

Association Between Socioeconomic Status and Willingness to Pay for Medical Care Among Government School Teachers in Addis Ababa

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Abstract: In low income countries households are the principal health financing agents. Their expense goes not without shrinking the basic consumptions of the household. This cost is not even enough to avert the consequences either. As a consequence it perpetuates the vicious cycle between sickness and poverty. Control of diseases or their outcome will depend on socioeconomic determinants. Understanding what affects willingness-to-pay (WTP) for medical care is very important to design choices about the allocation of scarce resources. The objective of this study was to assess the association between socioeconomic status and WTP for medical care among government school teachers in Addis Ababa. A cross sectional survey methodology was employed and a structured questionnaire was administered to 847 government school teachers between January to March 2011. The sample was generated by a two-stage probability proportional to size sampling (PPS) method. A dichotomous choice contingent valuation method (CVM) in the single bound formulation was used to elicit a “yes” or “no” answer by respondents when asked if they are WTP a given bid for medical care. Three hypothetical case scenarios: common cold (CC), glaucoma (BD) and heart attack (HAT) were designated. Both descriptive and analytic statistics were used to analyze the data. The degree and strength of association between the explanatory variables and willingness to pay were evaluated by logistic regression. Generally more respondents were WTP for CC, BD and HAT in government than private facilities. In government facilities WTP for CC and BD did not vary with socioeconomic status. However WTP for HAT was lower in the low income group and educational status. In private facilities WTP for CC varied with land ownership only. WTP for both BD and HAT was higher in those with better income and who own land. Educational level, proxy indicators of wealth, income level, lower medical care costs and seriousness of illness were found to positively influence the WTP for medical care. Improving employment benefits and establishing a mechanism to help raise the ability to pay are commendable policy measures.

Keywords: Willingness to Pay, Contingent Valuation Method, Medical Care

1. Introduction

The cost of medical care is not guided like other ordinary markets. It is difficult to estimate the fair price of the service. The Willingness to Pay (WTP) is identified as one of the most basic methods to measure and thereby obtain the potential demand for medical care [i,ii]. As it is very clear people tend to be willing to pay for any good, in this case health, more than

its cost. Welfare economic theory dictates that the maximum an individual is WTP for medical care reflects the benefit that same individual obtains. The gain in wellbeing is represented by the difference between the cost of the intervention and the benefit derived from or risk avoided by the intervention (for example the probability of death).

Contingent valuation is one of the methods utilized to estimate willingness to pay. This is a survey method in which individuals are asked to state their preferences in hypothetical markets. There is controversy over the validity and reliability of WTP measurements. Relying on personal interviews to improve the understanding of participants and use of closed-ended questions that elicit the respondents' WTP are among the recommendations established as best practice rules by the National Oceanic and Atmospheric Administration (NOAA) and Carson et al (2001) to overcome the challenges of biases in such surveys. Using the CVM in the single bound formulation is recommended provided a reliable pretest is conducted and the sample size is large [iii]. To further improve the reliability and validity of questions, budgetary contexts are of significant advantage [iv,v,vi,vii,viii].

Medical care costs are on the increase. In low income countries, out-of-pocket payments (or user fees) at the point of delivery for treatment and services represent the most widespread means of financing health care. Out of pocket payment accounts for 60% of total health spending versus 20% in high-income countries. In Ethiopia, it accounts close to 80%. In order to avoid the bad economic consequences of paying for medical care, a system that renders reliable financial protection for households is worth considering or services should not, at least, be at the expense of financial catastrophes to be carried by having to pay for the care[ix,x,xi,xii].

Achieving equity in the provision of medical care which is based on need, not ability to pay, is far from being realized in the world over[xiii]. User fee free health service was seen as one way to achieve this equity issue for the world poor. The Ethiopian poor like many other sub-Saharan have not yet been immune to carry the burden of payment. The lack of unequivocal and/or uniform guideline to categorize individuals who deserve the free health care provision is one impediment to realize equity of access to medical care [xiv,xv].

In Ethiopia, the low willingness to pay is expected to have arisen from a low income and vice versa and this is a shared experience with other low income countries (LIC) [xvi]. Absence of alternative methods of financing or lack of prepayment mechanisms such as health insurance lowers WTP and predisposes households to the unaffordable medical care expenditure[xvii,xviii,xix,xx].

Several studies revealed that WTP for medical care is different for different groups. Income, educational status, the cost of care, wealth and differences in attitude are some of the factors identified. The value that people attach to medical care outcomes is reflected in their willingness to pay for the care provided to them to obtain the benefits of recovering their health and the productivity capacity related therefrom or to avoid ill health and the costs that may result from ill health. The balance of relation between the value of money and the valuation of the benefits of medical care in the mind of people makes it difficult to predict willingness to pay from one's income level [xxi]. Income differences for

example bring measurable difference in mortality rates and actually this has helped both low and high income countries to coin programs to improve socioeconomic status in line with improving the health of the public [xxii]. Hence, seriousness of the illness and socioeconomic status in terms of ability to pay are basic elements in determining one's WTP. In private health facilities, however, the cost of medical care is the limiting factor. The response to medical care prices will implicitly affect utilization of care provided and revenues collected by providers [xxiii,xxiv,xxv].

Another study has shown that socio economic factors like educational status, income, occupation and one's subjective belief of health status determine the willingness to pay[xxvi]. Valuation of benefits in health in monetary terms has made it inherently difficult for other literatures to agree whether socioeconomic status predicts one's willingness to pay for medical care. The gender disparity observed in the WTP is the other gap identified and a study points to the hypothesis that one's decision making power over the household income guides WTP[xxvii]. Those with low socioeconomic status can be viewed as disadvantaged in two ways: they earn less yet they pay more and this affects their WTP for medical care negatively [xxviii]. In working out mechanisms to improve one's earning or lower the payment due to him or her (both to raise WTP) one can start at the role individuals play in public budgeting [xxix].

WTP has been used in Ethiopia for different health care goods and services[xxx,xxxi,xxxii,xxxiii] but no study was found in Ethiopia in general and the study area in particular that explored the association between socioeconomic status and WTP and the determinants of WTP for medical care.

The focus of this study is on the effect of the cost of medical care on the socioeconomic characters or other factors to respond to a given disease. This study, therefore, aims to assess the association between socioeconomic status and WTP, and the determinants of WTP for medical care among government school teachers in Addis Ababa, Ethiopia.

2. Methods

2.1. Study Area and Period

The study was conducted in Addis Ababa. Based on the 2007 Census by the central statistical agency of Ethiopia (CSA), Addis Ababa has a total population of nearly 3 million people. Females outnumber the male population. Average of 4.1 persons reside in a household. During the study period there were 13,302 teachers in all sectors and of which 10,604 were teaching in government Schools. Out of the 263 schools in Addis Ababa 157 were government schools. The study period was between January 2011 and March 2011.

2.2. Study Design, Sample Size, Sampling

The sample size was estimated using sample size determination formula for a single population proportion.

The source population of this study are teachers working in public schools in Ethiopia. At time of conduction of this study, there were 10,604 teachers working in public schools in Addis Ababa (Reference). Since local studies are lacking on the proportion of people WTP for medical care, a 50% WTP proportion is assumed to obtain the maximum sample size, design effect of 2 with 95 % certainty, 0.05 type I error and a maximum discrepancy of 5% between the sample and the underlying population and adding 10 % to the sample size as a contingency for a possible non response. Based on these assumptions, a total sample size of 847 was determined. Selection of study clusters and participants was done following a two-stage probability proportional to size sampling (PPS) scheme. A representative sample of 20 schools (clusters) were randomly included and the 847 participants were proportionally distributed among each school. Study participants were recruited by simple random sampling.

2.3. Data Collection

The survey was based on self-reported questionnaires. Data was collected from January to March 2011. Socio-demographic variables, ability to pay questions, general health status or subjective fitness level and contingent valuation questions were included.) In order to decrease reporting bias the contingent Valuation (CV) questions were constructed according to the recommendations of the NOAA. The closed-ended, dichotomous-choice questionnaire format, and of Carson et al, was used.

The questions from Willingness to pay manual for reproductive health and hypothetical case scenarios for asking WTP for medical care were adapted and tailored to fit the study population.

Table 1. Illnesses based on outcome divided in to three categories.

Category	Effect of disease	Hypothetical case
1	There is no risk of death or disability	Common cold (CC)
2	There is no risk of death but disability	Glaucoma (BD)
3	There is risk of death	Heart attack (HAT)

Hypothetical scenarios relating to these three illnesses were presented and the WTP for medical care in government or private facilities was asked in the respective case scenarios. Questions about mobile phone, satellite dish, car, house, and land ownership were included to map socioeconomic status, assuming that people who had a car, a house and owned a land were of higher socioeconomic status. The medical care costs for the respective hypothetical case scenarios were obtained by doing a mini market survey as well as by consulting private and government health facility practicing health care providers including specialists. Adjustments to costs were made after pre testing the questionnaire. The questionnaire was prepared first in English then translated to Amharic and then back to English in order to maintain its consistency.

Four data collectors were trained for four days mainly on the purpose of the study, ethical issues, random selection of participants, instruction on the hypothetical case scenarios, distribution, and collection of the questionnaire. Questionnaires were pre-tested at government schools which were not included in the main study. Based on the pretest, questionnaires were revised, edited, and those found to be unclear or confusing were amended. The principal investigator supervised, collected the completed questionnaires every day and checked each for inconsistencies and omissions. Any format with a defect was rejected from the study.

2.4. Data Analysis

Data was entered to Epi Info version 3.5.3 and cleaned. Using Stat transfer version 9, the final data set was transferred to SPSS version 18. Frequencies, proportions and measures of dispersions were estimated to describe variables. Logistic regression by determining the probability of willingness to pay was used to determine presence of association between explanatory variables and willingness to pay for medical care. The degree of association between the variables was measured using odds ratio with 95% confidence interval and alpha 0.05.

2.5. Ethical Considerations

Ethical clearance was obtained from Addis Continental Institute of Public Health – University of Gondar. Approval for the study was also collected from the respective authorities of Addis Ababa regional education bureau and the selected schools for the study.

3. Results

3.1. Descriptive Statistics

The response rate was 92.1%. Of the respondents, 49.7%, 24.9% and 25.4% were in the age group 18-28, 29-38 and >38 years respectively. The mean age was 32.4, females accounted for 42.3% of the subjects, monthly income for 62% of respondents was \leq 2 000 Ethiopian Birr (US\$ 1= 16.57 birr, during the study period). 87% of total household's monthly income of all sources was below 3000 birr and 36% of them had one or more dependents and 89.6 % of them were at least a diploma holder. 93.3% owned mobile phones, 26.3% owned satellite dish, 2.9% had a car, 20.5% had their own or a shared house and 9.6% owned a land. 19% of participants had no monetary support, 3.7% had private insurance, 5.6% had another system of insurance. More than 86% of respondents believe medical care improves quality of life and productivity. Close to 12% and 9% of participants had chronic illness and history of hospital admission respectively. 37.4%, 56.2% and 56.3 are WTP to pay 25,450 and 1000 birr to get medical care for CC, BD and HAT in a government facility respectively. However, only 20.4%, 20.3% and 22.8% are WTP 150,

3500 and 5000 birr to get medical care for CC, BD and HAT in a private facility respectively.

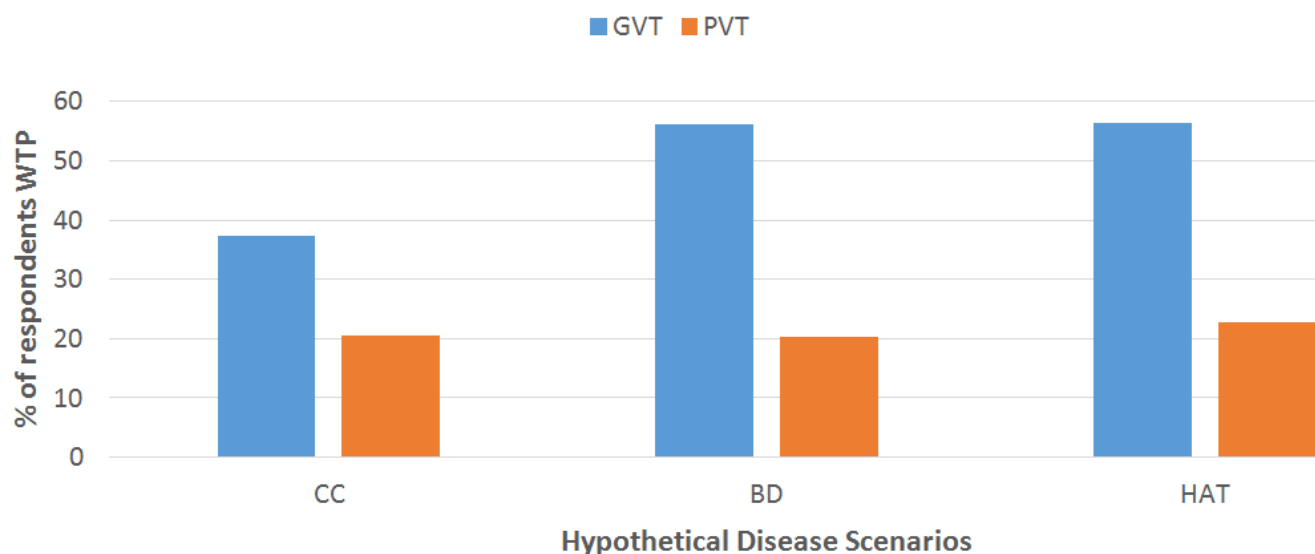


Fig. 1. Distribution of WTP for medical care among the study participants in government and private facilities.

3.2. WTP for Medical Care Provided in Government Facilities for the Respective Hypothetical Scenarios

In the crude analysis no significant difference were found among the different educational statuses, income groups and proxy indicators of wealth in terms of WTP for medical care provided for CC and HAT in government facilities. Respondents who earn between 1000 and 1500 birr per month are 0.65 times less likely to pay for medical care to avoid blindness than those who earn less than 1000 birr per month. [COR=0.65, 95%CI:0.45-0.94 at P=0.02]. Those who have a house are 1.44 times more likely to pay for blindness than those who have not [COR=1.44, 95%CI:(1.01-2.06) at p=0.05] In all others there is no statistically significant difference (table 2).

Adjusting for other variables, including socio demographic variables, revealed no significant differences among the different socioeconomic status in WTP for CC. The same holds true for medical care to avoid BD. Degree holders are 2.26 times more WTP for medical care to avoid death due to HAT [AOR=2.26, 95% CI (1.24-4.14) at p=0.01]. respondents with income in the range of 1500 - 2000 and above 2000 are 1.93 and 2.44 times more likely to pay for medical care to avoid death due to HAT [AOR= 1.14 CI=(1.14-3.27) p=0.02 and [AOR= 2.44 CI= (1.21-4.95) p=0.01] respectively In all others no significant difference was found after adjustment (table 4).

3.3. WTP for Medical Care Provided in Private Facilities for the Respective Hypothetical Scenarios

In the crude analysis other than land ownership there is no significant difference among the different socio economic indicators with regard to WTP for medical care provided for CC and BD in government facilities. Respondents who earn more than 2000 birr per month are two times more WTP for medical care provided for HAT than those who earn less than 1000 birr. [AOR= 2.00 95%CI= (1.10-3.62) p=0.02] Those who own a land are 2.28, 2.30, and 2.35 times more WTP for CC, BD and HAT respectively [AOR= 2.28 95%CI= (1.37-3.81) p<0.001, AOR=2.30 95%CI=(1.38-3.84) p< 0.001, AOR= 2.35 95%CI= (1.43-3.87) p<0.001] Those who have a car are 2.7 times more WTP for medical care provided for HAT than who don't have [AOR= 2.70 95%CI= (1.16-6.26) p=0.02] (table 3)

After adjusting for other variables, those who earn more than 2000 are 3.17 times more WTP for BD than those who earn less than 1000 birr per month [AOR= 3.17 95% CI= (1.42-7.05) p=0.01]. Those who earn between 1500 and 2000 and more than 2000 are 2.18 and 4.05 times more WTP for HAT [AOR= 2.18 95%CI= (1.19-3.97) p=0.01 AOR= 4.05 95%CI= (1.88-8.74) p<0.001] respectively.

Nearly similar significant differences were found in those who have and who don't have a land. Those who own land are 2.51, 2.46, and 2.49 times more WTP for CC, BD and HAT [AOR= 2.51 95%CI= (1.36-4.65) p<0.001, AOR= 2.46 95%CI= (1.32-4.57) p< 0.001, AOR= 2.49 95%CI= (1.38-4.50) p<0.001] respectively (table 5).

Table 2. Socioeconomic determinants of WTP for medical care received in government facilities for the three hypothetical cases among government school teachers in Addis Ababa- unadjusted.

No	Variables	Common Cold			Blindness			Heart attack		
		COR	95% CI	P-value	COR	95% CI	P-value	COR	95% CI	P-value
1	Educational category									
	Certificate	1	-	-	1	-	-	1	-	-
	Diploma	0.90	0.56	1.47	0.73	0.45	1.19	1.33	0.83	2.15
	Degree	0.90	0.55	1.48	0.68	0.41	1.13	1.43	0.88	2.32
	Masters	0.57	0.14	2.30	0.32	0.09	1.20	0.85	0.24	3.02
2	Monthly income									
	<1000	1	-	-	-	-	-	-	-	-
	1000-1499	0.88	0.61	1.27	0.65	0.45	0.94	0.70	0.49	1.02
	1500-2000	1.19	0.77	1.83	0.94	0.61	1.46	1.24	0.80	1.93
	>2000	0.78	0.44	1.37	0.76	0.44	1.30	1.06	0.61	1.82
3	Mobile Ownership									
	No	-	-	-	-	-	-	-	-	-
	Yes	1.14	0.63	2.06	1.02	0.58	1.79	1.21	0.69	2.12
4	Satellite dish ownership									
	No	-	-	-	-	-	-	-	-	-
	Yes	1.41	1.02	1.95	1.08	0.78	1.49	1.23	0.89	1.70
5	House ownership									
	No	-	-	-	-	-	-	-	-	-
	Yes	1.07	0.75	1.53	1.44	1.01	2.06	1.34	0.94	1.91
6	Land ownership									
	No	-	-	-	-	-	-	-	-	-
	Yes	1.53	0.95	2.46	1.19	0.73	1.94	1.43	0.87	2.34
7	Car ownership									
	No	-	-	-	-	-	-	-	-	-
	Yes	1.55	0.68	3.57	1.02	0.44	2.35	1.22	0.52	2.84

Note WTP= Willingness to Pay COR = Crude Odds Ratio, CI= Confidence interval, P= level of significance

Table 3. Socioeconomic determinants of WTP for medical care received in private facilities for the three hypothetical cases among government school teachers in Addis Ababa- unadjusted.

No	Variables	Common Cold			Blindness			Heart attack		
		COR	95% CI	P-value	COR	95% CI	P-value	COR	95% CI	P-value
1	Educational category									
	Certificate	1	-	-	1	-	-	1	-	-
	Diploma	1.21	0.66	2.23	1.25	0.68	2.30	1.33	0.72	2.44
	Degree	1.15	0.62	2.15	1.08	0.58	2.03	1.44	0.78	2.67
	Masters	1.01	0.20	5.15	1.01	0.20	5.15	1.70	0.40	7.17
2	Monthly income									
	<1000	1	-	-	1	-	-	1	-	-
	1000-1499	0.81	0.53	1.23	0.78	0.50	1.22	0.95	0.61	1.48
	1500-2000	0.78	0.46	1.31	0.99	0.59	1.67	1.40	0.85	2.32
	>2000	0.74	0.38	1.45	1.61	0.88	2.95	2.00	1.10	3.62
3	Mobile Ownership									
	No	1	-	-	1	-	-	1	-	-
	Yes	0.75	0.39	1.45	1.07	0.53	2.19	0.99	0.51	1.92
4	Satellite dish ownership									
	No	1	-	-	1	-	-	1	-	-
	Yes	1.43	0.98	2.09	1.20	0.81	1.76	1.09	0.75	1.58
5	House ownership									
	No	1	-	-	1	-	-	1	-	-
	Yes	1.23	0.81	1.86	1.03	0.67	1.58	1.32	0.89	1.97
6	Land ownership									
	No	1	-	-	1	-	-	1	-	-
	Yes	2.28	1.37	3.81	2.30	1.38	3.84	2.35	1.43	3.87
7	Car ownership									
	No	1	-	-	1	-	-	1	-	-
	Yes	2.14	0.89	5.14	2.16	0.90	5.19	2.70	1.16	6.26

Note WTP= Willingness to Pay, COR = Crude Odds Ratio, CI= Confidence interval, P= level of significance

Table 4. Socioeconomic determinants of WTP for medical care received in government facilities for the three hypothetical cases by government school teachers in Addis Ababa _adjusted for multiple factors*.

No	Variables	Common Cold			P-value	Blindness			P-value	Heart attack			P-value
		AOR	95% CI			AOR	95% CI			AOR	95% CI		
1	Educational category												
	Certificate	1				1				1			
	Diploma	0.94	0.54	1.63	0.83	0.75	0.43	1.32	0.32	1.63	0.94	2.83	0.08
	Degree	1.22	0.67	2.23	0.52	0.90	0.49	1.65	0.72	2.26	1.24	4.14	0.01
	Masters	0.61	0.11	3.39	0.57	0.49	0.11	2.08	0.33	1.55	0.38	6.31	0.54
2	Monthly income												
	<1000	1				1				1	-	-	-
	1000-1499	1.02	0.67	1.57	0.91	0.82	0.54	1.25	0.35	1.01	0.66	1.54	0.97
	1500-2000	1.38	0.82	2.31	0.23	1.11	0.65	1.87	0.71	1.93	1.14	3.27	0.02
	>2000	1.10	0.54	2.23	0.79	1.27	0.63	2.58	0.50	2.44	1.21	4.95	0.01
3	Mobile Ownership												
	No	1				1				1			
	Yes	1.12	0.58	2.17	0.74	0.82	0.42	1.57	0.54	1.01	0.52	1.94	0.99
4	Satellite dish ownership												
	No	1				1				1-	-	-	-
	Yes	1.29	0.87	1.90	0.21	1.02	0.69	1.51	0.92	1.23	0.83	1.82	0.30
5	House ownership												
	No	1				1				1	-	-	-
	Yes	0.98	0.63	1.52	0.92	1.33	0.84	2.10	0.22	1.24	0.79	1.95	0.36
6	Land ownership												
	No	1				1				1	-	-	-
	Yes	1.38	0.79	2.42	0.26	1.22	0.68	2.18	0.51	1.38	0.77	2.48	0.28
7	Car ownership												
	No	1				1				1	-	-	-
	Yes	1.16	0.44	3.06	0.76	0.71	0.26	1.95	0.50	1.19	0.41	3.43	0.75

Note WTP= Willingness to Pay, AOR =Adjusted Odds ratio, CI= Confidence interval, P= level of significance* age, sex, marital status, ethnicity, religion, number of dependents, having monetary support, having insurance, history of hospital admission, history of chronic medical illness, expense of participants on food, transport, housing, utility, health and general health status.

Table 5. Socioeconomic determinants of WTP for medical care received in private facilities for the three hypothetical cases by government school teachers in Addis Ababa _adjusted for multiple factors*.

No	Variables	Common Cold			P-value	Blindness			P-value	Heart attack			P-value
		AOR	95% CI			AOR	95% CI			AOR	95% CI		
1	Educational category												
	Certificate	1				1				1			
	Diploma	1.46	0.73	2.92	0.28	1.07	0.54	2.15	0.84	1.41	0.71	2.77	0.33
	Degree	1.63	0.77	3.47	0.21	1.25	0.59	2.67	0.56	1.86	0.89	3.88	0.10
	Masters	1.27	0.18	8.87	0.81	1.37	0.23	8.14	0.73	2.42	0.49	12.04	0.28
2	Monthly income												
	<1000	1				1				1			
	1000-1499	1.03	0.62	1.70	0.92	1.04	0.62	1.76	0.88	1.22	0.74	2.03	0.44
	1500-2000	0.92	0.49	1.72	0.80	1.42	0.75	2.69	0.28	2.18	1.19	3.97	0.01
	>2000	1.10	0.47	2.55	0.83	3.17	1.42	7.05	0.01	4.05	1.88	8.74	<0.001
3	Mobile Ownership												
	No	1				1				1			
	Yes	0.70	0.33	1.48	0.35	1.21	0.53	2.80	0.65	0.96	0.45	2.04	0.91
4	Satellite dish ownership												
	No	1				1				1			
	Yes	1.38	0.87	2.18	0.17	1.04	0.66	1.65	0.86	1.04	0.67	1.62	0.86
5	House ownership												
	No	1				1				1			
	Yes	1.31	0.78	2.20	0.30	1.03	0.61	1.73	0.93	1.47	0.90	2.39	0.12
6	Land ownership												
	No	1				1				1			
	Yes	2.51	1.36	4.65	0.00	2.46	1.32	4.57	0.00	2.49	1.38	4.50	<0.001
7	Car ownership												
	No	1				1				1			
	Yes	1.62	0.57	4.63	0.37	1.74	0.62	4.86	0.30	2.58	0.99	6.74	0.054

Note WTP= Willingness to Pay, AOR =Adjusted Odds ratio, CI= Confidence interval

* age, sex, marital status, ethnicity, religion, number of dependents, having monetary support, having insurance, history of hospital admission, history of chronic medical illness, expense of participants on food, transport, housing, utility, health and general health status

4. Discussion

More respondents were WTP for medical care provided in government facilities than private ones. The lower cost of care in government facilities may be one reason for better WTP for medical care provided in government facilities. Similar findings have been shown by many studies [xxiii-xxv].

In private facilities, income and proxy indicators of wealth like land and house ownership positively influenced ones WTP. Many studies have shown that socioeconomic status directly influences WTP for medical care [xi, xii, xix, vii, xxi, xxvii]. The results of this study revealed that socioeconomic status did not have any relation with WTP for less severe illnesses like CC in both government and private facilities. Analysis of this study, however, illustrated that WTP for both BD and HAT was found to be significantly lower in the low-income group and in those who do not have land. The idea that WTP is propelled more by the perceived seriousness of the medical condition (they pay more to avoid death due to heart attack than blindness due to glaucoma, and to blindness due to glaucoma than discomfort due to common cold) than with ability to pay was observed. This finding is similar to studies that pointed to the fact that serious diseases are worse enough for the expected benefit of medical care to outweigh the cost and to make seeking medical care inevitable. The three hypothetical case scenarios were presented based on the dichotomous choice format. For cases which bring about neither disability nor death such as common cold alternatives like traditional and over the counter medicines are available. Therefore, an individual who is not able to pay is unlikely to go for medical care to avoid the discomfort due to CC. Illnesses which can cause disability or death like glaucoma or heart attack do not have any alternative care available in the common market other than to seek medical care[xix]. Similar findings were appreciated in Nigeria and Tanzania where patients were more WTP to get relief from symptoms of malaria clearly attending to the perceived seriousness of the disease [xx, iv].

Degree holders were more WTP for medical care to avoid death due to heart attack. This was not consistently shown among Masters holders. This may be due to the small sample size of Masters holders and hence the power of the sample. The homogeneity of the study participants, perhaps by making the economic difference between education groups insignificant, could be an additional reason for the inconsistency. One further explanation could be the improved access decreasing the indirect cost of medical care. This is consistent with studies that emphasize the importance of supply side interventions to boost ability to pay [xvi, xviii, xix].

Contingent valuation techniques are criticized for the reason that results are based on elicitation methods. The hypothetical case scenarios in this study were made as

much understandable and realistic as possible. Single bound procedure was taken advantage of as it is easier to respondents to answer yes or no when they are asked if she or he is WTP a given amount for the specific hypothetical medical problem. There are many concerns to this method and the major one is the disparity between the hypothetical WTP and the actual WTP. However, given the significance of medical care to the respondents, the difference may be smaller [iv, viii, xxvi].

Reduction in the costs of care will in so doing help to induce individuals to seek care early. The role of the government is vital in forming social security networks, safety nets, employment benefits and public participation in decision making so that WTP would improve. Thus, helping “unequal groups” participate in the market. The institutional preference to be willing to pay for medical care in government instead of private facilities reflects the correlation of willingness to pay with ability to pay. This is in line with studies which state that lowering the cost of medical care, increasing access to care by establishing more hospitals to lower the cost of travel and waiting (increasing the positive externality) improves the WTP for medical care [xxviii].

5. Conclusion and Recommendation

This study showed that educational status, proxy indicators of wealth like car and land ownership and income level positively influence the willingness to pay for medical care. Ones willingness to pay is also associated with lower medical care costs. Extended waiting time is negatively related with the willingness to pay for medical care. This study also showed seriousness of illness, instead of income, guided the willingness to pay.

Policy makers should consider improving employment benefits to improve the ability of teachers to pay for medical care and establish a mechanism to help teachers to get continuous medical care. Public financing mechanisms to protect teachers from catastrophic health expenditure are required. Medical care tariff setting by providers should consider the tolerable or affordable percent of income spent to avoid catastrophic expenditure. To see the true association of socioeconomic status and willingness to pay it would be of importance to do the research on a heterogeneous population of different occupations, educational status, income, and wealth differences.

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References

- [1] Willingness to pay to sustain and expand National Health Insurance services in Taiwan. Taiwan: instituteofpublichealth;2008.Available from <http://www.biomedcentral.com/1472-6963/8/261>
- [2] Karen G,James R. Willingness to pay surveys for setting prices for reproductive health products and services a user's manual;2004.
- [3] Calia P,Strazzer E. Bias and efficiency of single and double bound models for CV studies: A Monte Carlo Anlaysis. *Applied Economics* 2000;32(10):1329-1326
- [4] Willingness and ability to pay for artemisinin-based combination therapy in rural Tanzania.Tanzania: Muhimbili University College of Health Sciences Department of Parasitology and Entomology; 2008.
- [5] Available from <http://www.malariajournal.com/content/7/1/227>
- [6] Olsenab J, Kidholmc K, Donaldsond C, Shackleye P. Willingness to pay for public health care: a comparison of two approaches. *J.healthpol.*2004;70 (2):217_228
- [7] Willingness to pay to assess patient preferences for therapy in a Canadian setting.Canada:Pharmaceutical Sciences Clinical Service Unit, Vancouver Hospital and Health Sciences Centre, Vancouver British Columbia;2004.Available from <http://www.biomedcentral.com/1472-6963/5/43>
- [8] Willingness to pay for social health insurance among informal sector workers in Wuhan, China: a contingent valuation study.China: Huazhong University of Technology and Science;2007.Available from <http://www.biomedcentral.com/1472-6963/7/114>
- [9] Arrow K, Solow R, Portney PR,Leamer EE,Radner R,Schuman H, editors.Report of the NOAA Panel on contingent valuation;1993.
- [10] Yu D, Souteyrand Y, Banda MA, Kaufman J, Perriens JH. Investment in HIV/AIDS programs: does it help strengthen health systems in developing countries?. *Global Health* 2008; 16: 4-8.
- [11] Cissé B, Luchini S, Moatti JP. Progressivity and horizontal equity in health care finance and delivery: What about Africa?.*Health Policy* 2007; 80: 51-68
- [12] Xu K, Evans DB, Kawabata K, Zeram dini R, Klavus J, Murray CJ. Household catastrophic health expenditure: a multicountry analysis. *Lancet* 2003; 362: 111_117.
- [13] Preker AS, Langenbrunner J. Spending wisely: buying health services for the poor. Washington, DC: The World Bank, 2005.
- [14] Habbani K, Groot W, Jelovac I. Do free-of-charge public health services impede cost recovery policies in Khartoum state, Sudan? *Eastern Mediterranean health journal* 2007; 13(4) :939-952
- [15] Ashagre G,Abebe Y. Free health care provision and its financial implications in Gondar town ,northwest Ethiopia. *Ethiop.J.Health Dev.*2004;18(2):125_129
- [16] Wolde M,Jirra C,Tegegne A. An assessment of the free health care provision system in Jimma town ,southwest Ethiopia. *Ethiop.J.Health Dev.*2005;19(3):188_194
- [17] Russel S,Abdella K.25. Too poor to be sick: Coping with the cost of illness in East Hararghe,Ethiopia.17 Grove Lane;2002 Coping with the costs of illness in East Hararghe, Ethiopia.
- [18] Marmot M,Bell R .Action on health disparities in the United States: commission on social determinants of health; JAMA. 2009;301(11):1169-1171
- [19] Doorslaer VE, O'Donnell O, Rannan-Eliya RP, Somanathan A, Adhikari SR, Garg CC,et al. Paying out-of-pocket for health care in Asia: catastrophic and poverty impact. *Health Economics* 2007; 16(11): 1159–1184
- [20] Russell S. The economic burden of illness for households in developing countries: a review of studies focusing on Malaria, Tuberculosis and Human Immunodeficiency Virus/Acquired Immunodeficiency syndrome. *Am J Trop Med Hyg* 2004;71 (2), 147-155.
- [21] Willingness to pay for rapid diagnostic tests for the diagnosis and treatment of malaria in southeast Nigeria: ex post and ex ante; 2010.Available from: <http://www.equityhealthj.com/content/9/1/1>
- [22] Robinson R. Economic Evaluation and Health Care: cost benefit analysis. *BMJ* 1993;307:924_6
- [23] Danis M,Lovett F,Sabik L,Adikes K,Cheng G,Aomo T.Low income employee's choices regarding employment benefits aimed at improving the socioeconomic determinants of health.*Am J Public Health* 2007;97(9):1650-1657
- [24] Bala M, Mauskopf J, Wood L. Willingness to Pay as a Measure of Health Benefits. *Pharmacoeconomics* 1999; 15 (1): 9-18.
- [25] Hansen D. Willingness to Pay for a QALY Theoretical and Methodological Issues. *Pharmacoeconomics* 2005; 23 (5): 423-432
- [26] Olsen J, Smith R. Theory Versus Practice: A Review Of 'WILLINGNESS-TO-PAY' In Health and Health Care. *Health Econ.*2001; 10: 39–52.
- [27] Willingness to pay for health care services in common cold, retinal detachment , and myocardiac infarction: an internet survey in Japan. Japan , University of Tokyo Hospital;2006.Available from :<http://www.biomedcentral.com/1472-6963/6/12>
- [28] Ternent L, McNamee P,Newlands D, Belemsaga D,Gbangou A, Cross S. Willingness to Pay for Maternal Health Outcomes Are Women Willing to Pay More than Men? *Appl Health Econ Health Policy* 2010; 8 (2): 99-109.
- [29] Mendoza UR. Why do the poor pay more? Exploring the poverty penalty concept. *Journal of Int.dvt* 2008;23(1):1-28

- [30] Koford CB. Public Budget Choices and Private Willingness to Pay. *Budgeting & Finance* 2010;30(2):47-68.
- [31] Legesse Y, Tegegn A, Belachew T, Tushune K. Households willingness to pay for long-lasting insecticide treated nets in three urban communities of Assosa zone, Western Ethiopia. *Ethiop Med J* 2007; 45(4):353-362
- [32] Hagos D, Mekonen A, Gebreegziabher Z. Household willingness to pay for improved solid waste management: the case of Mekelle City, Ethiopia.
- [33] Asfaw A, Braun VJ. Can community health insurance schemes shield the poor against the downside health effects of economic reforms? The case of rural Ethiopia. *Health Policy* 2004; 70 (1) :97–108.
- [34] Asfaw A, Braun VJ. Innovations in health care financing, new evidence on the prospect of community health insurance schemes in the rural areas of Ethiopia. *International Journal of Health Care Finance and Economics* 2005; 5: 241–253.