

Willingness to Pay for Social Health Insurance Among Teachers at Governmental Schools in Gondar Town, Northwest Ethiopia

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Background: Globally, about 1.3 billion people lack access to effective and affordable healthcare and 150 million people in 44 million households face financial catastrophe. Health insurance schemes are an effective financing mechanism to help people who are unable to use healthcare services. However, the government employee's Willingness to Pay (WTP) for the proposed premium for health insurance were not well investigated.

Methods: A facility-based cross-sectional study was conducted from April to May, 2018 among teachers at governmental schools of Gondar town. The participants were selected using a simple random sampling technique using their payroll list as a sampling frame. Data were cleaned, coded, and entered into EPI-INFO version 7 software and exported to SPSS version 20 for analysis. A *P*-value less than 0.05 and Adjusted Odds Ratio (AOR) with 95% Confidence Interval (CI) were used to identify variables significantly associated with the outcome variable.

Results: Overall, 62.0% of teachers were willing to pay 3% or more of their monthly salary for SHI. In this study, teachers whose monthly salary was more than US\$215.6 (AOR=2.12; 95% CI=1.07–4.17), first degree (AOR=4.44; 95% CI=2.89–6.83), masters (AOR=4.91; 95% CI=1.14–11.09), history of illness in the past 6 months (AOR=2.13; 95% CI=1.37–3.31), not facing difficulty covering medical bills (AOR=0.49; 95% CI=0.35–0.84), heard about SHI (AOR=1.73, 95% CI=1.09–2.73), and favorable attitude towards SHI (AOR=1.82; 95% CI=1.22–2.72) were significantly associated with WTP for the proposed price of the scheme.

Conclusion: The majority of teachers were WTP the proposed amount of premium for the scheme. Factors such as level of education, monthly salary, attitudes, difficulty of covering medical bills, information, and history of illness were significantly associated with WTP for SHI. Therefore, awareness creation (sensitization activities) about SHI and increasing the educational status of the participant could improve WTP.

Keywords: willingness to pay, social health insurance, teachers, Gondar town, Ethiopia

Background

Globally, about 1.3 billion people lack access to effective and affordable healthcare, and annually an additional 150 million people in 44 million households face financial catastrophe.¹ Health insurance is a financial mechanism that allows individuals to protect themselves against the financial cost of illness by pooling risks with others in the population.² Social health insurance is a universal insurance system financed by employee–employer–payroll deductions, and an equity fund from the government can also be created to supplement contributions for those

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whose pooling of resources for healthcare are not formally employed.³ Out-of-pocket spending is the major payment strategy for healthcare in most low- and middle-income countries.⁴ In the last decade low- and middle-income countries have made considerable progress towards the goal of Universal Health Coverage (UHC).^{5,6}

A survey report in Mongolia, Burkina Faso, and Uganda showed that about 5.5, 15, and 2.6% of households had been suffering from catastrophic health expenditures, respectively.⁷ At the micro-level, the total economic cost of illness for a family unit is estimated to be frequently above 10% of the household income.⁸

The Ethiopian healthcare financing system highly depends upon out of pocket expenditure as a result of the absence of advanced methods to raise healthcare funds.⁹ The fifth national health account report of Ethiopia indicated that high household out of pocket health expenditure and low spending of government to healthcare could hamper poor households to access health services and put them at risk of impoverishment.¹⁰ In order to reduce the over-dependence and direct payment, the governments should organize the way that the prepayment mechanism for the health services is rendered. The most common way of a prepayment mechanism is one that pools risk across the population through health insurance.¹¹ Social Health Insurance (SHI) is one of several ways used to raise and pool funds for health financing.¹² The principle of SHI is one of the most popular in developing countries and one of the main options for achieving UHC.¹³ SHI is a mandatory type health insurance designed for civil servants who are working at formal sectors and payed through a payroll based system. It is financed by individuals and employers contributions.^{14,15} For the SHI scheme, many preparatory activities such as legislation, regulations, and draft packages were formulated.^{16,17} Following the legal frameworks, the health insurance agency was established in the Ministry of Health, and SHI was planned to be launched in July 2011,¹⁸ which was moved to 2014.¹⁹ Lack of sufficient information on demand and supply side implementation issues, limited management capacity, and low quality of services were among the challenges in the setup of the scheme.^{18,20} The original draft for the SHI strategy proposed a typical SHI package with a 3% of salary premium, with an exclusion for dialysis and dental care (except root canal) and services jointly provided by public and selected private providers.²¹

Studies indicate that 30% of households in South Africa,²² 90% of households in Ghana,²³ and 87% of the

uninsured respondents in Namibia,²⁴ were willing to pay for health insurance schemes. In Ethiopia, studies indicate that 69.8% of civil servants in Debre Markos²⁵ and 71.3% of teachers in Wolaita Sodo¹⁶ are willing to pay the proposed premium (3% of their salary) for SHI. Evidence shows that sociodemographic and economic, health and health-related awareness, knowledge, and attitude towards health insurance schemes determine the acceptance of SHI.^{16–21,24} Healthcare costs and out of pocket payment are very high in Ethiopia. Accordingly, SHI is one of the strategies to reduce OOP healthcare costs in Ethiopia. However, WTP for the proposed SHI was not well studied in the country, particularly in the study area. Therefore, this study aimed at assessing the WTP for SHI and associated factors among teachers in governmental schools in Gondar town, Northwest Ethiopia.

Methods and Materials

Study Design and Settings

An institution-based cross-sectional study design was conducted among teachers working in governmental schools of Gondar town from April to May 2018. The study was conducted in Gondar town which is one of the Multi-Politian towns in Amhara National Regional State in Northwest Ethiopia. Gondar town is found in the Northwest part of Ethiopia and it is 180 and 748 km from Bahir Dar (capital city of Amhara region) and Addis Ababa, respectively. Based on the 2007 Central Statics Agency (CSA) report of Ethiopia, the town had a total population of 400,000. From these, 198,120 are males and 201,880 are females.²⁶ The town had 23 kebeles and 48 health institutions. These are one comprehensive referral hospital, eight health centers, one private general hospital, 15 specialty clinics, 15 medium clinics, and eight primary clinics. The town also had 44 primary, six secondary, and five preparatory schools.

Population and Sampling Procedure

All teachers in Governmental schools in Gondar town were the source population. The study population were also all teachers in the selected governmental schools in Gondar town. Furthermore, all teachers who were served 6 months and above in the governmental schools of the town were included in the study, whereas those teachers who were absent during data collection were excluded from the study.

The sample size for the first objective was calculated using the single population proportion formula with an assumption of the proportion of teachers WTP for the newly proposed SHI among teachers in Wolayita Sodo (53%),¹⁶ 5% marginal error (d), 95% level of confidence, 1.5 design effect and 5% non-response rate. As a result, the final sample size for the first objective was 603. Accordingly, the sample size for the second objective was calculated using a double population proportion formula using significant variables in previously conducted research in Wolayita Sodo, such as marital status, educational status, and heard about SHI¹⁶ and using an assumption of 95% level of confidence, 80% power, 1.5 design effect, and 5% non-response rate. The sample sizes for the second objective were 155, 164, and 230, respectively. These were less than that of the sample size for the first objective. Therefore, the final sample size was 603. Following sample size determination, the schools were stratified based on their levels as primary, secondary, and preparatory schools. The sample was proportionally allocated based on the number of teachers working in these schools. Finally, a simple random sampling technique was used to select the participants.

Measurements and Variables

Willingness to pay for SHI was the amount of premium (percentage of salary) which teachers were willing to pay for the scheme. Contingent Valuation Method (CVM) with double bounded dichotomous choice elicitation method was used to measure respondents' WTP for SHI with an initial bid of 3% of their monthly salary and participants who were willing to pay 3% or more of their monthly salary were considered as willing to pay for SHI. Knowledge of participants about the SHI scheme was measured by ten item questions each containing (1=yes and 0=no) alternatives and those who had scored 60% or more of the total knowledge measuring score was considered as having good knowledge. Similarly, attitude towards SHI was also measured by six item questions each containing a five-point Likert Scale and those who scored 60% of the total attitude measuring score were considered as having a favorable attitude towards SHI. Additionally, the wealth status of participants was classified as low, middle, or high using principal component analysis.

Data Collection Tools and Procedures

A semi-structured self-administered questionnaire was used by reviewing different literature.^{16,25,27} The questionnaire had socio-demographic, economic status, health status, knowledge and attitude, and willingness to pay the

scheme items. The questionnaire was prepared in English and then translated to Amharic and finally back to English by language experte to ensure consistency. Four diploma and two BSc degree graduated clinical nurses and health officers for data collectors and supervisors were recruited, respectively. One day of training was given for data collectors and supervisors. A pre-test was conducted among 30 teachers who were working at Debarq town and some modification was made based on the pretest findings.

Data Management and Analysis

Data were entered and analyzed by using Epi Info version 7.2.1 and Statistical Package for Social Sciences (SPSS) version 20, respectively. Descriptive statistics such as percentage, frequency, mean, median, and standard deviation were presented using graphs and tables. A binary logistic regression model was fitted. Variables having a *p*-value of less than 0.2 during bi-variable logistic regression were entered in multiple logistic regression analysis. Finally, a *p*-value of less than 0.05 and an Adjusted Odds Ratio (AOR) with 95% CI were used to declare factors associated with the outcome variable. Hosmer-Lemeshow goodness-of-fit test was done to check model fitness. Principal Component Analysis (PCA) was done for reduction of the factors that we used for measuring wealth status.

Results

Socio-Economic and Demographic Characteristics

A total of 574 teachers participated in the study with a response rate of 95.2%. About 54.4% of participants were males and 93% were Amhara. Furthermore, 81.9% and 66.9% were orthodox Christians and married, respectively. The mean age of respondents was 26±9.2 (SD) years. Additionally, 21.8% of teachers had a monthly salary of more than US\$215.6 and 34% of the respondents were classified as having high wealth status (Table 1).

Knowledge and Attitude Towards SHI

About 46% of participants had good perceived health status and 16% of respondents had chronic medical illness such as diabetes mellitus, hypertension, asthma, renal disease, liver disease, cardiac disease, and epilepsy. Thirty-five percent of teachers had a history of at least one episode of illness in the past 6 months, and 93.5% of them had got treatment. One-third (33.6%) of participants ever had faced difficulty of covering medical bills. More than eighty-five percent (87.3%) of

Table 1 Socio-Demographic Characteristics of Teachers in Governmental School at Gondar Town in Northwest Ethiopia, 2018 (N= 574)

Variables	Category	Frequency	%
Sex	Male	312	54.4
	Female	262	45.6
Age in years	<30	44	7.7
	30–39	256	44.6
	40–49	145	25.3
	≥50	129	22.4
Types of school	Primary	325	56.6
	Secondary	143	24.9
	Preparatory	106	18.5
Religion	Orthodox	470	81.9
	Muslim	79	13.8
	Protestant	25	4.3
Current marital status	Married	384	66.9
	Single	119	20.7
	Divorced	53	9.2
	Widowed	18	3.1
Family size	<5	201	35.0
	≥5	373	65.0
Under 5 Children	Yes	227	39.5
	No	347	60.5
>64 years in household	Yes	36	6.5
	No	538	95.3
Educational status	Diploma	236	41
	Degree	324	56.4
	Master	14	2.4
Experiences in years	≤5	52	9.1
	6–10	102	17.8
	≥11	420	73.2
Monthly salary (US\$)	<166.5	162	28.2
	166.5–215.6	287	50.0
	>215.6	125	21.8
Wealth status	Low	192	33.4
	Middle	187	32.6
	High	195	34.0

teachers had heard about SHI and for more than half (53.4%) of the participants their source of information was mass media. All respondents had no form of health insurance previously. Nearly sixty percent (59.4%) and 42.3% of respondents had good knowledge and favorable attitude towards SHI, respectively. Nearly half (49.3%) of the participants had good perceived quality of healthcare services (Table 2).

Table 2 Knowledge, Attitude Towards SHI, and Health-Related Characteristics of Teachers at Governmental Schools of Gondar Town in Northwest Ethiopia, 2018 (n=574)

Variables	Category	Frequency	%
Perceived health status	Poor	118	20.6
	Fair	192	33.4
	Good	264	46.0
History of chronic illness	Yes	92	16.0
	No	482	84.0
History of illness in the past 6 months	Yes	345	60.1
	No	229	39.9
Treated	Yes	224	59.4
	No	153	40.6
Where were you treated?	Government	117	49.8
	Private	112	47.7
	Others	6	2.6
Methods of payment for medical cost	Out of pocket	212	90.6
	Borrowed	18	7.7
	Free	4	1.7
Difficulty of covering medical bills	Yes	193	33.6
	No	381	66.4
Attitude towards SHI	Favorable	243	42.3
	Unfavorable	331	57.7
Knowledge on SHI	Good	341	59.4
	Poor	233	40.6
Heard about SHI	Yes	501	87.3
	No	73	12.7
Source of information (n=501)	Mass media	268	53.4
	Friends/Colleagues	98	19.6
	Healthcare providers	87	17.4
	Others	60	12.0

Willingness to Pay for SHI

Sixty-two percent (95% CI=57.5–65.6) of teachers were willing to pay the proposed ≥3% of their monthly salary for the SHI scheme. Feelings of being healthy (31.7%) and unable to pay (15.1%) were some of the main reasons for unwillingness to pay for the scheme (Table 3).

Factors Associated with WTP for SHI

The results of this study showed that teachers who earned a monthly salary of USD>215.6 were 2.12-times

Table 3 WTP for SHI ($\geq 3\%$ of Monthly Salary) Among Teachers in Governmental Schools at Gondar Town in Northwest Ethiopia, 2018 (n=574)

Variables	Frequency	%
WTP for SHI (3% or more)		
Yes	356	62.0
No	218	38.0
Reasons for not willing to pay (n=218)		
Feeling of being healthy	69	31.7
Low perception of quality of healthcare services	67	30.7
Unable to pay the premium	33	15.1
Inadequate benefit package	32	14.7
Prefer out of pocket	17	7.8

(AOR=2.12; 95% CI=1.07–4.17) more likely WTP for SHI compared with those who earned US\$<166.5 per month. Teachers who had a first degree were 4.44-times (AOR=4.44; 95% CI=2.89–6.83) and masters were 4.91-times (AOR=4.91; 95% CI=1.14–11.09) more likely WTP for the scheme as compared to diploma holders. Participants who had a history of illness in the past 6 months were 2.13-times (AOR=2.13; 95% CI=1.37–3.31) more likely WTP for SHI than their counterparts. Respondents who had no history of difficulty for covering medical bills were less likely willing to pay for the scheme by 51% (AOR=0.49; 95% CI=0.35–0.84) compared with those who had faced difficulty of covering medical bills. Participants who had ever heard about SHI were 1.73-times (AOR=1.73; 95% CI=1.09–2.73) more likely willing to pay for SHI than their counterparts. Teachers who had a favorable attitude towards SHI were 1.82-times (AOR=1.82; 95% CI=1.22–2.72) more likely willing to pay compared with those who had an unfavorable attitude (Table 4).

Discussion

The Health Care Financing (HCF) strategy named two generations of general healthcare reforms. These are: supply side issues (improvement of the availability and quality of services), and introduction of different health insurance schemes (SHI for formal and CBHI for informal sectors).²⁸

This study revealed that about 62.0% (95% CI=57.5–65.6) of participants were willing to pay the proposed price of the scheme. This finding was lower than the studies done in Wolayta Sodo (53%),¹⁶ and Debre-

Markos (68.9%),²⁹ Nigeria (83.9%),³⁰ and Ghana (90%).²³ However, this finding was greater than the study done in Paulo's hospital, Addis Ababa (53%).²⁵ This might be due to the variation in study settings and because of information dissemination, accessibility, and burden of medical bills when seeking healthcare services. The possible explanation may be there is still a misconception in the willingness to pay about SHI. The possible reason might be difference in study areas, awareness, socioeconomic characteristics, wealth status, insurance experiences of study participants, and study population differences.

In this study, teachers who had earned a monthly salary of USD>215.6 were 2.12-times more likely WTP for SHI compared with those who earned USD<166.5 per month. This result is consistent with a study conducted in Bangladesh.³¹ This could be due to their ability to afford the health insurance premium. Teachers who had a first degree or masters were 4.44- and 4.91- times more likely WTP for the scheme, respectively, compared with diploma holders. This finding was in line with studies done in Bangladesh,³¹ North-Central Nigeria,⁸ and Wolayta Sodo.¹⁶ This might be due to the fact that people with higher education were more confident and trusting in a new system that could be attributed to accept the scheme positively. Furthermore, they might also have better knowledge about the benefits of making regular small health insurance payments to avoid the risk of catastrophic medical expenditures at the time of ill health.

Teachers who had a favorable attitude towards SHI were WTP for SHI scheme compared with their counterparts. This finding was consistent with a study conducted in Nigeria.³² This might be due to having a good attitude which will enhance individuals' preference to choose and use the SHI scheme. Participants who had ever heard about SHI were more WTP for SHI than their counterparts. This result was in line with the findings in Wolayta Sodo.¹⁶ The possible justification might be due to information dissemination about the program among beneficiaries which will improve the individuals' decision because of the advocacy of the government about the social health insurance scheme.

Respondents who had no history of difficulty for covering medical bills were less likely WTP for the scheme compared with those who had faced difficulty of covering medical bills. This result was consistent with a study conducted in China.²⁷ The possible explanation might be employees from the public sector are not assisted in

Table 4 Factors Associated with WTP for SHI Among Teachers in Governmental Schools at Gondar Town, Northwest Ethiopia, 2018 (n= 574)

Variables	WTP to SHI		COR (95% CI)	AOR (95% CI)
	Yes	No		
Level of education				
Diploma	91	145	1	1
Degree	254	70	5.78 (3.98–8.39)	4.44 (2.89–6.83)*
Master	11	3	5.84 (1.58–13.50)	4.91 (1.14–11.09)*
Monthly salary (US\$)				
<166.5	66	96	1	1
166.5–215.6	191	96	2.89 (1.94–4.31)	1.50 (0.94–2.40)
>215.6	99	26	5.54 (3.25–9.44)	2.12 (1.07–4.17)*
Family size				
≤5	106	95	0.55 (0.34–0.90)	0.74 (0.42–1.31)
>5	250	123	1	1
Heard about SHI				
Yes	320	181	1.82 (1.43–3.14)	1.73 (1.09–2.73)*
No	36	37	1	1
Difficulty of covering medical bills				
Yes	137	56	1	1
No	219	162	0.55 (0.38–0.80)	0.49 (0.35–0.84)*
Sex				
Male	204	108	1	1
Female	152	110	0.73 (0.52–1.03)	0.99 (0.67–1.48)
Attitude towards SHI				
Favorable	163	80	1.46 (1.31–2.89)	1.82 (1.22–2.72)*
Unfavorable	193	138	1	1
Hx of illness in the last 6 months				
Yes	228	117	1.54 (1.12–2.23)	2.13 (1.37–3.31)*
No	128	101	1	1
History of chronic illness				
Yes	42	50	0.45 (0.23–1.49)	0.66 (0.97–3.86)
No	314	168	1	1

Note: *Significant at P -value<0.05.

organizing their healthcare. Consequently, they use the out-of-pocket payment system to cover their health bills. At last, participants who had a history of illness in the past 6 months were 2-times more likely WTP for SHI than their counterparts. This study finding was consistent with willingness to pay for health insurance technology in Ethiopia.³³ This could be due to the fact that people with poor health and chronic illness have greater perceived risk of care seeking and then a strong need to pay the SHI scheme. The limitation of this study was the possibility of bias (hypothetical bias) related to the contingent valuation method. The strength of this study is the assessment of

perception of teachers for this newly proposed SHI is before its implementation is suggestive for changing the strategy into action.

Conclusion

The majority of teachers were willing to pay the proposed amount of premium. Factors such as level of education, monthly salary, attitudes towards SHI, difficulty of covering medical bills, heard about SHI, and history of illness in the past 6 months were significantly associated with teachers' willingness to pay for social health insurance. Therefore, awareness creations (sensitization activities) about SHI scheme,

enhancing educational status and promotion on attitudinal changes might need to improve their willingness to pay on SHI.

Abbreviations

CBHI, Community Based Health Insurance; CI, Confidence Interval; CVM, Contingent Valuation Method; ETB, Ethiopian Birr; GDP, Gross Domestic Product; OOP, Out-Of-Pocket; SPSS, Statistical Package for Social Science; SHI, Social Health Insurance; WTP, Willingness to Pay.

Data Sharing Statement

All the data supporting the findings are within the manuscript. Additional detailed information and raw data are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate

This study was conducted in accordance with the Declaration of Helsinki. Ethical clearance was obtained from the Ethical Review Committee of Institute of Public Health, College of Medicine and Health Sciences, University of Gondar. Written informed consent was taken from each participant. Moreover, verbal informed consent was obtained from those participants who could not read and write, approved by the ethical committee. Each eligible participant was informed about the purpose of the study. Participants were also assured that their name was not written on the questionnaire and confidentiality was kept at all levels.

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Author Contributions

All authors made substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval

of the version to be published; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that there are no conflicts of interest in this work.

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