

# Association of information, education, and communication; and enrollment in health insurance: A case of Nepal

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## Research article

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# Abstract

## Background

Most of the studies have indicated that various programmes were failing due to lack of appropriate information, education, and communication [IEC] to the target audiences. But still unanswered that which methods or means of communication could be the most powerful for changing behaviour, decision making, and or desired action. The paper aims to assess the effects of IEC on the enrollment of health insurance [HI] in Nepal.

## Methods

A cross-sectional study, with randomly selected 810 [405 enrolled and 405 not-enrolled] households, was conducted at Baglung and Kailali districts of Nepal in 2018 using pretested structured interview tool. Background characteristics of family and respondents, and exposure to the means of communication were independent variables; and enrollment of HI was the dependent variable. Univariate, bivariate, and multivariate analyses were done to interpret the data.

## Results

Data show that socio-demographics and exposure to HI related information were associated with the enrollment of HI. Demographic characteristics of the respondents and households particularly age, wealth status, and presence of chronic diseases in the family were significantly associated with the enrollment of HI. Similarly, exposure to communication and media such as heard about HI and knowledge of contribution amount of HI, having HI related books or guidelines, participation in training and workshop, discussion with peers and neighbours, exposure to HI related messages from radio and television, seen hoarding board, newspaper, and HI related pamphlet, brochure, and posters were significantly associated with enrollment in HI. Heard about HI and knowledge of contribution amount, having HI related books and guidelines, and discussion with peers and neighbours appeared to be the positive and significant predictors for enrollment in HI.

## Conclusion

Communication and interaction with peers and neighbours about HI scheme of the government could lead to higher participation in HI programme. It would be better to incorporate this strategy while planning policies and interventions on HI.

# Background

Government of Nepal [GoN] has made commitment to achieve Universal Health Coverage [UHC] by 2030 which is one of the targets of Sustainable Development Goals [SDGs] for good health and wellbeing [SDG 3] (1). Besides this, the Constitution of Nepal [CoN] has also declared basic health services as one of the fundamental rights of the citizen (2). However, the GoN has allocated less than three percent of its total budget for health sector (3) which is said to be insufficient to meet the targets of global agenda of good health and wellbeing for all and constitutional provision of right to healthcare. Therefore, appropriate and sustainable financing for health is needed to meet the targets and agendas. The GoN has formulated Health Insurance Act [HIA] 2017 to ascertain the financial sustainability for health care(3,4). Health Insurance [HI] programme was initially introduced as Social Health Security [SHS] in 2016 under the provision of Development Board Act 1956 in Kailali, Baglung and Ilam Districts in initial phase (5).

Health Insurance Programme [HIP] is relatively a new programme for Nepalese people. So, it has obviously both opportunity and challenge to implement. An opportunity in the sense of new programme to the households and challenge in the sense that people may or may not participate in the HIP since they may not have adequate and correct information about it. A survey conducted in Kailali District shows that only nine percent people had good knowledge about HI (6). Department of Health Services shows about only eight percent population were enrolled in HIP as of November, 2018 from 36 districts but less than three [2.4] percent population were enrolled in Baglung and Kailali Districts, and majority did not renewed their scheme (3,5). This may be happening because of inadequate information, education, and communication [IEC] activities. Inadequate IEC leads to poor enrollment, lower retention, and fewer renewal as well.

The HIP in Nepalese context requires proper sensitization and information to the targeted population in mass level. Various interventions such as sensitization, awareness, orientation, and training shall be conducted for mass enrollment (7,8). However, it is still unanswered which method would be more appropriate to get people informed about HIP. Health Insurance Board [HIB] has set

three tiers of communication strategy at policy level, community level and household level but the strategy is yet to be validated (9). IEC is a combination of strategies, methods and approaches that enables a person to adopt a dynamic role in improving quality of life through healthy conducts (10). IEC is not only limited to the process of changing behaviour but also a process of political, social and economic transformation. Adequate IEC approaches can encourage and support to follow up for positive behaviour change (11). IEC creates awareness, increases knowledge, changes attitude, and moves people towards change and continues their behaviours to adopt new innovation (12). It updates and upgrades knowledge, awareness and attitudes for favourable change in behaviour or decision making(13,14).

Nepal Demographic and Health Survey [NDHS] 2016 shows that more than half [50 and 51%] of young adults [15–49 years] had access to Television. They watched Television at least once a week, 27.7 percent of women and 36.1 percent of men had access to Radio and listened at least once a week, and 37.2 percent of women and 31 percent of men had no access to Newspaper, Television or Radio at least once a week. However, 24 percent women and 50 percent men had access to internet and they used it within past 12 months (15). Nearly half of the population had no access of mass media which may prevent them from accessing health related information including health insurance. NDHS 2016 further indicates that Television was the most common media and half of the people had access upon it (15).

Good and healthy behaviours are often time consuming, costly, difficult, inconvenient, complicated and even less rewarded. Therefore, people generally do not follow the healthy behaviour (16). Rather it leads to negative attitude towards health behaviours. So, it needs appropriate intervention to overcome the negative attitude. A bad IEC could damage individuals' wellbeing but a good IEC could lead to change positively in their behaviour and lives (17). Gathering all people in the main stream of IEC is a difficult task. It does not only change the behaviour but develops culture and civilization. It is a process of transforming innovations, ideas, opinions and new trends (18).

IEC informs, inspires, motivates, enables, and empowers people for making decision towards the healthy way by making changes in terms of knowledge, attitudes, and beliefs (19). Communication is a power for decision making for behaviour change. It makes individuals positive, motivating, encouraging, and supportive for understanding (20). IEC consists several methods, approaches, and interventions but it is neither evaluated nor assessed which method and approach would be better for behaviour change in relation to enrollment in health insurance in the context of Nepal. So the article aims to assess the association of information, education, and communication on enrollment in health insurance.

## Methods

### Research approach and design

The study used cross-sectional survey design and household was the unit of study. Mainly quantitative data were collected and analysed accordingly.

### Study field/area

The study was undertaken in Baglung and Kailali Districts of Nepal. Baglung is located at hill in mid-western part and Kailali is situated in Terai and south-western part of Nepal. HIB initiated HIP at these districts in initial phase (3).

### Population and sample

All households residing in Baglung and Kailali Districts were the population of the study. There were two types of sample: enrolled and non-enrolled. The required sample size was calculated by using online SurveyMonkey software (21), where population size according to latest National Household Census was 204,002 [61,522 and 142,480 households in Baglung and Kailali respectively] (22), confidence level 95 percent and five percent margin of error. It showed estimate sample size of 385 [in round figure] that was equal to the sample size of Daniel's formula (23,24).

By adjusting the non-response rate of five percent as experienced at NDHS 2016 (15), the sample reached 405 for enrolled family and the same size was determined for non-enrolled household. Sample for enrolled household accounted 122 for Baglung and 283 for

Kailali as per population proportion as per latest household census survey 2011 (22). List of households was obtained from HIB district offices and household unit was randomly selected for enrolled sample. There were 9779 households were enrolled by mid-January, 2018. The proximal household of enrolled household, which was not enrolled in HIP, was selected as non-enrolled sample, random sampling was used if more than one household in the proximity.

## Data collection tool

Interview schedule [IS] was used for research tool. It was pretested and modified for validation prior to administration. The IS was validated by test-retest method which had eight sections. The Cronbach's alpha was calculated for the validation of attitude statements. But only the results of IEC related section has been presented in this article.

## Data collection procedure

After completing all administrative procedure: ethical approval was received from Nepal Health Research Council [NHRC], obtained permission from HIB central and district offices, we intended to collect data from household head [HH]. If HH was absent or did not respond, then another senior member of the household or another nearest household was selected. Informed consent was taken prior to interview. Data were collected from respondents' house or the place where they felt comfort to respond. Information were collected since March 20<sup>th</sup>, 2018 and it took 75 days to complete.

## Data analyses

Data were cleaned, edited, inspected for accuracy and consistency. There were mostly categorical type of independent and dependent variables. The dependent variable was dichotomous character. Family and individual characters, socio-demographic characters, and IEC related variables were independent variables whereas enrollment of HI was the dependent variable. Some attributes of variables were lumped due to small frequency. Univariate [frequencies and percentage], bivariate [chi-square test], and multivariate [binary logistic regression] analyses were performed to interpret the data. We used IBM SPSS Statistics 20 to analyse the data.

## Ethical consideration

NHRC reviewed and approved the study proposal on 15<sup>th</sup> Feb, 2018. We followed National Ethical Guidelines for Health Research in Nepal and Standard Operating Procedure (25) and Ethical Compliance Checklist prepared by American Psychological Association (26) throughout the research process.

## Results

### Characteristics of respondents and households

Of the total 810 respondents, 70 and 30 percent were from Kailali and Baglung respectively. They were drawn as per the proportional distribution of sample based on the national population and household census 2011 (27). Out of them, more than one fourth [26%] were from rural area. More than half of the respondents [51%] were female. Among them, two third [66%] were the household heads. More than 92 percent were literate, more than half of them had basic and secondary level of education, and 12 percent had bachelor or higher level of education. Forty-one percent household belonged to nuclear family. Fifty-six percent of the total households had upto five members in the family, 42 percent households had six to 10 members and nearly two percent had more than 10 members in the family. Different nine types of household assets and dwelling were assessed to categorize wealth status in three equal class. So, the wealth status of the people comprised one third each of the rich, middle and poor households.

More than half [51%] of the total respondents could feed their family throughout the year; 16, 14 and 11 percent could feed their family upto three months, three to six months, and six to nine months respectively. Similarly, eight percent of them could feed their family nine to 12 months. More than one third [34.6%] of the respondents expressed that minimum one family member had some type of chronic

disease. Half of the respondent were enrolled and half other were not-enrolled in the HIP which was already determined during sample size calculation and sample selection. Seventy-two percent of the respondents expressed that they had some knowledge about health insurance and the remaining 28 percent did not have.

Most of the respondents [71%] were informed by the enrollment assistant. Nearly half [49%] of them were informed by Radio/FM, 40 percent from neighbours/peers, 37 percent from Television, 15 percent from family members, 14 percent from female community health volunteers [FCHV] and 11 percent from teachers and Health workers respectively. Nearly two third [66%] of the respondents had knowledge about contribution amount for HI. Seventeen percent of them had HI related books or guidelines. However, only five percent had participated in training and discussion related to HI.

**Table 1: Background characteristics of households and respondents (n=810)**

Variables	Category	Total	
		%	N
District	Baglung	30.1	244
	Kailali	69.9	566
Residence type	Urban	74.1	600
	Rural	25.9	210
Sex of respondents	Male	49.0	397
	Female	51.0	413
Household head	No	34.1	276
	Yes	65.9	534
Age group of respondents	Upto 20 years	2.8	23
	21 to 40 years	59.5	482
	41 to 60 years	28.8	233
	More than 60 years	8.9	72
Educational status	Illiterate	7.4	60
	Literate	30.4	246
	Basic education	26.4	214
	Secondary education	24.3	197
	Bachelor or above	11.5	93
Type of family	Nuclear	41.0	332
	Joint	59.0	478
Size of family	Upto 5 members	56.4	457
	6 to 10 members	42.0	340
	More than 10 members	1.6	13
Wealth status	Poor	33.3	270
	Middle	33.3	270
	Rich	33.3	270
Ability to feed the family throughout the year	No	48.8	395
	Yes	51.2	415
Family member having chronic diseases	No	65.4	530
	Yes	34.6	280
Enrolled in health insurance	No	50.0	405
	Yes	50.0	405
Heard about health insurance	No	28.0	227
	Yes	72.0	583
Sources of information <sup>^</sup> (n=583)	Neighbour/Peer	40.3	235
	Radio/FM	49.4	288
	Television	36.5	213
	Family members	14.8	86
	Health worker/Doctor	11.1	65
	Teacher	11.3	66
	FCHV	13.7	80
	Training/seminar	4.1	24
	Enrollment assistant	70.8	413
	Print media and others	3.8	22
Knowledge about contribution amount	No	34.3	278
	Yes	65.7	532
Having HI related books	No	83.2	674
	Yes	16.8	136
Participated in HI related training	No	95.1	770
	Yes	4.9	40
Interaction with peers or neighbours about HI	No	68.0	551
	Yes	32.0	259
Known from social media	No	80.9	655
	Yes	19.1	155
Listened HI related information from Radio/FM	No	52.3	424
	Yes	47.7	386
Watched HI related information in TV	No	61.7	500
	Yes	38.3	310
Seen hoarding board	No	73.3	594

	Yes	26.7	216
Read newspaper	No	86.9	704
	Yes	13.1	106
Seen brochure/poster/pamphlet	No	82.5	668
	Yes	17.5	142

^ Multiple responses

Nearly one third [32%] of the respondents had discussed with peers or neighbours about HI whereas 19 percent of them were informed through social media. Nearly half of the total respondents listened HI related messages from Radio whereas 38 percent of them watched HI related messages from Television. Data show that 27 percent of the respondents saw HI related message on Hoarding Board and 13 percent read HI related message from newspapers. Eighteen percent of the respondents received HI related information from brochure, poster, pamphlet, and flyers.

## Family and respondents' characters; information, education, and communication; and enrollment in health insurance

Out of the total respondents, 50 percent resided in urban area and 49 percent of rural were enrolled. Fifty-three percent of the male respondents were enrolled in HI compare to 47 percent of female were enrolled. Fifty-three percent of the respondents who were the household heads, were enrolled in HI compared to 45 percent of those who were not household head [ $p < 0.05$ ]. Data show that higher the age higher the enrollment rate. Twenty-six percent of the respondents of age less than 20 years were enrolled in HI compared to 44 percent from the age of 21 to 40 years, 59 percent from the age of 41 to 60 years, and 68 percent from the age of more than 60 years [ $p < 0.001$ ]. There were no significant differences between educational level of respondents, types of family, and size of family; and enrollment in HI. More than half (56%) of respondents having rich wealth status were enrolled compared to 46 percent of middle and 49 percent poor wealth status [ $p < 0.05$ ].

**Table 2: Family characteristics and HI related information, and enrollment in HI**

Variables	Category	Enrolled in health insurance				Chi Square	P Value
		No		Yes			
		N	%	N	%		
District	Baglung	122	50.0	122	50.0		
	Kailali	283	50.0	283	50.0		
Residence type	Urban	298	49.7	302	50.3	0.103	0.748
	Rural	107	51.0	103	49.0		
Sex of respondents	Male	186	46.9	211	53.1	3.088	0.079
	Female	219	53.0	194	47.0		
Household head	No	153	55.4	123	44.6	4.946	0.026
	Yes	252	47.2	282	52.8		
Age group of respondents	Upto 20 years	17	73.9	6	26.1	29.565	<0.001
	21 to 40 years	270	56.0	212	44.0		
	41 to 60 years	95	40.8	138	59.2		
	More than 60 years	23	31.9	49	68.1		
Educational status	Illiterate	27	45.0	33	55.0	2.490	0.646
	Literate	132	53.7	114	46.3		
	Basic education	103	48.1	111	51.9		
	Secondary education	99	50.3	98	49.7		
	Bachelor or above	44	47.3	49	52.7		
Type of family	Nuclear	169	50.9	163	49.1	0.184	0.668
	Joint	236	49.4	242	50.6		
Size of family	Upto 5 members	231	50.5	226	49.5	0.935	0.626
	6 to 10 members	166	48.8	174	51.2		
	More than 10 members	8	61.5	5	38.5		
Wealth status	Poor	139	51.5	131	48.5	6.163	0.046
	Middle	147	54.4	123	45.6		
	Rich	119	44.1	151	55.9		
Ability to feed the family throughout the year	No	197	49.9	198	50.1	0.005	0.944
	Yes	208	50.1	207	49.9		
Family member having chronic diseases	No	292	55.1	238	44.9	15.913	<0.001
	Yes	113	40.4	167	59.6		
Heard about health insurance	No	217	95.6	10	4.4	262.260	<0.001
	Yes	188	32.2	395	67.8		
Sources of HI related information <sup>^</sup> (n=583)	Neighbour/Peer	74	31.5	161	68.5	102.328	<0.001
	Radio/FM	101	35.1	187	64.9		
	Television	68	31.9	145	68.1		
	Family members	17	19.8	69	80.2		
	Health worker/Doctor	17	26.2	48	73.8		
	Teacher	17	25.8	49	74.2		
	FCHV	19	23.8	61	76.3		
	Training/seminar	6	25.0	18	75.0		
	Enrollment assistant	86	20.8	327	79.2		
	Print media and others	4	18.2	18	81.8		
Knowledge about contribution amount	No	238	85.6	40	14.4	214.713	<0.001
	Yes	167	31.4	365	68.6		
Having HI related books	No	382	56.7	292	43.3	71.577	<0.001
	Yes	23	16.9	113	83.1		
Participated in HI related training	No	394	51.2	376	48.8	8.521	0.004
	Yes	11	27.5	29	72.5		
Interact with peers or neighbour about HI	No	335	60.8	216	39.2	80.376	<0.001
	Yes	70	27.0	189	73.0		
Known from social media	No	336	51.3	319	48.7	2.306	0.129
	Yes	69	44.5	86	55.5		
Listened HI related information from Radio/FM	No	259	61.1	165	38.9	43.731	<0.001
	Yes	146	37.8	240	62.2		
Watched HI related information in TV	No	290	58.0	210	42.0	33.445	<0.001
	Yes	115	37.1	195	62.9		
Seen hoarding board	No	335	56.4	259	43.6	36.465	<0.001
	Yes	70	32.4	146	67.6		

Read newspaper	No	367	52.1	337	47.9	9.769	0.002
	Yes	38	35.8	68	64.2		
Seen brochure or poster or pamphlet	No	359	53.7	309	46.3	21.348	<0.001
	Yes	46	32.4	96	67.6		

Note: ^ = multiple responses

Sixty percent of the respondents, who had family member(s) having chronic disease(s), were enrolled in HI compared to 45 percent who had not [ $p<0.001$ ]. Sixty-eight percent of the respondents who heard about HI were enrolled in HI compared to four percent who did not [ $p<0.001$ ]. Eighty percent of the respondents, who got information from family members, were enrolled in HI compared to 79 percent from enrollment assistant, 76 percent from FCHV, 75 percent from training or seminars, 74 percent equally from teachers and health workers/Doctors respectively, 69 percent from neighbours, 68 percent from Television, and 65 percent from Radio/FM [ $p<0.001$ ]. Sixty-nine percent of the respondents, who had knowledge about contribution amount, were enrolled in HI compared to 14 percent who did not have knowledge regarding contribution amount [ $p<0.001$ ]. Eighty-three percent of the respondents, who had HI related books or guidelines, were enrolled in HI compared to 43 percent of those who had not HI related books or guidelines [ $p<0.001$ ].

Similarly, 73 percent of the respondents, who participated in training or discussion of HI related programme, were enrolled in HI compared to nine percent of those who did not participate [ $p<0.01$ ]. Seventy-three percent of the respondents, who discussed with peers or neighbours about HI related issues, were enrolled in HI compare to 39 percent of those who did not discuss [ $p<0.001$ ]. Sixty-two percent of the respondents, who listened HI related information from Radio/FM, were enrolled in HI compare 39 percent of those who did not listen [ $p<0.001$ ]. Likewise, 63 percent of the respondents, who watched HI related message from Television, were enrolled in HI compare to 42 percent of those who did not watch [ $p<0.001$ ]. Moreover, 68 percent of the respondents, who seen HI related message from Hoarding Board [HB], were enrolled in HI compare to 44 percent of those who did not see HB [ $p<0.001$ ]. Sixty-four percent of the respondents, who read HI related message from newspaper, were enrolled in HI compared to 48 percent of those who did not read newspaper [ $p<0.01$ ]. Similarly, 68 percent of the respondents, who had seen HI related information from brochure, poster or pamphlet, were enrolled in HI compare to 46 percent of those who did not [ $p<0.001$ ].

## Multivariate analyses of background characteristics; exposure to IEC; and enrollment in HI

We used multivariate analysis in three models. In first model, we obtained background characteristics and enrollment in HI. In second model we presented exposure to communication and enrollment in HI. Lastly, in third model all these variables were included for further prediction.

According to Model I, it was found that higher the age higher the chances of enrollment. Respondents age 21 to 40 years, 41 to 60 years, and more than 60 years were 1.9 [aOR = 1.916] times, 3.2 times [aOR = 3.200,  $p<0.05$ ], and 4.4 times [aOR = 4.352,  $p<0.05$ ] more likely to enroll in HI respectively compared to age less than 21 years but not significant in Model III. Model I shows, the respondents who had family member(s) having chronic disease(s) were more likely to enroll in HI [aOR = 1.536,  $p<0.01$ ] compared to the family who had not chronic disease(s) within family member(s) but the result was not consistent in Model III.

The Model II shows the respondents who heard about health insurance were 20.5 times more likely to enroll compared to those who did not [aOR = 20.521,  $p<0.001$ ]. Similarly, the respondents who had knowledge about contribution amount for health insurance were 4.9 times more likely to enroll than those who did not have [aOR = 4.925,  $p<0.001$ ]. Likewise, the respondents who had health insurance related books or guidelines were 5.1 times more likely to enroll in HI than those who had not [aOR = 5.117,  $p<0.001$ ]. Interestingly, the respondents who interact with peers or neighbours were 1.9 times more likely to enroll in HI compare to those who did not interact [aOR = 1.883,  $p<0.01$ ].

Model III shows some similar and some contradictory projection compared to Model I and Model II. Age groups more than 20 years were more likely to enroll in HI compared to age upto 20 years which was the similar prediction with Model I. Model II and Model III have nearly the same result compared to Model I. The respondents who heard about HI were more likely to enroll in HI [aOR = 20.229,  $p<0.001$ ] compared to those who did not. The result seems similar to Model II. In the same way, the respondents, who had heard about HI, knowledge on contribution amount, were more likely to enroll in HI [aOR = 5.176,  $p<0.001$ ] compared to those who had not. The respondents having HI related books or guidelines were more likely to enroll in HI [aOR = 4.812,  $p<0.001$ ] that was also the same result

with Model II. The participants who had participated in the HI related training were less likely to enroll in HI compared to those who did not.

Interaction with peers and neighbours played positive role in enrollment. The respondents who interacted about HI with neighbours or peers were 1.7 times more likely to enroll in HI [aOR = 1.739, p<0.01] compared to those who did not. The result was same to Model II. Multivariate analysis shows that Radio and or TV had no more influencing role in enrollment. Similarly, newspaper, poster, pamphlet, flyer or brochure had no positive and influencing role to the enrollment in HI. But The participants who saw HI related message from Hoarding Board were 1.3 times more likely to enroll in HI compared to those who did not.

**Table 3: Logistic regression of background characteristics, and exposure to communication; and enrollment in HI**

Variables	Attributes	Model I			Model II			Model III		
		aOR	95% CI		aOR	95% CI		aOR	95% CI	
			Lower	Upper		Lower	Upper		Lower	Upper
Household head	No (ref.)									
	Yes	1.075	.776	1.487				.880	.574	1.348
Age group of respondents	Upto 20 years (ref.)									
	21 to 40 years	1.916	.727	5.052				1.476	.397	5.493
	41 to 60 years	3.200*	1.158	8.843				2.541	.642	10.066
	More than 60 years	4.352*	1.427	13.276				3.774	.838	16.995
Wealth status	Poor (ref.)									
	Middle	.820	.580	1.161				.594*	.364	.969
	Rich	1.204	.849	1.707				.622	.372	1.038
Family member having chronic diseases	No (ref.)									
	Yes	1.536**	1.129	2.089				.923	.618	1.379
Heard about health insurance	No (ref.)									
	Yes				20.521*****	10.020	42.025	20.229***	9.782	41.834
Knowledge about contribution amount	No (ref.)									
	Yes				4.925***	3.049	7.953	5.176***	3.122	8.545
Have HI related books or guidelines	No (ref.)									
	Yes				5.117***	2.759	9.490	4.812***	2.602	8.901
Participated in HI related training	No (ref.)									
	Yes				.428	.179	1.023	.465	.193	1.123
Interact with peers and neighbours about HI	No (ref.)									
	Yes				1.883**	1.244	2.851	1.739**	1.141	2.650
Listened HI related info from Radio/FM	No (ref.)									
	Yes				.917	.611	1.375	.919	.609	1.387
Watched HI related information in TV	No (ref.)									
	Yes				.831	.551	1.255	.934	.604	1.444
Seen HI related hoarding board	No (ref.)									
	Yes				1.342	.827	2.178	1.413	.865	2.308
Read HI related newspaper	No (ref.)									
	Yes				.653	.359	1.188	.715	.390	1.310
Seen HI related brochure/poster/pamphlet	No (ref.)									
	Yes				.669	.375	1.194	.703	.391	1.264
<b>Consent</b>			<b>.353*</b>			<b>.022***</b>			<b>.017***</b>	
<b>- 2 Log likelihood</b>			<b>1080.673</b>			<b>713.426</b>			<b>699.222</b>	
<b>Cox &amp; Snell R Square</b>			<b>.051</b>			<b>.397</b>			<b>.407</b>	

Note: \*significant at p<0.05, \*\* significant at p<0.01, \*\*\*significant at p<0.001

## Discussion

IEC contains different approaches, activities and methods that targets to change the desirable behaviour through the application of various activities by creating awareness, upgrading knowledge, changing desirable attitude, and supporting individuals for adopting an innovation or desirable behaviour (12,28–30). In this study, interaction and discussion with peers or neighbours seemed more productive for HI related communication. IEC materials were useful tool for promoting suitable eye awareness and also a powerful for social change in Madhurai, India (31). Similarly, it was observed that IEC and contraceptive uses were significantly associated beyond the visits of medical and family planning officers which was experienced in Indonesia (32). A study from Gambia shows that mass media was effective and feasible means to make change in maternal health service utilization and care (33). Similar observation seemed in India that IEC approaches appeared appropriate for consuming low salt diet to control hypertension (34) however flip chart seemed ineffective for food hygiene and food safety (35). IEC could be useful not only for making changes in behaviour but also for preparedness, response and mitigation for disaster that may save lives and resources (36).

Different audiences may be motivated from different mode of communication. Arroz (2017) states that Radio, dramas, lectures, posters and pamphlet, and folk programmes could considered as synergetic approaches but not replace one another (37). There was a significant difference between the respondents who listened HI message from radio and enrollment in HI compared to those who did not. The similar result was observed in Liberia that the women who listened radio spots were encouraged to care their child and visit health facilities of their babies appear with fever (38).

The study shows that educational level of respondents was not significantly associated with the enrollment but heard about HI was significantly associated with the enrollment in HI. A study from Nigeria shows that educational level of the participants was significantly associated with the awareness of national health insurance scheme (39). So it does not always mean that educational status is equal to HI literacy as well as enrollment. Another study from Columbia suggested that integrated approaches that are Radio, TV and interpersonal communication with health workers/volunteers were effective for seeking treatment for malaria (40). Consequently a study from Odisha, India shows that drugs adherence to IEC was significantly higher in receiving Artemisia in combination therapy in experiment group compared to control (41). Therefore, it can be concluded that IEC is an effective means to adopt an innovation or change in desired behaviour.

The study shows that nearly two third of the respondents, who interacted with peer or neighbours were enrolled compared to those who did not interact that was statistically significant. In the same way interaction with peers or neighbours was a positive significant predictor for enrollment in HI. Various empirical studies support the argument. Information and counselling from neighbours or peers make significant changes in behaviour modification. Not only a good behaviour but health destructive behaviours also influenced by peers (42). Peer teaching or coaching enhances relationship, reciprocal understanding, and development to achieve the targeted behaviour (43) besides these peer assessment improves students' learning outcomes with progressive attitudes (44). Not only that, the peering approach appears also successful in peer to peer fiscal planning and educational programmes (45).

The peer teaching method supports to develop in-depth and mutual understanding, cooperative and collaborative learning environment and also ensures self-assessment and monitoring of progress (46). Peering approach seems more effective specially for adolescents with high risk background. It connects with positive towards peer-to-peer relationship and they should be guided in supporting one-another in promoting healthy behaviour (47). The approach has been recognized as an effective and valuable approach so can be incorporated into different setting using various methods and approaches (48) which might be fastest, cheapest, efficient, and beneficial approach and can be utilized social as well as cognitive field (49).

The peering or neighbouring approach leads productive social interaction, responsiveness, co-operation and positive attitudes and social harmony. It supports learning environment and encouraging participation in interaction (50). A systematic review shows that adolescents and sexuality health education had improved in knowledge, attitude and intentions by peer leading approach (51). Peer mediated approach also leads to positive changes in social behaviour of person having learning disabilities (52). Another experimental study shows that peer education significantly increased knowledge and practice of mental health of adolescents girls (53).

Peers/neighbours support in three different ways: first, social; second, informational; and lastly, personal or folk, facts and feelings respectively which are interconnected with interpersonal skills. From the biomedical point of view on breastfeeding, peer to peer [P2P] approach is women centred, related to their own experiences, considering women as change agent from their own experiences and able to cope cultural constrains therefore recommended for P2P approach (54). From the result of this study and empirical evidences from other studies show that P2P or neighbouring approach is more convenient, efficient and effective way to change or modification of the behaviour.

## Limitation

The study was conducted in Baglung and Kailali Districts since the HIP was initially implemented in these districts. Households enrolled after 15<sup>th</sup> January, 2018 and enrolled from other organization/company except HIB were excluded. For the non-enrolled sample, the proximal household to enrolled was selected assuming that they [both enrolled and non-enrolled household] may have equal access to mass media and communication. The study period was 75 days started from March 20<sup>th</sup> 2018 and it captures information given by the respondents on that particular period. The article has mainly focused on IEC activities with reference to socio-demographic characteristics.

## Conclusion

From the data of the study and empirical evidences from other studies, it can be concluded that heard about HI and knowledge about contribution amount seem major predictors for enrolment. Similarly, HI related books, guidelines and Hoarding Board can support for mass participation. The existing ways of message dissemination through Radio, TV, newspaper, poster and pamphlet seem less effective for enrolment. It would be better to be re-evaluated for disseminating message to public awareness or it could be modified for betterment. But, interaction with peer or neighbour seemed a positive and significant predictor for enrollment in HI. Therefore, policy maker should think of these facts while planning for the interventions.

## List Of Abbreviations

aOR: Adjusted Odds Ratio

CoN:Constitution of Nepal

GoN:Government of Nepal

HH:Household Head

HI:Health Insurance

HIA:Health Insurance Act

HIB:Health Insurance Board

HIP:Health Insurance Programme

IEC:Information, education, and Communication

IS:Interview Schedule

NDHS: Nepal Demographic and Health Survey

NHRC: Nepal Health Research Council

SDGs:Sustainable Development Goals

SHS:Social Health Security

SPSS:Statistical Package for Social Sciences

UHC:Universal Health Coverage

## Declarations

### Ethical Approval and consent to participate

NHRC reviewed and approved the study proposal. Consent was taken prior to interview.

## Consent for Publication

Not applicable.

## Availability of data and materials

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

## Competing interest

The authors declare that they have no competing interest.

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## Authors' contribution

DA, the principal author of this paper, designed, analysed and interpreted the data. BD supervised all over process of study and reviewed, edited the manuscript. KG involved in manuscript drafting and made correction on it. RB involved in data collection, data entry. All authors read and approved in final version of the manuscript.

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