as poor people often have worse health conditions and suffer more often from severe health problems than the rich do (Gwatkin et al., 2007). Individuals who had access to modern health facility and motorable road within half an hour of distance were more likely to report an illness than individuals who lived in a community farther than half an hour.

Limitations of the Study

The study has some limitations that need to be acknowledged. First, this is a cross-sectional survey conducted in one district of Nepal. The cross-sectional nature of the data only provides the estimates of illness reporting at one point of time. Thus, long-term perfect causal associations cannot be perfectly inferred from this study. Second, collecting data on the illness reporting can be very costly and time-consuming and self-reported illness from the survey may be prone to recall/reporting bias. However, self-reported illness surveys have been widely used for decades in a variety of academic disciplines (Bhandari, 2006). Third, it would have been useful to consider supply-side factors. However, information on supply factors was lacking in this study. This could be a key area for further research and a qualitative approach is suggested to capture

supply-side factors. Thus, this study captures only potential predicting factors of individual, household, and community characteristics. Fourth, variations in the seasonality of diseases in the study district were not considered. For example, the study was conducted between November 2017 and January 2018 – i.e. in the winter season. The timing of the survey may well have affected the self-reported illness such as colds, which tend to be more usual in winter than in summer. However, as per the latest national survey of Nepal, cold/cough/fever was the most predominant reported illness throughout the year (CBS, 2011).

5. CONCLUSION AND POLICY IMPLICATIONS

The results of this study have important policy implications. The findings from this study could inform policy in the ongoing national health insurance debate in Nepal and elsewhere. Since household members having health insurance are more likely to report illness compared to uninsured suggests that there is need to expand the health insurance program thought the country. Despite some methodological constraints, this study provides new information on the occurrences of self-reported illnesses among the Nepalese population, which could serve the basis for further in-depth investigation on illness reporting and economic consequences especially for poor households. This can in turn help policy makers to formulate proper interventions to protect the poor from the financial burden associated with ill-health. Furthermore, in order to minimize the economic burden of illness, several approaches need to be adopted, including social health insurance complemented with an upgraded community-based health insurance system, and subsidy program expansion for illness/diseases with high economic burden.

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