

Factors Associated with Willingness to Pay for Social Health Insurance among Government Employees in Tigray Region, Northern Ethiopia

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INTRODUCTION

Developing countries seldom use social health insurance (SHI), and their healthcare finances mostly rely on general revenues and direct out-of-pocket payments. This study investigated the level and factors associated with willingness to pay for SHI among government employees in Tigray region, North Ethiopia.

METHODS

An institution-based quantitative cross-sectional study was carried out from June to July 2018 among government employees in Tigray, Ethiopia. Sample size was determined using single population proportion formula, and multi-stage cluster sampling was used to select the study participants. Data collected using an interviewer-administered questionnaire was analyzed using SPSS Version 20.

RESULTS

There were 544 (64.5%) respondents who were not willing to pay for SHI. Respondents age older than 39 years were 2.2 times more likely to be willing to pay for SHI, as were those who disagreed with the binding rule of referral system (1.4 times), and with exclusion of periodic medical checkup from the SHI (1.4 times), those who didn't consider health service quality to be poor (1.6 times), and those who disagreed with the presence of financial insecurity in health institutions (1.7 times).

CONCLUSION

This study revealed that government employees' willingness to pay for SHI was low. SHI agencies should publicize the proclamation for SHI and induce employees with SHI referral system, services excluded, and health facilities' readiness and service quality to increase willingness to pay. In addition, the government should reconsider the implementation of the proclamation for SHI accordingly.

Key words: employee, willingness to pay, social health insurance

INTRODUCTION

Globally, high proportions of people suffer and die due to lack of access to basic healthcare services. Each year in low- and middle-income countries, approximately 150 million people suffer a health-related financial catastrophe, and more than three people are pushed into poverty per second as a result of out-of-pocket (OOP) health expenditures (Bump J, et al., 2016, Averill C et al., 2013). This signifies that health service fees are a main barrier to healthcare coverage and utilization (Dieleman JL et al., 2017). Moreover, many African countries fail to attain the minimum 15% of their budget allocation for health (Spreeuwiers, A.M. et al., 2012), which was agreed on through the Abuja Declaration of 2001.

On the other hand, poor populations in sub-Saharan Africa make up approximately 24% of the global disease burden and account for less than 1% of global health expenditures (Bank.,W., 2011). Similarly, the recent Ethiopian health account showed that the share of total government health spending was not more than 5.6% of the total government expenditure, and around 34% of this expenditure comes from OOP payment of households (Federal ministry of health [FMoH], 2014).

SHI is an agreement that insures individuals from damage, illness and death, and transfers risk of an individual's loss (Comfort AB, et al., 2013) by pooling risks with other people (Comfort AB et al., 2013, De Allegri M, et al.,2006). To

reduce reliance on direct OOP payments and achieve universal health coverage (UHC), governments encourage implementation of health insurance schemes (Odeyemi IA., 2014). Several countries have started SHI as the country's system of healthcare financing and have attained UHC (Carrin G, et al., 2005). However, low- and middle-income countries seldom use SHI and mostly rely on general revenues and direct OOP payments as sources of healthcare financing (Hsiao W.C & Shaw. R.P). As of 2008, Ethiopia had only 1.1% of any kind of insurance with 1% of government health expenditures spent on insurance activities (FMoH, 2008).

Even though Ethiopia is preparing to start SHI, willingness to pay for the scheme is not well researched (Agago TA et al., 2014, MoH,2010). Studies have been limited to a particular facility and city with small sample sizes. This study aims to investigate the level and factors associated with willingness to pay among government employees in Tigray, which can help individuals to make informed choices and provide evidence for policymakers and program implementers to set equitable level of premiums.

METHOD

The study used an institution-based quantitative cross-sectional study design carried out from June to July 2018 among government employees in Tigray region, North Ethiopia. Sample size was determined using single population proportion formula using 47% prevalence of willingness to pay for SHI (Tesfamichael A.A, et al.,2014), standard score $Z^{\alpha/2} = 1.96$, margin of error 0.05% at 95% confidence level, design effect of 2, and 10% non-response rate. Multi-stage cluster sampling was used to select the study participants. In the first stage, 10 institutions were sampled out of the 42 using simple random sampling. In the second stage, 843 employees out of the total 100,172 in the institutions' sampling frame proportionally allocated to each institution were selected using simple random sampling with replacement technique. The inclusion criteria was permanent employees who worked for more than six months; the exclusion criterion was employees who were included in any health insurance scheme.

Data was collected using a structured, interviewer-administered questionnaire. The questionnaire had two parts: sociodemographic characteristics and health service-related variables. The dependent variable was willingness to pay for the 3% premium set for SHI (measured using a 'Yes or No' question), and the independent variables were socio-demographic characteristics and health service-related variables. A pretest was conducted on 5% of the sample size on government employees of non-sampled institutions to make necessary corrections to the questionnaire and time of data collection.

The study employed nine trained diploma-level data collectors and four supervisors to ensure data completeness and validity. Data were entered and cleaned using EPI-info version 7 and analyzed using SPSS version 20. Descriptive analysis using frequency and percentage was performed to

describe selected study variables. Bivariable logistic regression at p-value <0.2 and multivariate logistic regression at p-value <0.05 was performed to identify the factors associated with employees' willingness to pay for the scheme using odds ratios (OR) at 95% CI.

All procedures performed in this study were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Participants were not provided with any incentives or payment to take part in the study and were given the full right to refuse from participating or to withdraw from the study at any time. Ethical clearance was obtained from Tigray Health Research Institute Institutional Review Board, and an official support letter was obtained from Tigray Regional Health Bureau. Consent was obtained from each study participant, and confidentiality of data and scientific honesty was maintained.

RESULTS

Socio-demographic characteristics

A total of 843 government employees participated in the study. More than half of the respondents (432; 51.2%) were male, and 439 (52.1%) had 1-3 family members. The mean age of the respondents was 35 years. More than half (466; 55.3%) of the respondents were less than 35 years of age and 377 (44.7%) of the respondents were 35 years or older. With regard to educational status of the respondents, 347 (41.2%) were diploma and lower levels and 496 (58.8%) were first degree and above levels. One hundred and thirty-four (15.9 %) of the respondents were earning a monthly salary of lower than \$81 USD, 631 (74.8%) were earning \$81-315 USD, and 78 (9.3%) were earning more than \$315 USD a month (Table 1).

Willingness to pay and health service-related variables

Among the respondents, 299 (35.5%) were willing to pay the 3% premium for SHI, and 544 (64.5%) of the respondents were not willing. The main reasons mentioned for not being willing were non-affordability, exclusion of certain services from SHI, and poor health service quality. Furthermore, the monthly health service expenditure of 831 (98.6%) of the respondents was $\leq 20\%$, and that of 12 (1.4%) respondents was $>20\%$ of their monthly income. Seven hundred and thirty nine (87.7%) of the respondents had ever heard about SHI, while 104 (12.3%) had not ever heard about SHI. Nearly half (49.7%) of the respondents perceived quality of health service in SHI to be good, whereas the remainder (50.3%) perceived that quality of health service in SHI was not good. More than two-thirds (67.9%) of the respondents agreed with the fixed referral chain system in SHI, while the remaining (32.1%) disagreed (Table 2).

Table 1. Socio demographic characteristic of respondents (n=843, Tigray region, 2018)

Respondent characteristics	N (%)
Age group	
<24	91 (10.8%)
25-29	197 (23.4%)
30-34	178 (21.1%)
35-39	119 (14.1%)
>39	258 (30.6%)
Sex	
Male	432 (51.2%)
Female	411 (48.8%)
Marital status	
Single	283 (33.6%)
Married	505 (59.9%)
Widowed/divorced	55 (6.5%)
Family size	
1-3	439 (52.1%)
4-6	366(43.4%)
≥7	38(4.5%)
Education level	
1-12 grade	93(11.1%)
Diploma	254 (30.1%)
First Degree	447 (53.0%)
Second degree	49 (5.8%)
Total regular monthly income (USD)*	
< 81	134 (15.9)
81-315	631 (74.8)
> 315	78 (9.3)
Income per capita (USD)*	
≤ 55	427(50.7%)
55.1-93	187(22.2%)
93.1-160	139(16.5%)
>160	90(10.7%)
Work experience (years)	
1-10	508 (60.3%)
11-20	177 (21.0%)
>20	158 (18.7%)

*Commercial bank of Ethiopia, 30 July 2018 exchange rate

Factors associated with willingness to pay

The bivariate logistic regression analysis (at P-value 0.2 cut off point) indicated that age, periodic medical checkup unrelated to illness, rule of referral system to get higher level of services, poor financing mechanism of government health facilities, and perceived poor quality of health facilities were statistically significant variables. The sociodemographic

variables such as gender, educational status, marital status and family size were not significantly associated with willingness to pay for SHI.

Table 2. Willingness to pay and health service-related variables (n=843, Tigray region, 2018)

Respondent characteristics	N (%)
Willingness to pay 3% premium for SHI	
Yes	299 (35.5%)
No	544 (64.5%)
Reasons for unwillingness to pay 3% premium:	
Not enough money to buy SHI Card	88 (16.2%)
No illness/ healthy/ always in good health	10 (1.8%)
Complicated SHI administration	21 (3.9%)
Poor healthcare quality	30 (5.5%)
The scheme does not cover all needed services	87 (16.0%)
The cutoff point (3%) premium is unaffordable	308 (56.6%)
Suggested amount of % premium	
<2%	344 (40.8%)
2%	193 (22.9%)
>3%	7 (0.8%)
Percent of health service expenditure	
0%	146 (17.3%)
≤20%	685 (81.3%)
>20%	12 (1.4%)
Perceived affordability of health service expenditure	
Affordable	435 (51.6%)
Unaffordable	408 (48.4%)
Ever heard about SHI	
Yes	739(87.7%)
No	104(12.3%)
Willingness to join	
Yes	588(69.8%)
No	255(30.2%)
Worrying about future health service cost	
Yes	470 (55.8%)
No	373 (44.2%)
Exclusion of periodic medical checkup	
Agree	233 (27.6%)
Disagree	610 (72.4%)
Perceived good quality of health service in SHI	
Yes	419 (49.7%)
No	424 (50.3%)
Fixed referral chain system in SHI	
Agree	572 (67.9%)
Disagree	271 (32.1%)

Table 3. Bivariate and multivariable analysis of factors associated with willingness to pay (n=843, Tigray region, 2018)

Variables	Category	Willingness to pay		OR (95%CI)	
		Yes (%)	No (%)	COR	AOR
Age	<24	39(42.9)	52(57.1)	Ref	Ref
	25-29	73(37.1)	124(62.9)	1.3(0.77, 2.1)	1.3(0.78,2.2)
	30-34	80(44.9)	98(55.1)	0.92(0.55, 1.53)	1.1(0.62,1.8)
	35-39	39(32.8)	80(67.2)	1.54(0.88, 2.7)	1.7(0.96,3.1)
	>39	68(26.4)	190(73.6)	2.1(1.3,2.5)***	2.2(1.34,3.74)***
Presence of abiding rule of referral system to get higher level health services	Agree	219(38.3)	353(61.7)	Ref	Ref
	Disagree	80(29.5)	191(70.5)	1.5(1.1, 2)**	1.4(1.02,1.94)**
Exclusion of periodic medical checkup from SHI	Agree	102(43.8)	131(56.2)	Ref	Ref
	Disagree	197(32.3)	413(67.7)	1.6(1.2, 2.2)**	1.4(1.02,1.95)**
Service quality in government health institutions Perceived to be poor	Yes	175(41.8)	244(58.2)	Ref	Ref
	No	124(29.2)	300(70.8)	1.74(1.3,2.3)****	1.6(1.2, 2.1)***
Presence of financial insecurity in government health institutions	Agree	90(26.3)	252(73.7)	Ref	Ref
	Disagree	44(26.67)	121(73.33)	2(1.5, 2.7)****	1.7(1.23,2.31)***

* Significant at P<0.05, ** significant at P<0.01, *** significant at P<0.001, **** significant at P<0.000,

OR= Odds Ratio, COR=crude odds ratio, AOR=Adjusted Odds Ratio

In the multivariable analysis, age, periodic medical checkup unrelated to illness, rule of referral system to get higher level of services, poor financing mechanism of government health institutions, and perceived poor quality of health institutions were statistically significantly associated with willingness to pay for SHI (Table 3). Respondents older than 39 years were found to be more than twice as likely (AOR= 2.24, 95%CI [1.34, 3.74]) to be willing to pay compared to respondents younger than 24 years. Those who disagreed with the binding rule of referral system were 1.4 times (AOR= 1.4 [1.02, 1.94]) more likely to be willing to pay the 3% premium for SHI than those who agreed with the binding rule of referral system. Those who disagreed with the exclusion of periodic medical checkup from the SHI were 1.4 times (AOR=1.41, 95%CI [1.02, 1.95]) more likely to be willing to pay the 3% premium for SHI than those who agreed with the exclusion of periodic medical checkup from the SHI. Those who didn't consider the service quality in government health institutions to be poor were 1.6 times (AOR=1.6, 95%CI [1.2, 2.1]) more likely to be willing to pay the 3% premium for SHI than those who considered the service quality in government health institutions to be poor. Those who disagreed with the presence of financial insecurity in government health institutions were 1.7 times (AOR= 1.7, 95%CI [1.23, 2.31]) more likely to be willing to pay the 3% premium for SHI than those who agreed with the presence of financial insecurity in government health institutions.

DISCUSSION

This study was conducted to find out the level of willingness to pay for SHI and the factors related to willingness to pay among government employees in Tigray region in north Ethiopia. The result of the study showed that willingness to pay for SHI was low (35.5%), and this was lower than the 67% finding in Addis Ababa, Ethiopia, (LasebewY,M, et al,2017), the 74.4% in Wolaita-Sodo, Ethiopia (Tesfamichael A.A, et al.,2014) and the 67.8% in Juba, South Sudan (Basaza et al,2017).

This study found that age, periodic medical checkup unrelated to illness, rule of referral system to get higher level of services, poor financing mechanism of government health institutions, and perceived poor quality of health institutions were the factors statistically significantly associated with willingness to pay for SHI. The study also indicated that older respondents (age greater than 39 years) were more likely to be willing to pay for SHI than younger respondents (age less than 24 years), which is comparable with a study conducted in South Africa where respondents age 35 and above more willing to pay for SHI than younger respondents (Jane Goudge1, et al., 2018). Also, in St. Vincent and Grenadines, people age 31-45 were more willing to pay for SHI than younger respondents (age less than 30 years) (Rosmond Adams et al, 2012).

Our study found that those who disagreed with the exclusion of periodic medical checkup from the SHI were more likely to be willing to pay for SHI than those who

agreed with the exclusion of periodic medical checkup from the SHI. About 72.4% of study participants disagreed to pay a 3% premium SHI due to prohibition of periodic medical checkup unrelated to illness. A similar study highlighted that respondents were willing to pay for SHI scheme with no exclusions of certain services like dialysis and dental care over exclusions, and in terms of coverage, respondents were more willing to pay for SHI to get full coverage of tests over partial coverage (Amarech Obse, et al., 2016). Furthermore, respondents who did not consider service quality in government health institutions to be poor were more likely to be willing to pay for SHI than others. A similar study indicated that respondents who believed SHI scheme improve quality of health services were more likely to be willing to pay than those who did not believe the scheme to improve quality (LasebewY,M, et al, 2017). However, studies done in Ghana and South Africa showed that once people are insured, they tend to perceive health services quality to be poor compared to the uninsured during health service provision (Jane Goudge1, et al., 2018 and Kwasi S, O., et al., 2018). Furthermore, those who disagreed with the binding rule of referral system more likely to be willing to pay for the SHI than those who agreed with the binding rule of referral system.

Our study also found that those who disagreed with the presence of financial insecurity in government health institutions were more likely to be willing to pay for the SHI than those who agreed with the presence of financial insecurity. Furthermore, 40.6% of the study participants disagreed to pay the SHI premium due to fear of financial insecurity of government health facilities, which is analogous to a study done in Saudi Arabia where over two-thirds (69.6%) of the respondents were willing to participate in SHI if health facilities were well financed (Mohammed Khaled Al, et al., 2018). Similarly, a study in northwest Ethiopia affirmed that 77.5% of participants had poor attitudes on SHI, and 64.3% of respondents did not have trust in the ability of government's SHI agency to present intended benefit packages (Yeshiwas S, et al.,2018).

The study findings also indicated that 87.7% of respondents had heard about the proposed SHI scheme, of which 69.8% were willing to join, and this finding was comparable with the 67% finding of a study in Addis Ababa (LasebewY,M.et al,2017). Moreover, of all respondents of our study, 32.1% disagreed to follow referral chain of health system. This could suggest that insured individuals should be allowed to choose which level to get care. Even though income did not have a significant association with willingness to pay, about 90.7% of respondents were in the lower income category, which is less than 2,280.85 Ethiopian Birr (104 USD) per month. This inability to pay for SHI could be one reason for the low level of willingness to pay.

As far as level of health service expenditure is concerned, 697 (82.7%) of the respondents visited health facilities, and 12 (1.7%) of them had expended high amount of OOP payment for HSU in the previous 12 months. This is beyond the WHO recommendation, which can cause people to become impoverished due to catastrophic health expenditure

and push them down to the poverty line. However, 685 (98.3%) respondents had expended in line with and below the 20% WHO recommendation (WHO, 2010). However, about 408 (48.4%) of the study participants declared that OOP expenditure was not affordable and 470 (55.8%) were worried about their future health service expenditure; this is similar to a study done in Kosovo (Fatime Arenliu Qosaj, et al. 2018). On the other hand, 462 (54.8%) of the study participants were concerned about the transparency and accountability of the insurance system in terms of susceptibility to bias and misuse of SHI, which is similar to a study in Addis Ababa where 56.5% showed fear of SHI being exposed to corruption (LasebewY,M.et al, 2017).

The overall mean level of negative perception towards referral chain, prohibition of periodic medical checkup unrelated to illness, financial insecurity of government health facilities and compulsory payment of employed husband and wife to 3% premium of SHI in this study was 53% (95%CI [51%, 55%]), which is much higher than the 17% finding of a study done in St. Paul's hospital in Addis Ababa, Ethiopia. This indicated that there is a high level of unwillingness to pay for the newly proposed system of SHI, and this may be due to socioeconomic differences.

CONCLUSION

This study revealed that government employees' willingness to pay for SHI was low, and this could be due to poor health service quality and readiness, insured referral system, service exclusion, periodic medical checkup unrelated to illness, financial insecurity of health facility, and poor trust of SHI. Hence, SHI agencies should familiarize employees with the proclamation for SHI and the referral policy and improve employees' trust on the scheme to increase willingness to pay. SHI agencies should also improve health facilities' readiness and service quality. Finally, the government should reconsider the implementation of the federal proclamation for SHI No 691/2010 accordingly.

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CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

AG conceived the study idea, designed tools and performed the analysis and the write-up. All the authors AB, MT & TT have substantially contributed to the study's design, data management, performance, write-up and reviewing of the manuscript. The authors agree to be accountable for all aspects of the work related to the accuracy or integrity of any part of the work. All authors have read and approved the manuscript.

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