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Status and Associated Factors of Health Insurance Enrollment in Nepal: Findings from Nepal Demographic Health Survey 2022

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ABSTRACT

The Government of Nepal is committed to achieving universal health coverage by 2030. However, low enrollment and high dropout rates in health insurance implemented by the Health Insurance Board remain obstacles to this achievement. This study aims to assess the level of enrollment status and associated factors with enrollment in the government health insurance program using cross-sectional secondary data from the 2022 Nepal Demographic and Health Survey. Among men and women age 15–49, only about 10% had health insurance implemented by the government. Residents from Koshi Province had the highest health insurance coverage (21.8% of men and 20.4% of women), while those from Madhesh had the lowest (3.1% of men and 2.7% of women). Coverage was higher in urban areas, among the wealthiest households, and among the employed, although no group had coverage above 30%. Having health insurance is associated with a higher likelihood of visiting a health facility and with reporting fewer issues with accessing care. The data demonstrated that government health insurance in Nepal is not on track to achieve its goal of expanding health insurance coverage to 60% of the population by 2023–24. Policymakers may view these findings as a call to action for strengthening interventions that focus on the poor coverage areas in Nepal.

Key words: health insurance, health policy, insurance coverage, Nepal Demographic and Health Survey, sociodemographic characteristics, universal health coverage

ACRONYMS AND ABBREVIATIONS

CoN	Constitution of Nepal
GDP	gross domestic product
GoN	Government of Nepal
HIB	health insurance board
HIP	Health Insurance Program
NDHS	Nepal Demographic and Health Survey
NPR	Nepalese Rupee
SDG	Sustainable Development Goal

1 BACKGROUND

The Government of Nepal (GoN) began a national public health insurance program in 2016. The program aimed to increase access to quality health care for citizens and to reduce the financial hardship associated with accessing medical care through sustainable health care financing.[1,2] The Health Insurance Board (HIB) was established to implement, regulate, and monitor the Health Insurance Program (HIP). The board was originally named the Social Health Security Development Committee before the enactment of the Health Insurance Act, 2017 and the Health Insurance Regulations, 2019.[3,4] Initially, the HIP was implemented in three districts and has now been expanded to include all 77 districts and almost all local authorities in rural and urban municipalities.[2]

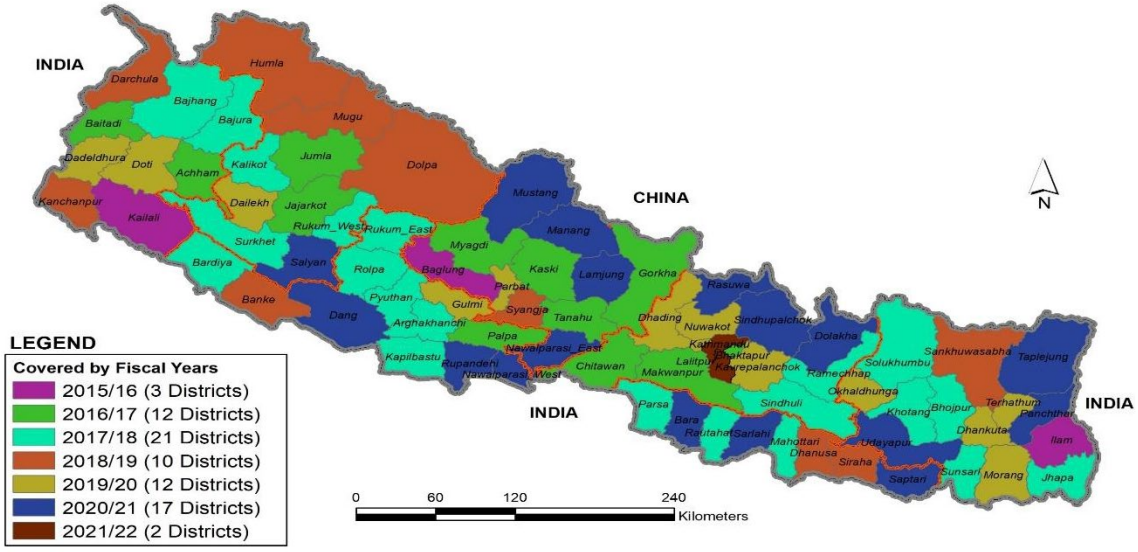
The Constitution of Nepal (CoN) recognizes that access to essential health services is a fundamental right of all citizens. The CoN maintains that the state has a responsibility to ensure that all citizens have access to quality health care, regardless of their ability to pay. This includes the right to receive emergency health services, which means that no one will be denied treatment for a life-threatening illness or injury.[5] However, data show that health care expenditures paid by residents are high in Nepal (54.17%) relative to neighboring countries Bhutan (15.42%), China (34.79%), Sri Lanka (46.58%), and India (50.59%).[6] As a member state of the World Health Organization and the United Nations, the GoN has a duty to ensure sustainable health care financing in order to meet the targets of Sustainable Development Goal (SDG) 3 (good health and well-being). The goal is to ensure that everyone, regardless of income or social status, has access to quality, essential health care services as well as affordable medicines and vaccines. This also includes financial protection so that residents do not have to create debts or sell their assets to pay for health care. The targets for achieving universal health coverage by 2030 are ambitious but essential to ensuring that everyone in Nepal has the opportunity to live a healthy life.[7] However, the GoN has allotted only 2% to 3% of the overall national budget,[8] or about 1% of the total gross domestic product (GDP), to the health sector. Experts consider this funding inadequate[9,10] to achieve the CoN's mandate and international commitments. The Pan American Health Organization has recommended that public health expenditures be 6% of total GDP,[11] while McIntyre et al.[12] recommended at least 5% of the total GDP ($86 per capita in U.S. dollars). The implementation of a national health insurance program is expected to improve the health care system in a sustainable way.[13]

1.1 Evolution of Health Insurance

Nepal has a long history of health insurance programs but a shorter history of public national (including during implementation) health insurance programs. The Primary Health Care Resource Center, in Lalitpur initiated a community-based health insurance program in 1972. In this program, the benefit package included a 50% discount for consultations, diagnostics, and hospital admissions. There was no ceiling on the benefits packages.[14–16] This health insurance program was gradually followed by other organizations' pilot programs, including the government's. In 1993, the Public Health Concern Trust in Nepal introduced the Community Health Insurance Program, which had a 30 to 50% copayment and other benefits for individuals who enrolled.[16] Other institutions and organizations have implemented health insurance programs in different ways, such as a health welfare scheme in 2000 by the BP Koirala Institute of Health Science, an emergency welfare fund in 2005 by The General Federation of Nepalese Trade Unions, and multiple health insurance schemes by the GoN in 2004 to 2006 at several hospitals and primary health

centers.[16] Some projects operated effectively, while others closed due to managerial problems, lack of political commitment, and instability.[14]

Map 1 Expansion of health insurance programs in Nepal



1.2 Regulations and Policies

National health policies aim to develop and expand a health system for all citizens in the federal structure based on social justice and good governance and to ensure access to and utilization of quality health services.

As stated in the 15th (fiscal year 2019/20 to 2023/24) periodic plan,[13] the Nepalese government has a strategy to maintain a sustainable health care financing mechanism by increasing investments in health. The strategy includes two policies: (1) an integrated health financing strategy and (2) quality health care services through health insurance, which is expected to cover 60% of the total population by 2023–24 (increasing from 7% in 2018–19).[13]

This study assesses Nepal's progress towards achieving the coverage target.

1.3 Perspectives on Health Insurance

We explored health insurance from social and developmental perspectives. The latest economic survey of Nepal showed that nearly one in six Nepalese residents live under the absolute poverty line (15.1%) or in multidimensional poverty (17.4%).[17] Multidimensional poverty was 28.0% in rural areas and 12.3% in urban areas.[17] Given these high rates of poverty, many residents cannot afford the required contributions for health insurance enrollment.[18]

1.4 Provision of Health Insurance

The 2022 Nepal Demographic and Health Survey (NDHS) revealed that approximately 12% of women and 13.3% of men age 15–49 were enrolled in an HIP.[19] Of those residents with insurance, almost all belonged

to the government-funded HIP (10.8% of women and 10.2% of men). The government health insurance scheme is a household-based scheme. As per the provision of the HIB, households with up to five members pay Nepalese Rupee (NPR) 3,500 ($26.38), with each additional member contributing an additional NPR 700 ($5.28). The health insurance regulations also require that all civil servants and employees of other government-funded institutions pay 1% of their basic salary. A five-member family will have health service coverage up to NPR 100,000 ($753.58), and each additional member can obtain additional services up to NPR 20,000 ($150.72), with a maximum ceiling of NPR 200,000 ($1,507.16).[4] Patients with a critical illness will receive NPR 100,000 ($753.58) additional coverage for conditions such as cancer, heart disease, kidney disease, head injuries, spinal injuries, sickle cell anemia, Parkinson's disease, and Alzheimer's disease.[4]

The 2022 NDHS shows that only 10% of the total population age 15–49 is enrolled in the government-funded HIP.[19] This age group is more educated, aware, independent, and socially and economically active than other age groups, which suggests that the general population's health insurance enrollment may be lower than 10%.

The GoN has HIP data since fiscal year 2015/16 in three districts to assess quality health care without financial hardship.[20] A study from Baglung and Kailali showed that residents were interested in enrolling in health insurance and were willing to pay more than the contribution amount.[21] However, the enrollment rate was low and the dropout rate high.[22] These data threatened the sustainability of health care financing as well as the HIP. To date, no nationally representative empirical research has assessed factors associated with health insurance enrollment. The 2022 NDHS, which was nationally representative and included 13,786 households (samples) nationwide, included health insurance for the first time.[19] This research examines the factors associated with HIP enrollment in Nepal. In this study, we determine the level of HIP enrollment in Nepal and the associations that exist between sociodemographic variables and health insurance enrollment. In addition, we explore the association of insurance and access to care by examining whether those with insurance are more likely to visit health facilities and whether they are less likely to report problems with accessing care.

2 MATERIALS AND METHODS

2.1 Design

This paper presents a secondary data analysis of the 2022 NDHS. Nepal has conducted the nationally representative NDHS survey approximately every 5 years since 1996, although this is the first time that health insurance questions were included. We extracted data from the household, men's (age 15–49), and women's (age 15–49) data sets.[19] Data are available from The DHS program. Questions on health insurance status were asked in the Woman's Questionnaire and Man's Questionnaire.

2.2 Study Participants

Households were selected using sampling frame developed from the 2011 census. In all households, women age 15–49 who were permanent residents or visitors who had slept in the household the night before were interviewed. In half of the households, men age 15–49 who were permanent residents or visitors who had slept in the household the night before were interviewed. In total, 13,786 households were interviewed, with 14,845 women responding to the Woman's Questionnaire and 4,913 men to the Man's Questionnaire.

2.3 Variables and Measures

Men and women were asked if they currently have insurance and, if yes, what type. Enrollment in government-funded health insurance was considered the dependent variable, while sociodemographic characteristics of households, men, and women were considered the independent variables. Province, residence, caste, marital status, education, wealth, household size, age, self-rated health, and occupation were included as socioeconomic variables for men and women. A husband living with wife variable was included as an independent variable of interest for married women.

We looked at the association of having insurance with accessing care among women (due to questionnaire constraints). We examined whether women with insurance (independent variable) were more likely to have visited a health facility in the past year and whether they expressed major issues with accessing care (dependent variables). All women were asked if the following were "big problems" in accessing care: obtaining permission to go to the doctor, obtaining money for advice or treatment, distance to the facility, and not wanting to go alone. We used weighted data from the DHS data sets.

2.4 Data Analysis

We calculated the percentages of men and women with insurance for subgroups of each variable of interest. We also calculated the population distribution of those with and without government insurance. We used bivariate and multivariate logistic regressions to determine statistically significant differences within independent variables. For one variable, husband living with wife, we restricted our sample to married women. To examine the association between having insurance and accessing care, we conducted three regressions per outcome: (1) a bivariate regression of insurance on a dependent variable, (2) addition of controls for travel time to the nearest facility and means of transport to the nearest facility, and (3) addition of the control variables included in the women's regression.

2.5 Ethical Considerations

The survey proposal for the 2022 NDHS was reviewed and approved by the Nepal Health Research Council and the ICF Institutional Review Board. Written consent was obtained prior to the interview.[19] The research used anonymized responses in the secondary data analysis.

3 RESULTS

3.1 Descriptive Statistics

The 2022 NDHS results showed that only 13.3% of men and 12.0% of women have health insurance, with 10.2% and 10.8%, respectively, enrolled in the government health insurance scheme.

Table 1 Distribution of government health insurance by sociodemographic characteristics

		Percentage of population with government insurance		Population distribution: men		Population distribution: women	
Variable	Category	Men	Women	Percentage with government insurance	Percentage without government insurance	Percentage with government insurance	Percentage without government insurance
Total	Total	10.2	10.8				
Province	Koshi	21.8	20.4	38.3	15.6	31.7	15.0
	Madhesh	3.1	2.7	6.2	21.9	5.0	22.1
	Bagmati	8.4	11.5	20.2	25.2	21.9	20.5
	Gandaki	11.7	16.6	9.0	7.7	14.5	8.8
	Lumbini	9.0	9.4	14.6	16.7	15.7	18.4
	Karnali	12.3	10.3	6.5	5.3	5.9	6.2
	Sudurpashchim	7.3	6.6	5.2	7.5	5.3	9.0
Residence	Urban	11.0	12.2	75.7	69.9	77.3	67.5
	Rural	8.4	7.8	24.3	30.1	22.7	32.5
Religion	Hindu	10.8	11.6	86.8	81.4	89.1	82.7
	Buddhist	6.9	6.0	5.4	8.2	3.6	6.9
	Muslim	5.3	2.7	2.4	5.0	1.2	5.0
	Kirat	11.2	13.5	3.1	2.8	3.1	2.4
	Christian/other	9.0	10.8	2.3	2.7	3.1	3.0
Caste	Hill Brahmin/ Chhetri	17.2	18.1	42.2	23.1	46.9	25.7
	Terai/Madheshi	4.9	5.4	9.0	19.8	7.9	16.7
	Dalit	10.0	7.6	13.1	13.4	10.6	15.6
	Janajatis	8.9	9.8	33.1	38.6	33.1	37.0
	Muslim/other	5.8	3.5	2.7	5.0	1.5	5.0
Marital status	In union	11.0	10.8	67.7	62.6	75.2	75.3
	Never in union	9.0	10.9	31.6	36.5	21.8	21.6
	Formerly in union	8.3	10.3	0.7	0.9	3.0	3.1
Education	None	2.5	4.5	2.0	8.7	10.6	27.4
	Basic	6.4	7.5	24.2	40.3	21.3	32.1
	Secondary	13.0	16.0	58.1	44.3	57.8	36.8
	Higher	20.9	25.1	15.7	6.8	10.3	3.7
Wealth	Poorest	5.1	4.1	7.6	16.2	6.8	19.0
	Poorer	8.2	7.4	15.2	19.4	13.1	20.0
	Middle	8.2	8.0	15.6	19.9	15.1	21.0
	Richer	10.8	13.1	24.3	23.0	26.0	21.0
	Richest	16.5	20.0	37.2	21.5	39.0	19.0
De jure household size	1 member	9.5	9.3	2.2	2.4	1.5	1.8
	2 members	10.5	10.4	7.4	7.3	9.3	9.7
	3 members	10.6	11.4	18.1	17.3	19.3	18.2
	4 members	9.7	11.2	23.0	24.3	24.3	23.4
	5 members	10.5	12.5	20.3	19.7	21.5	18.2
	6 members	11.8	10.3	15.1	12.9	11.2	11.8
	7+ members	8.9	8.5	13.9	16.1	13.0	16.8

Continued...

Table 1—*Continued*

Variable	Category	Percentage of population with government insurance: Men	Percentage of population with government insurance: Women	Population distribution: men: Percentage with government insurance	Population distribution: men: Percentage without government insurance	Population distribution: women: Percentage with government insurance	Population distribution: women: Percentage without government insurance
Age	15–19	6.6	8.0	13.0	20.9	13.2	18.4
	20–24	11.1	9.5	18.9	17.3	15.7	18.0
	25–29	8.8	11.9	12.6	14.8	18.0	16.2
	30–34	9.9	11.9	12.2	12.6	15.9	14.3
	35–39	14.2	11.1	18.0	12.4	14.0	13.6
	40–44	11.0	12.5	13.2	12.2	12.7	10.8
	45–49	12.3	12.6	12.1	9.9	10.5	8.8
Self-rated health	Very good	7.5	5.9	6.3	8.9	3.0	5.9
	Good	10.8	8.9	41.1	38.7	23.0	28.7
	Moderate	10.0	11.9	46.9	47.9	62.7	56.0
	Bad/very bad	12.3	12.7	5.6	4.6	11.3	9.4
Occupation	Employed	15.3	21.7	38.7	24.3	31.3	13.7
	Agriculture	9.9	8.5	22.7	23.6	37.6	49.3
	Manual	6.6	8.9	23.9	38.4	6.9	8.5
	Unemployed/ other	11.0	9.4	14.8	13.7	24.3	28.5

There is a similar level of government insurance coverage among both men (10.2%) and women (10.8%) (Table 1). For both genders, residents living in Koshi Province have the highest level of government health insurance (above 20%). Madhesh Province has the lowest (about 3.0%). Among men with government insurance, 38.3% live in Koshi, compared to only 15.6% without insurance. The distribution is similar for women; 31.7% of women with insurance and 15.0% of women without insurance live in Koshi. In Madhesh Province, 21.9% of men and 22.1% of women do not have insurance, while only 6.2% of men and 5.0% of women have coverage. These disparities may be indicative of differences in the implementation or effectiveness of government insurance programs across provinces.

The data showed a notable contrast between urban and rural areas in government insurance coverage. Urban areas have higher coverage rates than rural areas for both genders. In urban settings, women have a 12.2% coverage rate, while men have 11.0%. In contrast, rural women have a coverage rate of 7.8%, while rural men have 8.4%.

In terms of religion, the Kirat group has the highest insurance coverage (11.2% for men and 13.5% for women). However, this group represents only around 3% of the population. Hindus have the next highest coverage (10.8% for men and 11.6% for women). All other religious groups have insurance coverage at or below the national average, with the lowest coverage among Muslims (5.3% for men and 2.7% for women). With respect to caste, the Hill Brahmin/Chhetri group has the highest government insurance coverage (17.2% for men and 18.1% for women), while the Terai/Madhesi and Muslim/other groups have the lowest coverage.

There is little variation in coverage among women according to marital status, with 10.8% of married women, 10.9% of never-married women, and 10.3% of formerly married women having government insurance. Among men, those who are married are most likely to have government health insurance

(11.0%), followed by those who have never been married (9.0%) and those who are formerly married (8.3%).

Educational disparities exist in government insurance coverage; those with no education have the lowest levels, and coverage levels increase with each level of education for both men and women. However, the highest coverage group, women with higher than a secondary level of education, is only 25.1%. Wealth follows a similar pattern, with the lowest coverage among the poorest residents and the highest coverage among the richest residents. The richest quintile includes 37.2% of the men and 39.0% of the women with insurance. Fewer than 10% of residents with insurance are in the lowest wealth quintile. Households with seven or more members have the lowest rate of government insurance, although there is less variation across household sizes than within some of the other independent variables.

Among both men and women, the 15–19 age group is least likely to have insurance (6.6%, 8.0%). Respondents whose self-rated health is bad or very bad (grouped together due to the small sample size) have the highest rate of insurance (12.3%, 12.7%), while those reporting very good health have the lowest (7.5%, 5.9%). Those who are employed (but not in manual labor or agriculture) have the highest rates of government insurance coverage of any employment group (15.3%, 21.7%). Rates are lowest among men who work in manual labor (6.6%). Finally, married women whose husbands live with them have higher rates of insurance coverage (11.9%) than women whose husbands are staying elsewhere (8.7) (Table 2).

Table 2 Husband away and enrollment in health insurance

Variable	Category	Percentage of married women with government insurance	Population distribution (percentage) of women with government insurance	Population distribution (percentage) of women without government insurance
Husband away	Husband living with her	11.9	72.7	65.3
	Husband staying elsewhere	8.7	27.3	34.7

Table 3 presents data on women's visits to health care facilities in the past year with two categories: "visited" and "didn't visit." Overall, 11.8% of women who visited health facilities have government health insurance, while 8.6% who did not visit a facility had insurance. The results showed that most women had visited a health facility in the past year (75.8% of women with insurance and 68.8% of women without insurance).

Table 3 Distribution of health insurance enrollment among women

Variable	Category	Percentage of women with government insurance	Population distribution (percentage) of women with government insurance	Population distribution (percentage) of women without government insurance
Visited health facility in past year	Visited	11.8	75.8	68.8
	Didn't visit	8.6	24.2	31.2
Time to nearest health facility	15 minutes or less	11.9	75.7	67.9
	16 to 30 minutes	9.5	17.8	20.6
	31 to 60 minutes	6.7	4.4	7.4
	Over 1 hour	5.7	2.0	4.1
Form of transport to nearest health facility	Motorized	16.8	17.3	10.4
	Not motorized	10.1	82.7	89.6
Type of nearest health facility	Health post	8.7	32.1	40.7
	Basic health care center	14.8	6.2	4.3
	Community health unit	8.0	1.9	2.6
	Government hospital	18.6	7.5	4.0
	Other	12.9	0.7	0.6
	Pharmacy	9.9	19.1	21.1
	Primary health center	4.0	0.5	1.5
	Private clinic	13.0	25.2	20.5
	Private hospital	13.5	4.3	3.3
	Urban health center	18.2	2.5	1.4

Most women live within 15 minutes of a health facility. The highest percentage of women with insurance is among those closest to a facility (11.9%) and declines as time to a facility increases. Those who take a motorized form of transport to a health facility have higher rates of insurance (16.8%) than those who use nonmotorized transport (10.1%), although most women use a nonmotorized form of transport to reach a facility regardless of insurance status. Women who live near a government hospital or urban health center have the highest rates of insurance coverage (18.6%, 18.2%), while the coverage is lowest among women whose nearest facility is a primary health center (4.0%).

Table 4 presents data on the relationship between women's health insurance status and the extent of difficulty they face in obtaining health care. Women were asked if four different obstacles to care are a "big problem" or "not a big problem." Among women with insurance, 10.0% find obtaining permission for treatment to be a big problem, while 90.0% do not. A higher percentage of women without insurance, 16.8%, perceive it as a big problem, while 83.2% do not. Twenty-three percent of women with insurance report obtaining money for treatment as a big problem, as compared with 36.8% of those without insurance—both high figures, although over 50% higher for women without insurance. Distance to the facility is a greater obstacle for women without insurance (38.6%) than women with insurance (25.5%), which reflects the results from Table 3 showing that women with insurance live closer to facilities than those without insurance. Both groups were more likely to report not wanting to go alone to a facility as a big problem (56.2% of women without insurance and 43.8 of women with insurance).

Table 4 Health insurance enrollment and problems with obtaining care

Variable	Category	Percentage of women with insurance	Percentage of women without insurance
Obtaining permission to go for treatment	Big problem	10.0	16.8
	Not a big problem	90.0	83.2
Obtaining money for treatment	Big problem	23.0	36.8
	Not a big problem	77.0	63.2
Distance to health facility	Big problem	25.5	38.6
	Not a big problem	74.5	61.4
Not wanting to go alone	Big problem	44.0	56.2
	Not a big problem	56.0	43.8

3.2 Bivariate and Multivariate Results

Men who reside outside of Koshi Province have lower rates of government insurance than those who live in Koshi Province (Table 5). This finding remained after control for all other sociodemographic characteristics. With respect to residence, rural men are less likely to have insurance than urban men, but this relationship was not maintained when control variables were added. The bivariate regression showed that all castes are less likely to have insurance than the Hill Brahmin/Chhetri group. In terms of the multivariate relationship, there was no statistical difference between the Dalit and Hill Brahmin/Chhetri groups, although the other castes remained significantly lower. Men who have never been married have lower rates of insurance than married men, but this relationship was not statistically different when other variables were controlled. The education differential seen in the descriptive statistics held true when testing for significance, both with and without control variables. Looking at wealth, the poorest residents are less likely to have insurance and the richest are more likely to have insurance than those in the middle quintile, although the second and fourth quintiles were not statistically different from the middle quintile. There was no statistical difference across household size. The only statistical difference from the reference age group (age 30–34) was age 35–39. There was no statistically significant difference in insurance coverage for self-rated health categories relative to those who report being in good health. Finally, although there was a difference in insurance with employment status, only those in manual labor have statistically lower insurance coverage than those who are employed (in nonagricultural and nonmanual labor) after control for other variables.

Table 5 Regression analysis of sociodemographic characteristics and having government health insurance: Men

Category	Variable	Bivariate OR [95% CI]	Multivariate AOR [95% CI]
Province	Bagmati	0.33** [0.20, 0.53]	0.18*** [0.11, 0.31]
	Gandaki	0.47*** [0.29, 0.77]	0.29*** [0.17, 0.49]
	Karnali	0.50*** [0.30, 0.84]	0.37*** [0.20, 0.68]
	Koshi	1 [ref]	1 [ref]
	Lumbini	0.36*** [0.20, 0.62]	0.23*** [0.13, 0.40]
	Madhesh	0.12*** [0.06, 0.21]	0.12*** [0.06, 0.23]
	Sudurpashchim	0.28*** [0.14, 0.56]	0.23*** [0.11, 0.51]
Residence	Rural	0.74* [0.54, 1.02]	1.08 [0.78, 1.50]
	Urban	1 [ref]	1 [ref]
Caste	Dalit	0.53*** [0.36, 0.78]	1.32 [0.88, 1.97]
	Hill Brahmin/Chhetri	1 [ref]	1 [ref]
	Janajatis	0.47*** [0.33, 0.66]	0.57*** [0.40, 0.82]
	Muslim/other	0.30*** [0.12, 0.70]	0.51* [0.24, 1.07]
	Terai/Madhesi	0.25*** [0.15, 0.41]	0.47*** [0.27, 0.81]
Marital status	Formerly in union	0.73 [0.24, 2.20]	0.77 [0.22, 2.61]
	In union	1 [ref]	1 [ref]
	Never in union	0.80** [0.66, 0.98]	0.78 [0.57, 1.07]
Education	Basic	1 [ref]	1 [ref]
	Higher	3.87*** [2.66, 5.65]	2.74*** [1.77, 4.23]
	None	0.38*** [0.19, 0.78]	0.46* [0.21, 1.03]
	Secondary	2.19*** [1.69, 2.84]	1.87*** [1.40, 2.50]
Wealth	Middle	1 [ref]	1 [ref]
	Poorer	1.00 [0.70, 1.42]	0.89 [0.59, 1.33]
	Poorest	0.60** [0.39, 0.92]	0.42*** [0.26, 0.69]
	Richer	1.35 [0.92, 1.98]	1.10 [0.74, 1.65]
	Richest	2.20*** [1.49, 3.26]	1.61** [1.08, 2.38]
De jure household size	1 member	0.97 [0.45, 2.10]	1.06 [0.42, 2.65]
	2 members	1.08 [0.68, 1.72]	1.12 [0.69, 1.83]
	3 members	1.10 [0.77, 1.56]	1.06 [0.73, 1.54]
	4 members	1 [ref]	1 [ref]
	5 members	1.09 [0.73, 1.64]	1.18 [0.78, 1.77]
	6 members	1.24 [0.82, 1.88]	1.28 [0.82, 2.01]
	7+ members	0.91 [0.58, 1.42]	1.48 [0.88, 2.48]
Age	15–19	0.64** [0.44, 0.94]	0.73 [0.45, 1.19]
	20–24	1.13 [0.75, 1.71]	1.28 [0.83, 1.99]
	25–29	0.88 [0.58, 1.32]	0.94 [0.61, 1.43]
	30–34	1 [ref]	1 [ref]
	35–39	1.5** [1.02, 2.21]	1.8*** [1.2, 2.71]
	40–44	1.12 [0.74, 1.7]	1.25 [0.81, 1.95]
	45–49	1.27 [0.84, 1.94]	1.32 [0.85, 2.06]
Self-rated health	Bad/very bad	1.16 [0.72, 1.87]	1.37 [0.82, 2.31]
	Good	1 [ref]	1 [ref]
	Moderate	0.92 [0.72, 1.18]	1.1 [0.88, 1.39]
	Very good	0.67 [0.41, 1.1]	0.75 [0.45, 1.24]
Occupation	Employed	1 [ref]	1 [ref]
	Agriculture	0.6*** [0.45, 0.82]	0.87 [0.61, 1.23]
	Manual	0.39*** [0.29, 0.53]	0.69** [0.5, 0.95]
	Unemployed/other	0.68** [0.47, 0.99]	1.47 [0.91, 2.37]

Note: OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval
*** p < .001; ** p < .01; * p < .05

Table 6 shows, as with men, that women who reside in other provinces are statistically less likely to have health insurance than women who reside in Koshi Province. With respect to caste, all groups have statistcally significant lower insurance coverage than the Hill Brahmin/Chhetri group, both with and without control variables. Again, residence was significant in the bivariate analysis, with rural women being less likely to have government insurance than urban women, although this relationship was not sustained when control variables were added. Although there was no significant difference in insurance status by

marital status, there was a strong positive relationship between education and insurance coverage. In comparison with women in the middle wealth quintile, the poorest women are less likely to have insurance and the richer and richest women are most likely to have coverage. As with men, no relationship was found between household size and insurance coverage after control for other variables. Unlike the case with men, age patterns and insurance were statistically relevant for women, with younger women having lower odds of coverage than women age 30–34 and older women having higher odds. With respect to self-rated health, women reporting bad or very bad health are more likely to have insurance than women reporting good health.

Table 6 Regression analysis of sociodemographic characteristics and having health insurance: Women

Variable	Category	Bivariate OR [95% CI]	Multivariate AOR [95% CI]
Province	Koshi	1 [ref]	1 [ref]
	Madhesh	0.11*** [0.06, 0.19]	0.15*** [0.08, 0.27]
	Bagmati	0.50*** [0.33, 0.77]	0.29*** [0.19, 0.44]
	Gandaki	0.78 [0.53, 1.13]	0.57*** [0.39, 0.83]
	Lumbini	0.40*** [0.26, 0.63]	0.35*** [0.23, 0.53]
	Karnali	0.45*** [0.29, 0.70]	0.51*** [0.32, 0.81]
	Sudurpashchim	0.28*** [0.15, 0.50]	0.26*** [0.13, 0.52]
Residence	Urban	1 [ref]	1 [ref]
	Rural	0.61*** [0.47, 0.79]	1.01 [0.77, 1.31]
Caste	Hill Brahmin/Chhetri	1 [ref]	1 [ref]
	Terai/Madhesi	0.26*** [0.18, 0.37]	0.53*** [0.35, 0.79]
	Dalit	0.37*** [0.28, 0.49]	0.76* [0.57, 1.02]
	Janajatis	0.49*** [0.38, 0.63]	0.54*** [0.42, 0.70]
	Muslim/other	0.16*** [0.09, 0.31]	0.40*** [0.21, 0.76]
Marital status	In union	1 [ref]	1 [ref]
	Never in union	1.01 [0.87, 1.18]	1.03 [0.80, 1.31]
	Formerly in union	0.95 [0.68, 1.32]	0.93 [0.65, 1.35]
Education	None	0.58*** [0.45, 0.75]	0.66*** [0.50, 0.87]
	Basic	1 [ref]	1 [ref]
	Secondary	2.36*** [1.98, 2.83]	2.02*** [1.67, 2.44]
	Higher	4.16*** [3.13, 5.53]	2.42*** [1.84, 3.18]
Wealth	Poorest	0.50*** [0.37, 0.67]	0.43*** [0.31, 0.60]
	Poorer	0.92 [0.71, 1.19]	0.92 [0.70, 1.21]
	Middle	1 [ref]	1 [ref]
	Richer	1.73*** [1.36, 2.19]	1.52*** [1.19, 1.95]
	Richest	2.87*** [2.09, 3.94]	1.93*** [1.45, 2.56]
De jure household size	1 member	0.81 [0.50, 1.32]	0.86 [0.52, 1.43]
	2 members	0.92 [0.70, 1.21]	0.88 [0.67, 1.15]
	3 members	1.02 [0.82, 1.27]	0.99 [0.79, 1.25]
	4 members	1 [ref]	1 [ref]
	5 members	1.14 [0.90, 1.44]	1.34** [1.06, 1.70]
	6 members	0.92 [0.71, 1.18]	1.15 [0.89, 1.50]
	7+ members	0.74** [0.56, 0.99]	1.21 [0.90, 1.62]
Age	15–19	0.64*** [0.49, 0.84]	0.72* [0.51, 1.02]
	20–24	0.78** [0.62, 0.98]	0.75** [0.58, 0.96]
	25–29	0.99 [0.80, 1.23]	0.95 [0.75, 1.19]
	30–34	1 [ref]	1 [ref]
	35–39	0.92 [0.73, 1.15]	1.08 [0.85, 1.37]
	40–44	1.06 [0.81, 1.38]	1.48*** [1.12, 1.96]
	45–49	1.07 [0.84, 1.35]	1.57*** [1.18, 2.09]
Self-rated health	Very good	0.64** [0.42, 0.98]	1.07 [0.70, 1.64]
	Good	1 [ref]	1 [ref]
	Moderate	1.40*** [1.17, 1.66]	1.10 [0.92, 1.31]
	Bad/very bad	1.50*** [1.19, 1.89]	1.68*** [1.34, 2.11]
Occupation	Employed	1 [ref]	1 [ref]
	Agriculture	0.33*** [0.27, 0.42]	0.69*** [0.56, 0.86]
	Manual	0.35*** [0.25, 0.49]	0.68** [0.49, 0.94]
	Unemployed/other	0.37*** [0.29, 0.48]	0.54*** [0.42, 0.68]

Note: OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval
*** p < .001; ** p < .01; * p < .05

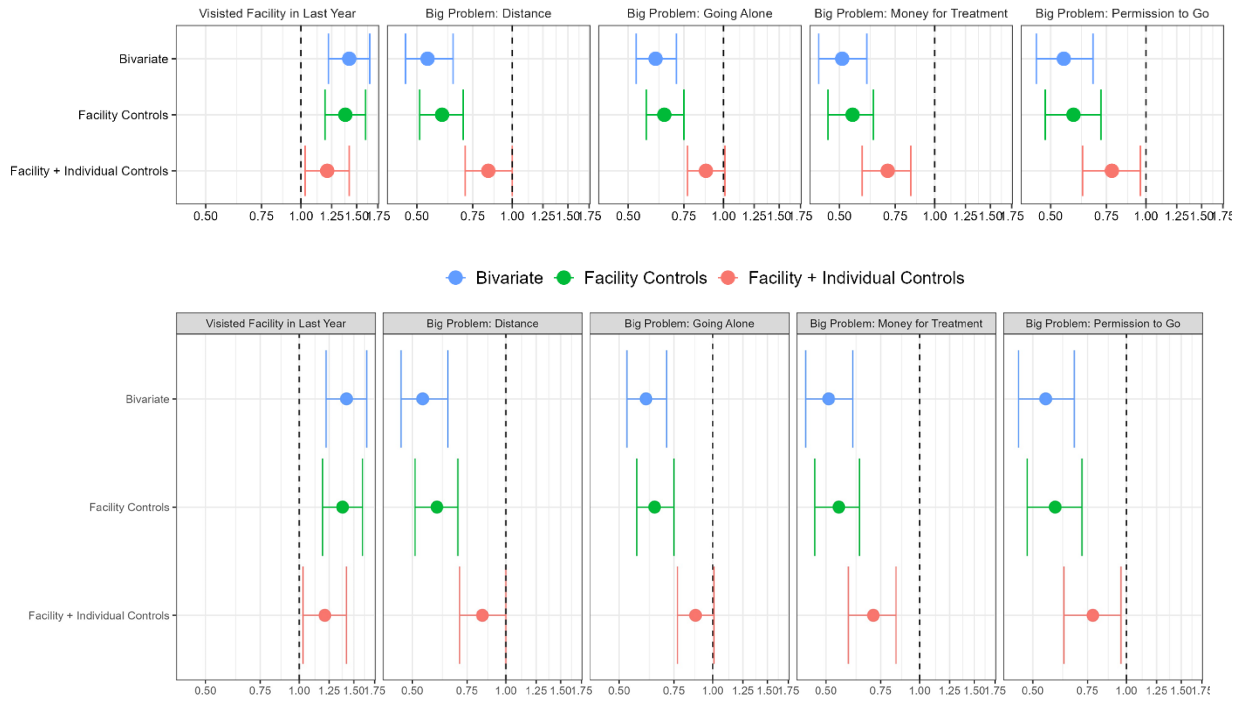
The bivariate analysis showed that married women whose husbands are staying elsewhere are less likely to have insurance than women whose husbands live with them, although there was no statistical difference after control for other variables (Table 7).

Table 7 Regression analysis of migration and having health insurance: Women

Variable	Bivariate OR [95% CI]	Multivariate AOR [95% CI]
Husband staying elsewhere	0.71*** [0.6, 0.83]	0.88 [0.74, 1.04]
Husband living with her	1 [ref]	1 [ref]

Figure 1 is a departure from the earlier analysis of insurance coverage with its focus on the association between having insurance and accessing care (the full regression results are available from the authors). The bivariate analysis showed that women who have government insurance are 42% more likely to have visited a health facility in the past year than women who do not. After controlling for distance to facility and means of transport to facility, having insurance is still positively and statistically associated with visiting a health facility. With the addition of sociodemographic control variables, having insurance is associated with a 21% increase in the odds of visiting a health facility in comparison with not having insurance. It is important to emphasize that insurance is a current status measure (we do not know when insurance coverage began), while visiting a health facility is a retrospective measure.

Figure 1 Regression analysis of likelihood of visiting a health facility in the past year and having major problems accessing care based on insurance coverage status



For all questions about problems accessing care (permission to go for treatment, obtaining money for treatment, distance to health facility, and not wanting to go alone), women with insurance are statistically less likely to report major problems than women without insurance, even after controlling for distance, mode of transport to facility, and socioeconomic characteristics.

4 DISCUSSION

We found that almost 1 out of 10 respondents (12.0% of women and 13.3% of men) have any health insurance, among whom 10.8% of women and 10.2% of men are enrolled in the government health insurance scheme[19]; these figures are much lower than the 60% coverage goal for 2023. The survey also showed lower insurance coverage than the HIB claims of 32% of total households and 5.9 million people (roughly 20% of the population) enrolled in the government HIP within the 6 years of its operation.[2] This does not mean that all participants have continued to reenroll annually. The NDHS does not allow us to assess dropout and reenrollment rates. Data from the 2022 survey revealed that there was variation in having health insurance based on age, gender, caste, residence, geographic area, occupation, and wealth status, although no subgroup was near 30%. Issues with inequalities exist, but the largest problem is the overall low coverage of government (or any other type of) health insurance. As we have shown, insurance is associated with an increased likelihood of visits and fewer problems accessing care, Thus, expansion of health insurance is a pressing need in Nepal.

Several issues associated with health insurance enrollment were identified in our research. Most of the sociodemographic characteristics of the respondents were associated with having health insurance and were similar to other research.[23] One of the most striking findings is the regional variation, with respondents from Koshi Province (20–22%) being much more likely to have health insurance than those from Madhesh Province (2–3%). Similarly, Dalit and Muslim women are less likely to have health insurance coverage than women in other groups. Although there is a policy that no one should be left behind in access to health care services based on their economic status, the poorest residents are less likely to have health insurance in Nepal. Major intervention is needed to increase participation in the government HIP to achieve universal coverage.

We found that several sociodemographic factors were significantly associated with health insurance coverage. Similar findings were observed in other studies from different countries including Nepal.[23–29] With respect to wealth status, most studies showed that richer residents are more likely to have health insurance,[24–26,29] and this was found in our study. However, poor residents are also more likely to have health insurance in Ghana.[30] Self-rated health status as "good" is considered a barrier for having insurance.[30,31] Pro-public health policies have also been examined as facilitators for having health insurance.[31,32]

The 2022 NDHS revealed the disappointing finding that a large proportion of active, informed, and civically engaged residents age 15 to 49 are not enrolled in the government HIP. Several interventions could lead to higher enrollments, including awareness campaigns, quality services for enrolled members, reminders to households to renew their insurance, proper management of patients' complaints, user-friendly services, higher coverage (ceiling amount), and pro-poor policies.[18,22,23] Enacting pro-participant rules and regulations can also increase program satisfaction, which can lead to higher participation.

Strengths and Limitations

Since the 2022 NDHS was a nationally representative sample survey, the findings can be applied to the nation as a whole. While government health insurance is purchased for the household, our analysis was

restricted to individuals age 15–49 because health insurance status was asked only in the Man's Questionnaire and Woman's Questionnaire. Some individuals may not be aware that their household has government insurance, which would possibly lead to underestimation of reports of insurance coverage. Additionally, since we used secondary data, some data were missed regarding whether respondents utilized services under the insurance scheme or not, what kinds of services they utilized, and whether there were large dropout rates from the insurance program. These results can be used for policy interventions while recognizing the limitations discussed above.

5 CONCLUSION

Nepal's Health Insurance Program has not reached the level of implementation expected in 2022. Major geographic and wealth disparities exist. The Government of Nepal must work to identify barriers to participation experienced by households to increase the use of health insurance. Policymakers should take our findings into account during intervention planning and implementation.

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APPENDIX TABLES

Appendix Table 1 Regression analysis of likelihood of visiting a health facility in the past year

		Visited health facility in past year		
Variable	Category	Bivariate OR [95% CI]	Multivariate AOR 1 [95% CI]	Multivariate AOR 2 [95% CI]
Insurance status	Has government insurance	1.42*** [1.22, 1.65]	1.38*** [1.19, 1.60]	1.21** [1.03, 1.42]
	No government insurance	1 [ref]	1 [ref]	1 [ref]
Travel time to health facility	0 to 15 minutes		1 [ref]	1 [ref]
	16 to 30 minutes		0.87** [0.78, 0.98]	0.85** [0.75, 0.97]
	31 to 60 minutes		0.96 [0.82, 1.12]	0.93 [0.78, 1.1]
	Over 1 hour		0.75*** [0.60, 0.93]	0.69*** [0.54, 0.88]
Form of transport to health facility	Motorized		1 [ref]	1 [ref]
	Not motorized		0.77*** [0.67, 0.89]	0.87* [0.75, 1.00]
Province	Koshi			1 [ref]
	Madhesh			0.90 [0.70, 1.15]
	Bagmati			0.93 [0.77, 1.14]
	Gandaki			0.95 [0.77, 1.17]
	Lumbini			1.09 [0.91, 1.31]
	Karnali			0.84 [0.68, 1.04]
	Sudurpashchim			1.14 [0.91, 1.43]
Residence	Urban			1 [ref]
	Rural			1 [0.88, 1.13]
Caste	Hill Brahmin/Chhetri			1 [ref]
	Terai/Madheshi			0.77** [0.61, 0.96]
	Dalit			1.00 [0.85, 1.17]
	Janajatis			0.85** [0.74, 0.97]
	Muslim/other			0.92 [0.68, 1.25]
Marital status	In union			1 [ref]
	Never in union			0.26*** [0.22, 0.31]
	Formerly in union			0.77** [0.61, 0.98]
Education	None			0.76*** [0.68, 0.87]
	Basic			1 [ref]
	Secondary			1.25*** [1.10, 1.41]
	Higher			1.18 [0.90, 1.55]
Wealth	Poorest			0.93 [0.79, 1.10]
	Poorer			1.00 [0.88, 1.14]
	Middle			1 [ref]
	Richer			1.04 [0.90, 1.20]
	Richest			1.02 [0.85, 1.22]
De jure household size	1 member			0.86 [0.63, 1.16]
	2 members			0.92 [0.78, 1.09]
	3 members			0.97 [0.85, 1.10]
	4 members			1 [ref]
	5 members			0.93 [0.81, 1.05]
	6 members			0.99 [0.85, 1.17]
	7+ members			0.94 [0.82, 1.09]
Age	15–19			1.04 [0.86, 1.26]
	20–24			1.53*** [1.29, 1.82]
	25–29			1.46*** [1.22, 1.73]
	30–34			1 [ref]
	35–39			0.84** [0.71, 0.99]
	40–44			0.59*** [0.49, 0.70]
	45–49			0.60*** [0.49, 0.73]
Self-rated health	Very good			1.08 [0.86, 1.34]
	Good			1 [ref]
	Moderate			1.13** [1.02, 1.26]
	Bad/very bad			1.76*** [1.47, 2.09]
Occupation	Employed			1 [ref]
	Agriculture			0.98 [0.84, 1.14]
	Manual			0.97 [0.78, 1.20]
	Unemployed/other			0.95 [0.82, 1.10]

Note: OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval.
*** $p < .001$; ** $p < .01$; * $p < .05$

Appendix Table 2 Regression analysis of having a major problem obtaining permission to go for treatment

Variable	Category	Obtaining permission to go for treatment is a big problem		
		Bivariate OR [95% CI]	Multivariate AOR 1 [95% CI]	Multivariate AOR 2 [95% CI]
Insurance status	Has government insurance	0.55*** [0.45, 0.68]	0.59*** [0.48, 0.72]	0.78** [0.63, 0.96]
	No government insurance	1 [ref]	1 [ref]	1 [ref]
Travel time to health facility	0 to 15 minutes		1 [ref]	1 [ref]
	16 to 30 minutes		2.26*** [1.94, 2.65]	1.53*** [1.30, 1.79]
	31 to 60 minutes		2.64*** [2.13, 3.27]	1.57*** [1.26, 1.95]
	Over 1 hour		2.75*** [2.06, 3.67]	1.29* [0.97, 1.70]
Form of transport to health facility	Motorized		1 [ref]	1 [ref]
	Not motorized		0.96 [0.75, 1.23]	0.84 [0.66, 1.08]
Province	Koshi			1 [ref]
	Madhesh			0.48*** [0.34, 0.68]
	Bagmati			0.82 [0.60, 1.12]
	Gandaki			0.58*** [0.40, 0.85]
	Lumbini			0.63*** [0.45, 0.88]
	Karnali			1.76*** [1.33, 2.33]
	Sudurpashchim			0.38*** [0.26, 0.55]
Residence	Urban			1 [ref]
	Rural			1.17 [0.96, 1.42]
Caste	Hill Brahmin/Chhetri			1 [ref]
	Terai/Madheshi			1.13 [0.84, 1.51]
	Dalit			1.14 [0.93, 1.41]
	Janajatis			1.10 [0.93, 1.31]
	Muslim/other			1.07 [0.73, 1.59]
Marital status	In union			1 [ref]
	Never in union			0.58*** [0.48, 0.69]
	Formerly in union			0.61*** [0.44, 0.84]
Education	None			1.10 [0.94, 1.28]
	Basic			1 [ref]
	Secondary			0.51*** [0.44, 0.59]
	Higher			0.42*** [0.24, 0.72]
Wealth	Poorest			1.45*** [1.18, 1.78]
	Poorer			1.30*** [1.10, 1.54]
	Middle			1 [ref]
	Richer			0.86 [0.71, 1.05]
	Richest			0.57*** [0.44, 0.75]
De jure household size	1 member			1.09 [0.67, 1.77]
	2 members			0.83* [0.68, 1.02]
	3 members			0.99 [0.84, 1.16]
	4 members			1 [ref]
	5 members			1.06 [0.90, 1.25]
	6 members			1.03 [0.86, 1.23]
	7+ members			1.31*** [1.11, 1.54]
Age	15–19			1.64*** [1.31, 2.06]
	20–24			1.53*** [1.26, 1.85]
	25–29			1.19* [0.97, 1.45]
	30–34			1 [ref]
	35–39			1.02 [0.84, 1.25]
	40–44			1.13 [0.92, 1.39]
	45–49			1.32** [1.07, 1.65]
Self-rated health	Very good			1.16 [0.88, 1.54]
	Good			1 [ref]
	Moderate			1.01 [0.88, 1.16]
	Bad/very bad			1.20** [1.00, 1.45]
Occupation	Employed			1 [ref]
	Agriculture			1.46*** [1.17, 1.81]
	Manual			1.72*** [1.30, 2.28]
	Unemployed/other			1.62*** [1.26, 2.08]

Note: OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval.
*** $p < .001$; ** $p < .01$; * $p < .05$

Appendix Table 3 Regression analysis of having a major problem obtaining money to go for treatment

		Money for treatment is a big problem		
Variable	Category	Bivariate OR [95% CI]	Multivariate AOR 1 [95% CI]	Multivariate AOR 2 [95% CI]
Insurance status	Has government insurance	0.51*** [0.43, 0.61]	0.55*** [0.46, 0.64]	0.71*** [0.59, 0.84]
	No government insurance	1 [ref]	1 [ref]	1 [ref]
Travel time to health facility	0 to 15 minutes		1 [ref]	1 [ref]
	16 to 30 minutes		1.96*** [1.72, 2.24]	1.37*** [1.20, 1.55]
	31 to 60 minutes		2.09*** [1.74, 2.50]	1.33*** [1.10, 1.61]
	Over 1 hour		2.12*** [1.60, 2.81]	1.09 [0.77, 1.53]
Form of transport to health facility	Motorized		1 [ref]	1 [ref]
	Not motorized		1.25** [1.02, 1.54]	1.11 [0.89, 1.37]
Province	Koshi			1 [ref]
	Madhesh			0.71** [0.54, 0.95]
	Bagmati			0.68** [0.5, 0.92]
	Gandaki			0.42*** [0.29, 0.62]
	Lumbini			0.58*** [0.42, 0.79]
	Karnali			1.23 [0.88, 1.72]
	Sudurpashchim			0.58*** [0.43, 0.78]
Residence	Urban			1 [ref]
	Rural			0.99 [0.83, 1.18]
Caste	Hill Brahmin/Chhetri			1 [ref]
	Terai/Madheshi			1.25** [1.00, 1.56]
	Dalit			1.38*** [1.16, 1.64]
	Janajatis			1.16* [1.00, 1.34]
	Muslim/other			1.19 [0.87, 1.65]
Marital status	In union			1 [ref]
	Never in union			0.9 [0.76, 1.06]
	Formerly in union			1.51*** [1.20, 1.91]
Education	None			1.15** [1.02, 1.3]
	Basic			1 [ref]
	Secondary			0.60*** [0.53, 0.68]
	Higher			0.31*** [0.22, 0.43]
Wealth	Poorest			1.40*** [1.15, 1.69]
	Poorer			1.25*** [1.10, 1.42]
	Middle			1 [ref]
	Richer			0.85** [0.74, 0.99]
	Richest			0.54*** [0.43, 0.67]
De jure household size	1 member			0.86 [0.61, 1.20]
	2 members			0.94 [0.80, 1.09]
	3 members			1.05 [0.93, 1.20]
	4 members			1 [ref]
	5 members			1.08 [0.95, 1.24]
	6 members			0.96 [0.84, 1.11]
	7+ members			1.05 [0.92, 1.21]
Age	15–19			0.89 [0.74, 1.07]
	20–24			0.99 [0.85, 1.15]
	25–29			1 [0.85, 1.17]
	30–34			1 [ref]
	35–39			1.04 [0.89, 1.22]
	40–44			1.18* [1.00, 1.40]
	45–49			1.29** [1.06, 1.56]
Self-rated health	Very good			0.51*** [0.39, 0.67]
	Good [			1 [ref]
	Moderate			1.17*** [1.04, 1.31]
	Bad/very bad			1.49*** [1.26, 1.76]
Occupation	Employed			1 [ref]
	Agriculture			1.23** [1.04, 1.46]
	Manual			1.49*** [1.20, 1.84]
	Unemployed/other			1.27*** [1.07, 1.49]

Note: OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval.
*** $p < .001$; ** $p < .01$; * $p < .05$

Appendix Table 4 Regression analysis of distance to a health facility being a major problem for treatment

Variable	Category	Distance to health facility is a big problem		
		Bivariate OR [95% CI]	Multivariate AOR 1 [95% CI]	Multivariate AOR 2 [95% CI]
Insurance status	Has government insurance	0.54*** [0.46, 0.65]	0.60*** [0.51, 0.70]	0.84** [0.71, 1.00]
	No government insurance	1 [ref]	1 [ref]	1 [ref]
Travel time to health facility	0 to 15 minutes		1 [ref]	1 [ref]
	16 to 30 minutes		3.45*** [2.97, 3.99]	2.48*** [2.14, 2.88]
	31 to 60 minutes		9.48*** [7.8, 11.53]	6.72*** [5.48, 8.24]
	Over 1 hour		25.86*** [18.54, 36.07]	15.02*** [10.42, 21.64]
Form of transport to health facility	Motorized		1 [ref]	1 [ref]
	Not motorized		1.06 [0.88, 1.27]	0.88 [0.73, 1.06]
Province	Koshi			1 [ref]
	Madhesh			1.26 [0.94, 1.69]
	Bagmati			0.65*** [0.49, 0.85]
	Gandaki			0.61*** [0.44, 0.85]
	Lumbini			0.54*** [0.40, 0.72]
	Karnali			1.14 [0.85, 1.53]
	Sudurpashchim			0.35*** [0.25, 0.49]
Residence	Urban			1 [ref]
	Rural			1.17* [0.99, 1.39]
Caste	Hill Brahmin/Chhetri			1 [ref]
	Terai/Madheshi			1.21 [0.95, 1.54]
	Dalit			1.14 [0.94, 1.37]
	Janajatis			1.06 [0.91, 1.24]
	Muslim/other			1.35 [0.94, 1.96]
Marital status	In union			1 [ref]
	Never in union			0.95 [0.82, 1.10]
	Formerly in union			1.00 [0.78, 1.28]
Education	None			1.12* [0.98, 1.27]
	Basic			1 [ref]
	Secondary			0.7*** [0.61, 0.80]
	Higher			0.47*** [0.34, 0.67]
Wealth	Poorest			1.84*** [1.52, 2.23]
	Poorer			1.39*** [1.21, 1.58]
	Middle			1 [ref]
	Richer			0.81*** [0.69, 0.95]
	Richest			0.52*** [0.42, 0.65]
De jure household size	1 member			0.88 [0.65, 1.20]
	2 members			0.91 [0.78, 1.07]
	3 members			1.01 [0.89, 1.15]
	4 members			1 [ref]
	5 members			0.94 [0.83, 1.08]
	6 members			0.96 [0.83, 1.11]
	7+ members			0.96 [0.84, 1.11]
Age	15–19			0.89 [0.74, 1.07]
	20–24			0.99 [0.85, 1.14]
	25–29			0.94 [0.79, 1.13]
	30–34			1 [ref]
	35–39			1.02 [0.86, 1.20]
	40–44			1.11 [0.93, 1.32]
	45–49			1.21** [1.00, 1.47]
Self-rated health	Very good			0.52*** [0.37, 0.72]
	Good			1 [ref]
	Moderate			1.23*** [1.08, 1.39]
	Bad/very bad			1.74*** [1.44, 2.10]
Occupation	Employed			1 [ref]
	Agriculture			1.32*** [1.11, 1.57]
	Manual			1.15 [0.91, 1.46]
	Unemployed/other			1.17 [0.97, 1.40]

Note: OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval.
*** $p < .001$; ** $p < .01$; * $p < .05$

Appendix Table 5 Regression analysis of not wanting to go alone being a major problem for treatment

Variable	Category	Not wanting to go alone is a big problem		
		Bivariate OR [95% CI]	Multivariate AOR 1 [95% CI]	Multivariate AOR 2 [95% CI]
Insurance status	Has government insurance	0.61*** [0.53, 0.71]	0.65*** [0.57, 0.75]	0.88* [0.77, 1.01]
	No government insurance	1 [ref]	1 [ref]	1 [ref]
Travel time health facility	0 to 15 minutes		1 [ref]	1 [ref]
	16 to 30 minutes		2.13*** [1.86, 2.45]	1.70*** [1.49, 1.95]
	31 to 60 minutes		3.47*** [2.92, 4.11]	2.74*** [2.29, 3.27]
	Over 1 hour		4.46*** [3.12, 6.38]	3.16*** [2.29, 4.37]
Form of transport to health facility	Motorized		1 [ref]	1 [ref]
	Not motorized		0.91 [0.79, 1.05]	0.81*** [0.71, 0.93]
Province	Koshi			1 [ref]
	Madhesh			1.15 [0.92, 1.44]
	Bagmati			0.75** [0.60, 0.94]
	Gandaki			0.84 [0.64, 1.09]
	Lumbini			0.71*** [0.56, 0.89]
	Karnali			1.25* [0.98, 1.58]
	Sudurpashchim			0.52*** [0.42, 0.65]
Residence	Urban			1 [ref]
	Rural			0.94 [0.83, 1.08]
Caste	Hill Brahmin/Chhetri			1 [ref]
	Terai/Madheshi			1.40*** [1.14, 1.71]
	Dalit			1.18** [1.01, 1.39]
	Janajatis			1.26*** [1.10, 1.44]
	Muslim/other			1.60*** [1.21, 2.11]
Marital status	In union			1 [ref]
	Never in union			1.03 [0.89, 1.19]
	Formerly in union			0.99 [0.79, 1.23]
Education	None			1.20*** [1.06, 1.35]
	Basic			1 [ref]
	Secondary			0.70*** [0.63, 0.78]
	Higher			0.51*** [0.40, 0.65]
Wealth	Poorest			1.33*** [1.14, 1.56]
	Poorer			1.10 [0.97, 1.24]
	Middle			1 [ref]
	Richer			0.81*** [0.70, 0.92]
	Richest			0.76*** [0.63, 0.90]
De jure household size	1 member			0.67** [0.49, 0.91]
	2 members			0.89 [0.76, 1.05]
	3 members			0.93 [0.82, 1.06]
	4 members			1 [ref]
	5 members			0.93 [0.82, 1.05]
	6 members			0.97 [0.84, 1.13]
	7+ members			1.05 [0.90, 1.22]
Age	15–19			1.70*** [1.39, 2.07]
	20–24			1.34*** [1.16, 1.56]
	25–29			1.08 [0.92, 1.26]
	30–34			1 [ref]
	35–39			1.01 [0.87, 1.18]
	40–44			1.12 [0.96, 1.32]
	45–49			1.16* [0.97, 1.38]
Self-rated health	Very good			0.53*** [0.41, 0.69]
	Good			1 [ref]
	Moderate			1.23*** [1.09, 1.38]
	Bad/very bad			1.45*** [1.21, 1.73]
Occupation	Employed			1 [ref]
	Agriculture			1.30*** [1.13, 1.50]
	Manual			1.22** [1.01, 1.47]
	Unemployed/other			1.38*** [1.19, 1.60]

Note: OR = odds ratio; AOR = adjusted odds ratio; CI = confidence interval.
*** $p < .001$; ** $p < .01$; * $p < .05$