

# Teachers' willingness to pay for social health insurance and its determinant factors at Harar region, Ethiopia, 2021

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## Research Article

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# Abstract

## Background

Most developing countries are characterized by low health cost protection system for the poor and lack of risk pooling and cost sharing methods. This study aims to assess the participants' willingness to pay for social health insurance.

## Methods

Cross-sectional study was conducted. Stratified and simple random sampling techniques were used to select schools and teachers respectively. Data were collected from 323 participants. Multivariate logistic regressions was done to determine the determinants of willingness to pay for social health insurance.

## Results

About 59.2% and 54% of teachers had positive attitude and good knowledge toward health insurance respectively. Of all, 89.5% had willingness to pay for social health insurance. Willingness to pay was more likely among those taught in primary school AOR = 1.85, 95%CI= [1.023, 3.45] and those had good knowledge AOR = 2.785, 95CI= [1.509, 5.142]

## Conclusion

Near to three-fourths of the teachers had willingness to pay for social health insurance.

## Introduction

At least half of the world's population still do not have optimum coverage of essential health services [1]. A survey from 89 countries suggested that an estimated 150 million people suffer financial catastrophes due to out-of-pocket payment (OOP) for health service [2]. In 2019, the WHO reported that an estimated of 930 million people ,around 12% of the world's population spend at least 10% of their household budgets to pay for health care[1]. Catastrophic spending for healthcare, defined as "paying more than 40% of household income directly for health care after basic needs have been met." Even though it occurs in all countries at all income levels, it is greatest in those that rely most on direct payments to raise funds for health care[2].

In most low income countries where governments expenditure on health is low, 85% of the cost for healthcare is covered by out-of-pocket payment[3]. The removal of user fees aims to reduce financial barriers and health financing through risk pooling mechanisms [4], and giving special attention to the poor, promotes universal health coverage and equity [5]. The implication of health financing through risk

pooling mechanisms is that the healthy will pay for some or all of the health care services and if the mechanism advances, they will pay for the services used by the poor[6]. Health insurance reduces catastrophic health spending, improves access and use of health care, which ultimately improves health outcomes[7].

The Ethiopian health system is characterized by extreme under financing, low protection mechanisms for the poor, and underfinancing ways of risk pooling and cost sharing; all of which result in inequality in access to healthcare. Data from trends reported by the World Bank showed that Ethiopia remained one of the highest, 78% from 1995 to 2014 with no improvement between those years. For many households in Ethiopia, a small OOP can result in financial catastrophes[8]. A steady drip of medical bills forces people with chronic diseases or disabilities into poverty[9, 10]. Since the Ethiopian parliament ratified health insurance in 2011, the government has struggled to start compulsory social health insurance and community-based health insurance for the formal and informal sectors, respectively. The implementation of all forms of health insurance systems in Ethiopia is at the earliest stages of development. In general, health insurance has been nearly non-existent in Ethiopia[11].

Recently, the Ethiopian government has planned to implement social health insurance (SHI) among employees in the formal sector. This health insurance is planned to provide health insurance for employees of the formal sector and their families. Active employees are expected to pay a monthly premium of 3%, while retired people are required to pay 1% of their monthly salary[12, 13].

However, little is known about willingness to pay (WTP) for social health insurance (SHI). On the other hand, whether an individual demands SHI and is willing to pay for it depends on the perceived difference between the level of expected utility with insurance and expected utility without insurance[14, 15]. Despite Ethiopia's Ministry of Health's plan to fully implement SHI by 2014[16], it has been repeatedly postponed, largely due to strong resistance from public servants. Hence, this study was conducted to explore public servants' WTP and factors contributing to resistance to social health insurance. The Ethiopian healthcare system is largely reliant on out-of-pocket spending, exposing many households to financial hardship and causing them to give up seeking healthcare, especially in rural areas of the country. This poor health care financing slows down health improvements in access and utilization of essential health services among the poor and rural communities[17]. For example, in 2014/2015 the government and other public enterprises provided 31% of the financing, donors and non-government organizations provided 37%, households provided 31%, and other private employers and funds about 1%[13, 18]. The current study focused on employed teachers' WTP. Understanding the views of teachers is important because of their influence in society. Therefore, this study was aimed at determining the willingness to pay for SHI and its associated factors among teachers in the Harar region, Eastern Ethiopia.

## **Materials And Methods**

### **Study area and study period**

This study was conducted in Harar city Eastern Ethiopia, from December to January 2021. Harar is a city located in Eastern Ethiopia, 526 km from Addis Abeba, the capital city of the country. Harar city has nine woreda and 19 kebeles, while the rural part of the state has 17 rural kebeds. The state's size is estimated to be 340 km<sup>2</sup>. Based on 2019's population projection from the 2007 Census conducted by the central statistics agency, the Harar National Regional States' (HNRS) total population was found to be 257,000 and the region has a total of 321 schools with 2693 teachers. According to data from Harar City, there are 27 governmental and 34 non-governmental schools with 1065 and 421 teachers, respectively. From these, 46 are primary and 15 are secondary schools, with 1024 and 462 teachers, respectively.

## Study design

An institutional based cross-sectional study design was conducted

## Sample size determination

The number of teachers who participated in the study was determined by using a single population proportion formula with the following assumptions. According to study done among public servants in Mekelle city in 2017, Northern Ethiopia n=384, 328(85.3%) were willing to pay the proposed social health insurance scheme[19]. Proportion of teachers willing to pay for SHI= 85.3% (p=0.85)[19] and 95% confidence interval ( $Z_{\alpha/2} = 1.96$ ), Margin of error (d=0.05), Sample size was estimated by the formula=

$$(z_{\alpha/2})^2 \frac{p(1-p)}{d^2}, n = (1.96)^2 \frac{0.85(1-0.85)}{(0.05)^2} = 195,$$
 by adding 10% for potential non-response, the final sample size became 215. By considering 1.5 design effect, the final sample size became 323 participants.

In this study, a stratified sampling method was applied to select primary and secondary governmental and non- governmental schools. The total number of primary and secondary teachers were 1024 and 462 in both government and private respectively. Probability proportional to size was used for the possible allocation of all teachers. First, primary and secondary governmental and non- governmental teachers were divided into 4 strata. Then a simple random sampling technique was used to select both government and private schools. Then calculated sample size was proportionally allocated to each stratum. A Simple random sampling method was applied to get 323 teachers.

## Outcome variable

Willingness to pay (WTP) for Social health insurance

## Independent variable

**Socio-demographic factors:** Age, educational status, family size, Professional status, marital status

**Socio-economic factors:** monthly salary and house belongings

Health and health-related factors: the health status of household members, the accessibility of health care facilities, the perceived quality of health care, the presence of chronic disease in household members, and medical bills. Knowledge of SHI, membership in a social organization, exposure to a source of credit, premium affordability, and the teachers' trustworthiness in system management attitude are all SHI-related factors.

### **Data collection Procedure**

Three data collectors with qualification diplomas were recruited from outside of the study area. The data collection team had reached the study area and submitted a support letter to Harar town health bureau. After receiving support letters from the Harar city health department, data collectors moved to assigned schools. After permission was obtained from the directors of each school, a data collection process was started immediately by using self-administered structured questionnaires. The questionnaire was developed after extensive revision of different literatures. The questionnaire consisted of socio-demographic characteristics, socio-economic factors, health and health-related factors, knowledge of participants, attitudes toward social health insurance, organizational factors, and questions related to willingness to pay for the social health insurance of the teachers.

### **Data quality Assurance**

One-day training was given to data collectors concerning overall purpose, goal, objectives, content, tools, pretest way of approach to reduce non-response rate and to increase the quality of data. To ensure adherence to data collection protocols and increase the validity of data collection techniques, supervisors and a research team reviewed the collected data at the end of the data collection day for completeness. Based on the findings from pretest, necessary tools' amendments were made to data collection tools. The data collection process and daily performance were followed. Any problems encountered during data collection were checked overnight and planned for the next day to solve them. On each morning of data collection day, supervisors and data collectors communicated on how to proceed and solve problems encountered for the next day

### **Data analysis and procedure.**

Data were entered into Epi data version 4.6.0.6 and were exported to SPSS version 25 for analysis. Descriptive data were analyzed and presented using frequency, percentage, summary measures, charts and tables. Bivariate analysis was done to identify candidate variables for multivariate variables. The variables with a p-value of less than 0.25 were taken as candidates for multivariate analysis. Finally, multivariate analysis was done and variables with a p-value of less than 0.05 were taken as significantly associated with WTP. Participants who answered more than or equal to mean were suggested to have good knowledge of SHI, whereas those who answered less than mean were suggested to know it poorly. Participants' attitudes had two categories; positive attitudes above certain categories and negative attitudes below that point. This point was calculated by a demarcation threshold formula,  $\left[ \frac{\text{total highest score} - \text{total lowest score}}{2} + \text{total lowest score} \right]$  [20].

## **Ethical consideration**

Ethical clearance was obtained from the Institutional Review Board of Haramaya University. College of health and medical science. To ensure voluntary participation of each participant, oral informed consent was obtained from each participant. Furthermore, the confidentiality of the data was guaranteed by using a code which is non-identifier and also the data were maintained in a safe and protected place.

## **Result**

### **Socio-demographic characteristics**

Of the 323 study participants, 272 of the teachers completely filled in the questioners, making a response rate of 84.2%. Out of these, 186 (68.4%) and 86 (31.6%) were from primary and secondary level schools, respectively. One hundred forty-five (53.3%) of the teachers were males. On the other hand, 61.8% of the study participants had bachelor's degrees. The median age was 34 (SD  $\pm$ 9.5) years. One hundred and sixty-five (60.3%) were married, followed by unmarried with 118 (36%) Table 1)

Table 1:- Socio-demographic characteristics of teachers in government and private school of Harar city, Eastern Ethiopia, 2021 (N=272).

Characteristics	Responses	Number	Percent (%)
School level	Primary	186	68.4
	Secondary	86	31.6
School Owner	Private	92	33.8
	Governmental	180	66.2
Sex	Male	145	53.3
	Female	127	46.7
Religion	Orthodox	156	57.4
	Muslim	46	16.9
	Protestant	43	15.8
	Others	27	9.9
Marital status	Single	79	29.0
	Married	164	60.3
	others	29	10.7
Level of education	Diploma	87	32.0
	Degree	168	61.8
	Masters	17	6.3
Age	20-29	77	28.3
	30-44	144	52.9
	Greater or equal to 45	51	18.8
Family size	Low	194	71.3
	Medium	76	27.9
	High	2	.7

### Socio-economic and health related factors

The majority of the study participants felt that their health status was very good and 87.1% of the study participants did not have chronic illness. On the other hand, 40.8% of them seek health care whenever needed from government health facilities. From the total faced illness in the past six months, 63(23.2%), 85.7 % pay OOP for treatment (Table 2).

Table 2: Health and socio-economic characteristics of teachers in government and private school of Harar city, Eastern Ethiopia 2021 (N=272)

Characteristic	Response	Number	Percent (%)
Current health status	Very good	134	49.3
	good	121	44.5
	Fair	12	4.4
	Poor	5	1.8
Have living house	yes	65	23.9
	no	207	76.1
Do you have chronic disease	yes	35	12.9
	no	237	87.1
Where do you go for treatment whenever you faced illness	Government hospital	111	40.8
	Private clinic	73	26.8
	Traditional healer	61	22.4
	Religious	27	9.9
Faced illness in the last six month	yes	63	23.2
	no	209	76.8
Means of payment of those faced illness	free	3	4.8
	Out of pocket	54	85.7
	Borrowed	3	4.8
	Others	3	4.8

## Knowledge and Attitudes of Participants towards SHI

The majority of the study participants, 209 (76.8%), had heard about SHI schemes. Their sources of information were television 186 (89.0%); radio 130(62.2%) and the least was conference 17(8.1%) respectively. All of the study participants had no SHI coverage despite the majority of 147(54%) having a good knowledge of SHI (Table 3).

Table3: Teachers' Knowledge on social health insurance at Harar government and private schools, Easter Ethiopia January 2021 (N=209).

characteristic		Response	Number	Percent
Do you know about SHI? IF yes from where have you get it?	yes	Television	186	89%
		Radio	130	62.2
		News paper	48	23
		Internet	48	23
		Health workers	62	29.7
		Friends	62	29.7
	Insurance agents	39	18.7	
	No	63		23.2
Is SHI important?	Yes		0	0
	No		272	100
Is SHI is part of health care system?	Yes		83	30.5
	No		189	69.5
Can SHI reduces cost catastrophe?	Yes		65	23.9
	No		207	76.1
SHI limits the rise in the cost of heath	Yes		186	68.4
	No		86	31.6
SHI ensure equitable distribution of health cost?	Yes		205	75.4
	No		67	24.6
Do you know health care packages can covered by SHI?	Yes		97	35.7
	No		175	64.3
Do you know care service that may not covered by SHI?	Yes		71	26.1
	No		201	73.9
Do you know the premium (%) proposed?	Yes		44	16.2
	No		228	83.8
Over all knowledge	Poor knowledge		125	46
	Good knowledge		147	54

## Assessment of teachers' attitude toward SHI

Most of the teachers, 163(59.9%), agree that the introduction of SHI should be appreciated. However, 36.8% of teachers responded that they were neutral on budget allocations for health. On the other hand, most 136(50%), of those agreed that SHI can reduce cost burden, promote equity, teachers can benefit from SHI and they also agree that teachers can also benefit from SHI. Fifty-nine percent of the teachers had a positive attitude (Table 4)

Table 4: Teachers attitude on social health insurance at government and private schools of Harar, Easter Ethiopia 2021 (N=209).

Characteristic	Response	Number	Present
Budget should allocated for health	Strongly agree	15	5.5
	Agree	62	22.8
	Neutral	100	36.8
	Disagree	89	32.7
	Strongly disagree	6	2.2
Introduction of SHI is appreciable	Strongly agree	71	26.1
	Agree	163	59.9
	Neutral	25	9.2
	Disagree	9	3.3
	Strongly disagree	4	1.5
SHI can reduces cost burden	Strongly agree	54	19.9
	Agree	136	50
	Neutral	51	18.8
	Disagree	25	9.2
	Strongly disagree	6	2.2
SHI can promote equity	Strongly agree	47	17.3
	Agree	139	51.1
	Neutral	56	20.6
	Disagree	23	8.5
Teachers can benefit from SHI	Strongly agree	45	16.5
	Agree	136	50
	Neutral	59	21.7
	Disagree	27	9.9
	Strongly disagree	5	1.8
SHI can redistribute health care cost from sick to healthy one	Strongly agree	32	11.8
	Agree	147	54
	Neutral	64	23.5
	Disagree	21	7.7

	Strongly disagree	8	2.9
Teachers should be necessarily included in to SHI coverage.	Strongly agree	40	14.7
	Agree	117	43
	Neutral	49	18
	Disagree	57	21
	Strongly disagree	9	3.3
I have confidence on the implementation of SHI	Strongly agree	34	12.5
	Agree	121	44.5
	Neutral	73	26.8
	Disagree	36	13.2
	Strongly disagree	8	2.9
Over all attitude	Positive attitude	161	59.2
	Negative attitude	111	40.8

## Willingness to pay for social health insurance

One hundred eighty-nine (69.5%) of teachers had a willingness to pay for the proposed social health insurance scheme. Of these, 126 (66.7%) had a willingness to pay 3% while the rest were unwilling to pay. From those unwillingness to pay 3%, 39.7% of them had a willingness to pay 2% of their monthly salary. Of those who had willingness to pay 3%, 48.8%, 42.6%, 42.6% and 14.7% of the teachers responded that they would pay a maximum of 4%, 5% and 6% respectively (Figure 2)

From those had unwillingness to pay, 83(30.5%), 9.6% of the respondents were due to their perception on the quality of service provided followed by lack of confidence in institution (5.10%) and government responsibility (5.10%)( Figure 3)

## Predictors of willingness to pay for SHI

From total variables entered to multivariate, level of schools, teachers' knowledge, marital status and attitude were significantly associated with WTP to SHI. Teachers being from primary schools, were 1.850

times more likely to pay for SHI (AOR=1.850, 95%CI [1.023,3.45].On the other hand, teachers who had good knowledge were 2.785 times more likely to pay for social health insurance as compared to those with poor knowledge (AOR= 2.785,95%CI =1.509 to 5.142).The teachers who had bad attitude were 0.284 times less likely to pay for SHI(AOR 0.284,95%CI= 0.156 to 0.517)(Table 5)

Table 5: Determinants of willingness to pay for social health insurance at government and private schools of Harar region , Easter Ethiopia , 2021 (N=209).

Variables	WTP for SHI		AOR	95%CI	p-value
	Yes	No			
School level					
Primary	122	64	1.850	[1.023,3.45]	0.042*
Secondary	67	19	1	1	1
knowledge					
Poor knowledge	68	57	1	1	1
Good knowledge	121	26	2.785	[1.509,5.142]	0.001**
Attitude					
Negative attitude	58	53	0.285	[0.156,0.517]	0.000**
Positive attitude	131	30	0.284	1	1
Marital status					
Single	52	27	0.345	[0.109,0.904]	0.021*
Married	114	50	0.561	[0.194,1.619]	0.194
Others	23	6	1	1	1
Educational level					
Diploma	54	33	0.387	[0.097,1.552]	0.180
Degree	122	46	0.668	[0.176,2.528]	0.552
Masters	13	4	1	1	1
Current health status					
Very good	89	45	1.034	[0.044,24.341]	0.984
Good	85	36	0.461	[0.043,4.963]	0.523
Fair	11	1	0.349	[0.032,3.757]	0.385
Poor	4	1	1	1	1
perception on quality service					
Low	64	23	2.956	[0.697, 9.661]	0.155
Medium	116	54			
High	9	6	1	1	1

\*Statistically significant variables (p<0.05), \*\* statistically significant variables (p<0.01)

## Discussion

This study aimed to assess the willingness to pay for social health insurance and associated factors among teachers in Eastern Ethiopia. The study revealed that near to three fourths of the respondents were willing to pay for SHI, which is lower than a study reported from Mekelle City, Ethiopia[19]. The difference may be possibly due to the difference in respondents' rate and sample size. In the current study, the respondent rate was 84% while in Mekelle City the rate was about 99.2%[19].

In the current study, more than three fourths of teachers had heard of the health insurance scheme, which is higher as compared to studies done in other parts of Ethiopia [21]. On the other hand, respondents in this study had better knowledge regarding SHI as compared to qualitative study conducted in Addis Ababa where little knowledge of participants was reported [22]. This may lead to high participation in SHI, which in turn contributes to a reduction in catastrophic costs for health. However, the participants in this study had no previous exposure to the insurance scheme and perceived benefit from it, while near to half of the study participants in Nigeria demanded to be enrolled in the insurance scheme[23].

Among those who had a willingness to pay 3%, near to half of them were ready to contribute greater than or equals to 4% of their monthly salary as a monthly premium. This greater than the study done in Northwest Ethiopia where nearly three percent of the study participants had willingness to pay [23]. The inconsistency may be due to the difference in awareness and attitude of study participants between the study settings. It was found that near to eight in ten of the respondents used out-of-pocket financing to cover their medical bills. This is in line with studies conducted on similar in southern Ethiopia [21]. The possible explanation for this may be due to the fact that the Ethiopian health financing system has been from out of pocket payment throughout the country. However, the magnitude of those paid from out of their pocket was higher than studies done in Nigeria[23]. The possible explanation might be employees from the public sector of Ethiopia are not used any insurance for their health care. Consequently, they may prone to expensive out-of-pocket payment system to cover their health bills.

Respondents from primary level schools were more likely to be willing to pay than those from secondary level, which is more comparable with the findings from China[24]. This might be due to the fact that people from secondary schools may have relatively higher confidence in covering the cost of health from their pockets than those at primary level. Participants with good knowledge had more WTP for SHI than the others. On the other hand, teachers with positive attitudes were more likely for WTP than those with different attitudes. However, single (unmarried) participants were less likely to pay for SHI.

## Conclusion

The current study revealed that near to three fourth of the teachers had willingness to pay for social health insurance. More than eight in ten of the participants had paid for health care from their pocket. Being in line with their willingness to pay, more than half and near to six in ten of the study participants had good knowledge and positive attitude toward social health insurance respectively. Participants with

good knowledge, positive attitude and being from primary schools showed willingness to pay more likely to pay for social health insurance. However unmarried participants were less likely to pay for it. Equipping all public facilities' employee with necessary knowledge of social health insurance is essential to reduce health care cost catastrophic. Future researches need to consider the qualitative study to support these finding.

## Operational Definition

**Positive attitude:** if the calculated attitude items were greater than  $\{(total\ highest\ score - total\ lowest\ score) / 2\} + total\ lowest\ score$  then they were considered as positive attitude. If they were lower than  $\{(total\ highest\ score - total\ lowest\ score) / 2\} + total\ lowest\ score$ , they were considered as **negative attitude**.

**Good knowledge:** if the participants answered greater than or equal to 50% of the knowledge items

**Poor knowledge:** if the participants answered less than 50% of the knowledge item.

## Abbreviations

OOP	out of pocket
SHI	Social Health Insurance
WTP	Willingness to Pay
CI	Confidence interval

## Declarations

### Data Sharing Statement

The supporting data of this study are available on reasonable request.

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### Author Contributions

All authors made a significant contribution to this work. Sintayehu Girma and Gizachew Abebe contributed to investigation, writing up and methodology. On the other hand conceptualization and

supervision were Bedasa Taye's contributions whereas formal analysis, data curation and writing up were contributed by Aklilu Tamire. Hamdi Fekredin's contributions were software and visualization.

## Disclosure

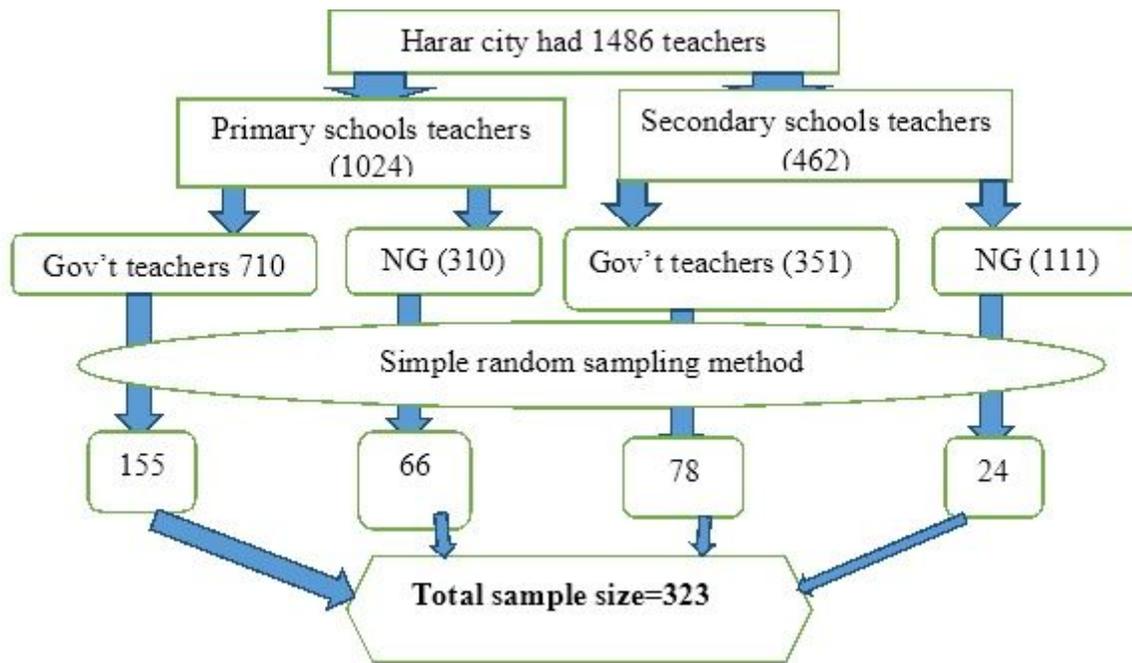
The authors declared that there were no conflicts of interest for this work.

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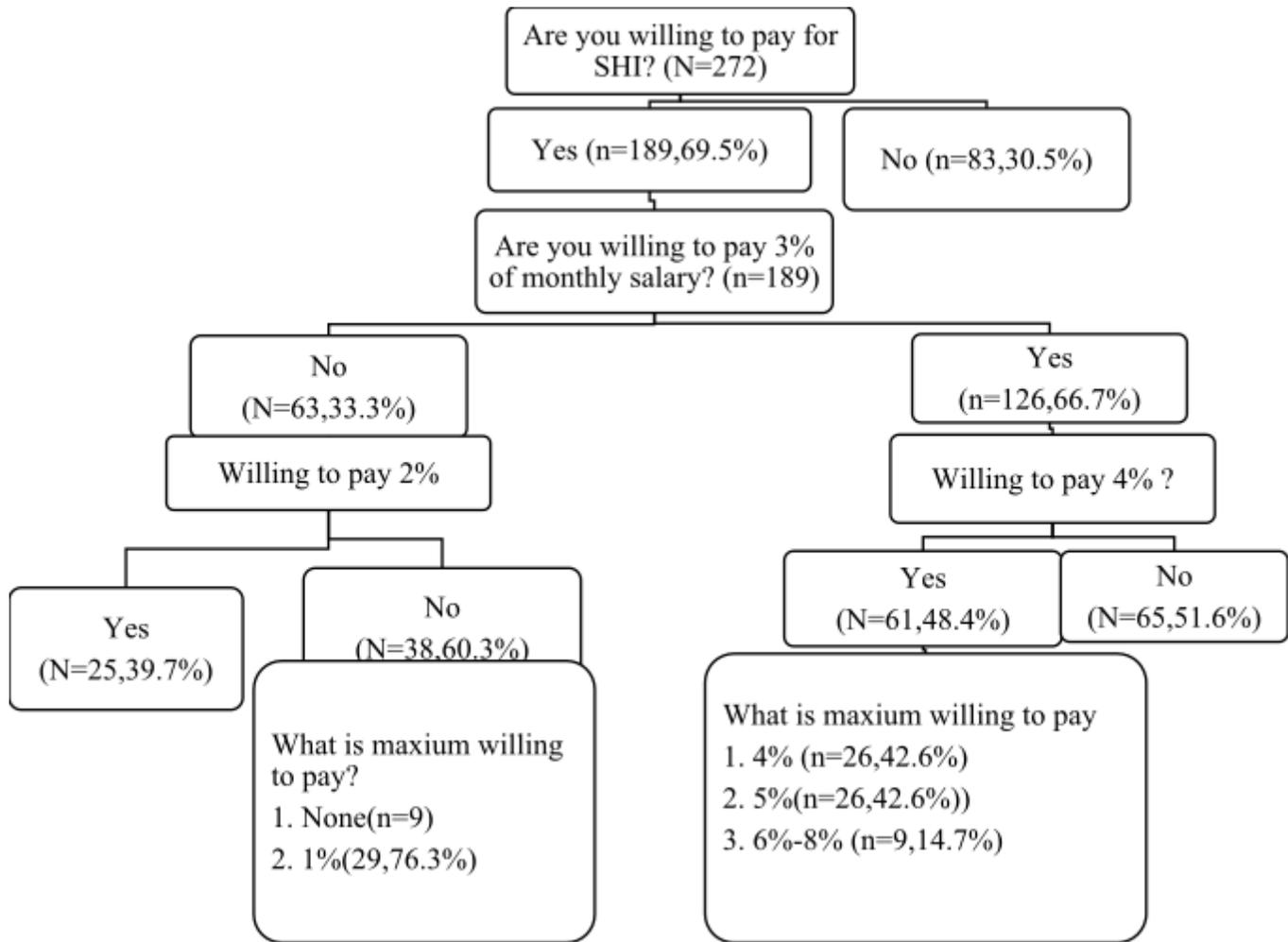
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## Figures



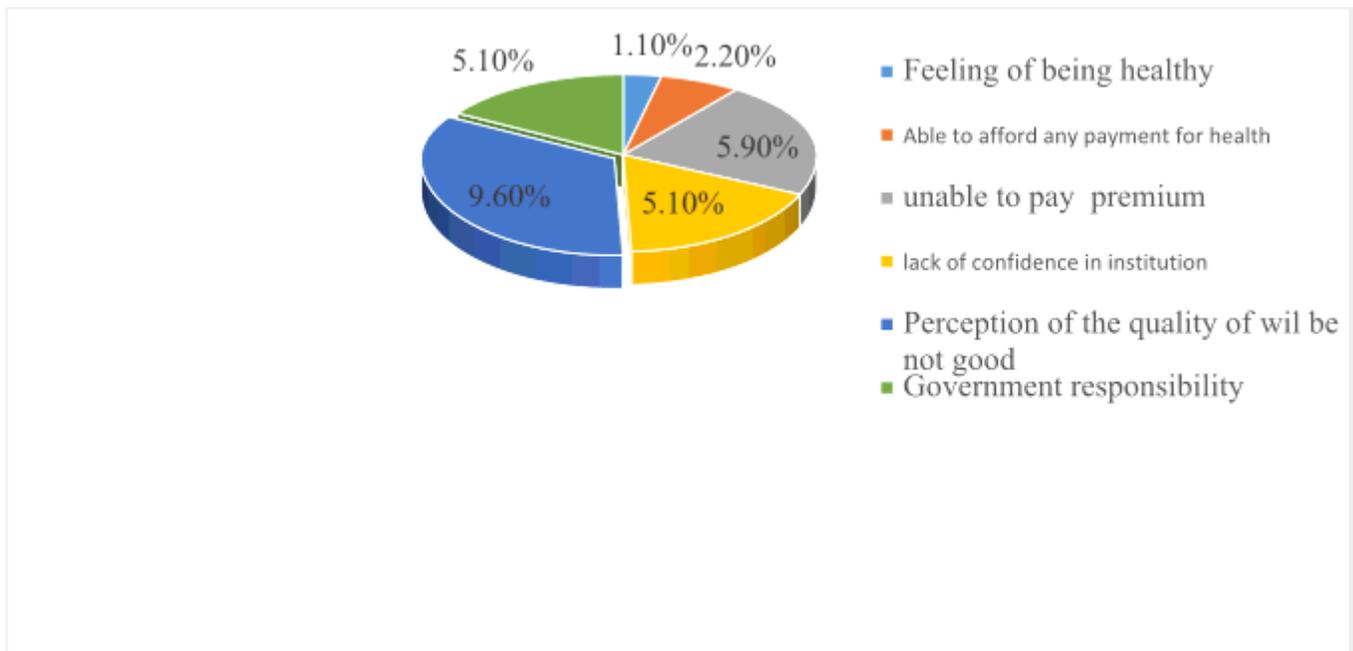
**Figure 1**

Schematic presentation of the sampling method to assess willingness to pay for the newly proposed social health insurance and associated factors among teachers in Harar city, Eastern Ethiopia in 2020/21.



**Figure 2**

Diagrammatic Representation of Measurement of WTP for SHI among teachers, in Harar city, eastern Ethiopia, 2021(n=272).



### Figure 3

Reasons for not willing to pay for social health insurance in Schools of Harar city, Eastern Ethiopia  
2021(n=63)