Factors Affecting Women-Willingness to Pay for Maternal, Neonatal and Child Health Services (MNCH) in Gombe State, Nigeria

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Abstract

Background: Gombe State in North Eastern Nigeria is one of the states in the region that records the highest maternal and new-born death rates in the world. The region has a maternal mortality ratio of 1549/100,000, child mortality rate of 260/1,000 and neonatal mortality rate of 43/1,000. With a poverty incidence of 72.2% in the state and the displacement due to insurgency, a great deal of women in the villages is vulnerable to more poverty and maternal deaths. Establishing the factors that affect the willingness to pay (WTP) for maternal services will help to improve maternal health services thereby reducing maternal deaths in the state. This study looked at the factors that affect women's willingness to pay for maternal services in relation to antenatal care (ANC), delivery in health facilities and post-natal care (PNC) through a baseline survey.

Methods: This study was cross sectional where data were collected from women groups (including women not registered with the groups) in two purposively selected Local Government Areas (LGAs) of the state. Seven hundred and fifty (750) women were sampled for the survey in the two LGAs. The main outcome variables are utilization of maternal service (specifically improved antenatal care attendance, facility delivery and postnatal care) and WTP for these services by the women. Descriptive statistics of the respondents were analysed using IBM SPSS 22 software. Logistic regression analysis was done to determine the factors affecting WTP for the maternal services.

Results: The findings from this study have shown statistically significant association between WTP for maternal health care and several factors. Women are more likely to be willingness to pay for ANC and delivery in the health facility if they belong to the savings and loans group ($p < 0.05$), had an average of 1-10 visits to a facility, married ($p < 0.05$), can read and write in English ($p < 0.05$) and live near health facilities ($p < 0.05$). Income and employment ($p < 0.05$) are additional factors affecting WTP for delivery. Post-natal care on the other hand was only associated with membership of savings and loans group.

Conclusions: Factors associated with the willingness to pay ANC and delivery in health facilities according to the findings of this study were membership of savings and loans group, closeness to a health facility, education, income and marital status. Number of previous visits to the health facility and occupation were also found to be significant predictors of willingness to pay for maternal services. Further studies on the association of WTP and PNC are suggested in order to improve PNC in the state.

Introduction

Women have pivotal roles to play in the traditional and cultural lives of African societies. They have greater burden in carrying pregnancies, childbirth, rearing children and ensuring their adequate parenting as well as balancing their social contracts with their husbands. These burdens exert economic and social pressure on women who do not have any tangible means of livelihood apart from heavily relying on their husbands for their upkeep. This is a reality especially in our rural communities in North Eastern Nigeria where a mixture of religion, culture and low literacy all combine to shape the image of women in this region. The consequence therefore, is a pool of women who cannot afford to cater for their needs including the uptake of basic health services for themselves and their children. This puts them at greater risk of maternal deaths from pregnancy related complications and deliveries attended to by unskilled personnel. Hence, it is not surprising that Gombe State in North Eastern Nigeria is one of the states in the region that records the highest maternal and new-born death rates in the world [1]. The National Health Insurance Scheme (NHIS) that is supposed to cover the general population has very low coverage and mostly enjoyed by urban and more educated women. Less than 2% of women age 15-49 have health insurance in Nigeria and that covers employees in the formal sector [2]. Women are therefore, left with no choice but to use out of pocket expenses to pay for their health needs further depleting their meagre resources and plunging them into more impoverishment. The logical thing to do is to empower these women economically to be able to have the independence to cater for their own basic needs, which include the utilization and payment for their maternal, neonatal and child health services [3]. A number of international donor organizations have supported some women groups in Northern Nigeria to improve access and utilization of maternal and child health services. This support came through different models of empowerment, which included provision of

matching grants, training on small income generating activities and facilitation of access to loans.

Targeted States High Impact Project (USAID funded) supported the formation of 100 Women groups in Bauchi and Sokoto states with the aim of helping women to increase their voices and gain more control of local decisions within communities and in households [4]. The groups later introduced internal savings and lending components within them enabling them to engage in trading activities. Gombe State is one of the 36 states of the federal republic of Nigeria, located in the Centre of the North Eastern part of the country (Figure 1).
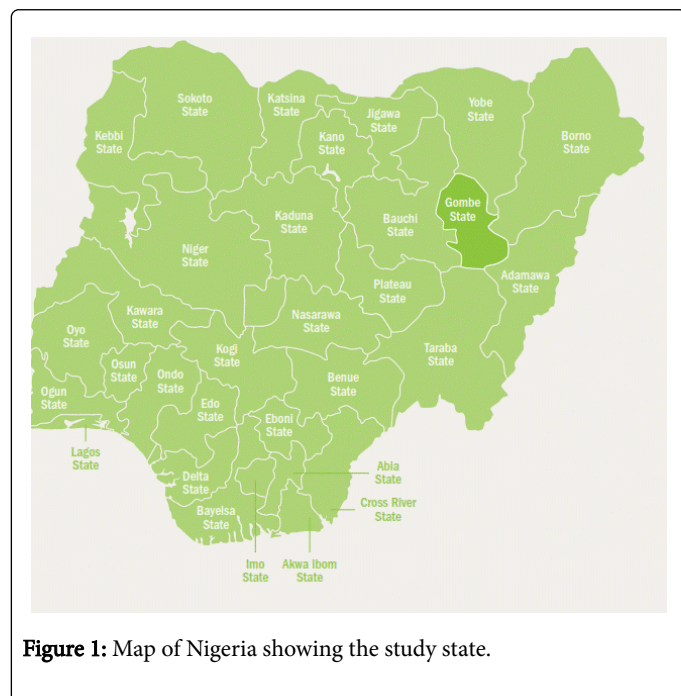

Figure 1: Map of Nigeria showing the study state.

The State has a population of 2,587,159 of which 50.1% (1,296,166) is male while 49.9% (1,290,993) is female and has a population growth of 3.2% annually [5] and the vegetation is guinea-savannah grassland. The budgetary allocation for health in the state stands at 2.1% of the total budget for the state, which is grossly inadequate for the effective delivery of health care in the state. Considering the poor maternal and child indicators, the Gombe State Strategic Health Development Plan (GSSHDP) for 2010-2015 had identified priority intervention areas to focus attention on. Maternal, perinatal and under five mortality will be addressed and reduced through implementing high impact public health interventions including the use of long lasting insecticidal treated nets (LLINs), intermittent preventive treatment (IPT), scaling up obstetric services, improved immunization and treatment of childhood illnesses [6]. Poverty incidence in the state is very high at 72.2%; this is coupled with the high out-of-pocket expenditures as citizens are not covered by NHIS in the state. ANC attendance for women is 58.2%, delivery in health facility is 27.6% and PNC check up by women in the first two days after birth is 32.8% [2]. A number of factors have been found to be significantly associated with WTP for health care from some studies. Age, education, income, quality of health care services and location (urban/rural) [7] were some of the factors documented to be influencing health care services. Information on cost to clients and their perception about the good quality of care was also essential factors found to be affecting changes in WTP [8]. This study conducted a baseline survey of the women groups to determine their "willingness to pay" for maternal and child health services (ANC, delivery and PNC), and to also determine the factors associated with the women's WTP from the baseline results.

Methods

Design

The design of the study was cross-sectional where data from baseline survey were collected. The methodology was quantitative involving data collection from members and non-members of women's savings and loan groups on their maximum willingness to pay for ANC, delivery at health facility and PNC and their utilization of maternal health services.

Study area

The study area was the north eastern state of Gombe, Nigeria. The choice of the state was based on the implementation of women groups in the state and its poor health indices, poverty exacerbated by the ongoing insurgency in the region further worsening the utilization of health services. Gombe (urban) and Kaltungo (rural/semi-urban) LGAs of the state were chosen for the study (Figure 2).

Figure 2: Map of Gombe State showing the local LGAs.

Two political wards in each the two LGAs were selected and women groups members from each of the two political wards were enrolled for the study. In each of the two LGAs, one ward was selected where women not participating in the women groups were enrolled.

Study period

The period of the study was for one month in August 2016 within which the baseline data on women groups were collected and analyzed.

Study population

The population for this study was the women in Gombe state registered as Mothers Groups that engaged in voluntary savings and loans schemes managed and supported by the state, civil society organizations and Non-Governmental Organization (NGO) partners. Women who did not belong to the women savings groups were also included for the purpose of comparison.

Sample and sample size

For the purpose of WTP estimation using Contingent Valuation Method (CVM), there is no literature on the standard formula for estimation of the sample size. However, previous studies on CVM have found out that at least 600 samples and 400 samples are required each for single bound and double bound CV methods respectively in order to ensure the statistical reliability of WTP estimations [9]. Considering the fact that the target population is the women groups and each group had between 25-30 members, and the two wards selected had five groups each, the sample size for one LGA was estimated at 250. The sample size for the 2 LGAs was therefore 500 taking the lower limit of 25 members per group. In the control wards, 125 women were sampled each based on the availability of five groups in each of the intervention wards.

Sampling technique

Purposive sampling was used in this study. Two LGAs Gombe (urban) and Kaltungo (rural/semi-urban) were purposively selected for the study. This was to allow for a mix of urban and rural characteristics of the women to be studied. Out of these two LGAs, the number of existing and registered women groups in the political wards of the LGA were identified and documented. Gombe LGA had 30 registered mothers Groups in six wards while Kaltungo LGA had 30 in 5 wards. Each ward had an average of five groups with minimum membership of 25 members. Two political wards were randomly selected from each of the two LGAs-Herwa Gana and Shamaki in Gombe LGA and Awak and Ture in Kaltungo LGA. All the women groups from each of the two wards were enrolled for this study. This gave 500 members in the two study LGAs within the 4 sampled wards. One ward in each of the sampled LGAs that did not have registered women groups for the intervention was randomly selected to serve as control (Bolari East ward in Gombe LGA and Kaltungo West in Kaltungo LGA). In each of the control wards, 125 women were sampled for the survey (Figure 3).

Figure 3: Flow chart for the sampling strategy.
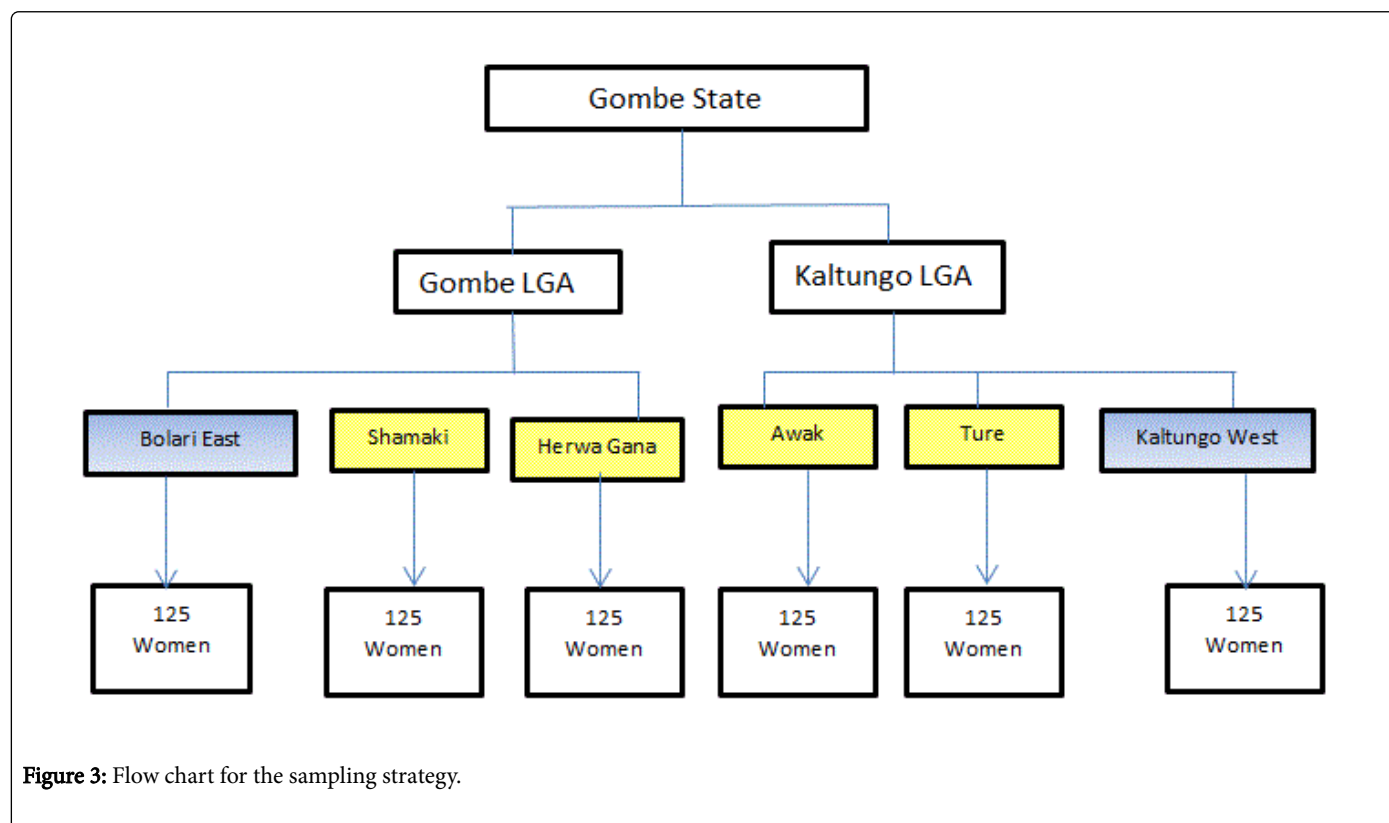
These women were also of childbearing ages that did not belong to any women savings group but with similar demographic and socio-economic characteristics.

Data collection

Trained survey assistants through questionnaires collected data and the process was paper-based. The questionnaire had three sections containing questions on background and household characteristics of the women, their knowledge of vital maternal health issues, literacy and numeracy skills and WTP for maternal care. The household survey tools used by IDEAS project of the London School of Hygiene and Tropical Medical in their evaluation of MNCH interventions in Gombe were adapted [10]. Questions on WTP for maternal services for the women's saving groups were also adapted from willingness to pay surveys manual [11]. The questionnaires were in three parts and covered socio-economic and demographic data of the women, their

knowledge and utilization of maternal health, educational level as well as their WTP for ANC, Delivery and PNC. The questionnaires were first translated into Hausa language, pretested and deployed in the field.

Data analysis

Quantitative data were collected and entered into Microsoft Excel and analysed using IBM SPSS Statistics 22 software. Descriptive statistics for the two groups were analysed at baseline. Binary logistic regression analysis was used for selected demographic and socio-economic factors to determine their relationship with the respondents' WTP for ANC, delivery in health facility and PNC.

Results

Seven hundred and fifty (750) women were sampled for the survey in two LGAs of the state one hundred kilometers apart and 689 responded (response rate of 91.9%). Women aged between 25-34 years constituted 41.2% of the sample. Islam is the religion of 65% of the women and 80% were pregnant before but 22.8% were currently pregnant. Only 25.1% of the women had ability to read and write in English but 52% could read and write in Hausa and Arabic. In terms of decision to spend the money they earn, 34.8% of the respondents take decision on their own, while on health care decisions only 12.5% take those decisions independently. The average monthly income of 48.9% of the women was below N500.00 (Nigeria Naira=$1.38) and 77.8% of them were unemployed and 84.8% married. Almost 90% of the respondents had Primary Health Care (PHC) centres available near them and 78% of them had course to visit the facilities at least once in the last six (6) months before the survey. Out of the 22% that gave reasons for their visit, 2.8% was for ANC, less than 1% for delivery and 1.5% for PNC. Walking was the major means of getting to the facilities for 81.7% of the women and 86% of them took between one and thirty minutes to reach the health facility from their houses (Table 1).

Variables		Frequency	Percentage (%)
Marital Status	Married	584	84.8
	Single	24	3.5
	Widowed/divorced	81	11.8
Age	15-24 years	229	33.2
	25-34 years	284	41.2
	35-44 years	154	22.4
	45-49 years	22	3.2
Religion	Islam	448	65
	Christianity	241	35
Pregnancy history	Previously pregnant	551	80
	Currently pregnant	157	22.8
Literacy	Ability to read or write in English	173	25.1
	Ability to read or write in other language	358	52
Decision on money spending	Respondent	240	34.8
	Husband/Partner	242	35.1
	Respondent and Husband/partner jointly	172	25
	Someone else	10	1.5
	Other	25	3.6
Decision on Health Care	Respondent	86	12.5
	Husband/Partner	287	41.7
	Respondent and Husband/partner jointly	276	40.1
	Someone else	16	2.3
	Other	24	3.5
Monthly Income	<N500	337	48.9

	N501-N1000	102	14.8
	N1001-N1500	40	5.8
	N1501-N2500	77	11.2
	>N2500	133	19.3
Occupation	Employed	21	3
	Self-employed	132	19.2
	Unemployed	536	77.8
PHC Facility	Availability	611	88.7
Number of visits to PHC Facility (last six months)	0 visit	153	22.2
	1-10 visits	527	76.5
	11-20 visits	6	0.9
	21-30 visits	3	0.4
Reasons for last visit to PHC	No response	538	78.1
	Family Planning	48	7
	Child Immunization	1	0.1
	Antenatal care	19	2.8
	Delivery care	4	0.6
	Post-Partum Care	10	1.5
	Neonatal Care	9	1.3
	Campaign	13	1.9
	Child Health Check	47	6.8
Reasons for non-visit	No reasons	153	22.2
	No illness in the family/No birth	314	45.6
	Facility too far away	140	20.3
	Costs too much money to go to health facility	82	11.9
Means of transportation to PHC Facility	Walking	563	81.7
	Bicycle	9	1.3
	Motor Vehicle	41	6
	Motor Bike	67	9.7
	Donkey/Horse/Cart	9	1.3
Time to PHC	1-30 minutes	592	86
	31-60 minutes	87	12.6
	61-120 minutes	10	1.5

Table 1: Demographic and socio-economic characteristics of the women.

The maximum willingness to pay for the women varied significantly based on the maternal health service sought (Table 2). PNC was found to be having the lowest value of N6000 ($16.48) with a mean of N552.60 followed by ANC with a value of N10000 ($27.47) and a mean of N786.79. Delivery services had the highest willingness to pay value at N50000 ($137.37) with a mean of N1013.34. Mean monthly income for the women was N1958.65 ($5.38).

Variables	WTPMAX for ANC	WTPMAX for Delivery	WTPMAX for PNC
Mean	786.79	1013.34	552.6
Median	500	500	500
Mode	1000	1000	500
std. deviation	1025.16	2628.67	576.44
Maximum	10000	50000	6000

Table 2: Descriptive statistics for the willingness to pay for ANC, Delivery and PNC (WTPMAX is the maximum willingness to pay).

To investigate the factors affecting WTP for ANC, Delivery and PNC, the following independent variables of interest from the socio-economic and demographic data were entered into the regression models: Marital Status, Age, Education, Religion, Average minimum income and decision on money spending and health care. Others were history of previous pregnancy, number of visits to the PHC facility as well as reasons for visit and non-visit. Willingness to pay for ANC, delivery and PNC were the three dependent variables for the three separate binary logistic regression models. The results of the regression analysis in Table 3 below show that Education (ability to read and write in English ($p<0.05$, OR=0.519), membership of savings and loans group ($p<0.001$, OR=0.149), occupation (Employed, p=0.02, OR=0.218) and marital status (p=0.005, OR=2.159) were found to have significant relationship with WTP for ANC.

Similarly, availability of PHC facility near the respondents ($p<0.001$, OR=0.163), higher monthly income (p=0.023, OR=0.463) and an average of one to ten previous visits to the facility (p=0.003, OR=0.511) were all significant predictors of WTP for ANC. WTP for Delivery was also found to be significantly associated with education of the women ($p<0.005$, OR=0.512) and membership of savings and loans group (p=0.005, OR=0.515). At least one to ten previous visits to the PHC facility ($p<0.001$, OR=0.299) and Marital status (p=0.018, OR=1.897) were also found to predict WTP for delivery significantly. Willingness to pay for PNC was found to be associated with membership of savings and loans groups only amongst all the other variables (p=0.048, OR=1.535) (Table 3).

Variables		ANC			Delivery			PNC		
		B	S.E.	OR	B	S.E.	OR	B	S.E.	OR
Membership of Savings and loans group		-1.904	0.266	0.149*	-0.663	0.235	0.515*	0.429	0.216	1.535*
Marital Status (Married)		0.77	0.274	2.159*	0.64	0.271	1.897*	-0.008	0.238	0.992
Education	English	-0.656	0.21	0.519*	-0.669	0.222	0.512*	0.211	0.187	1.235
	Other Languages	-0.333	0.18	0.717	-0.036	0.181	0.964	-0.069	0.161	0.934
PHC Facility	Availability of PHC facility nearby	-1.815	0.468	0.163**	-0.311	0.28	0.733	-0.275	0.272	0.759
	Transport means to PHC (Walking)	0.263	0.26	1.301	-0.083	0.24	0.92	0.008	0.22	1.008
	Number of Visits to PHC facility (1-10 visits)	-0.672	0.225	0.511*	-1.208	0.216	0.299*	-0.1	0.205	0.905
Pregnancy history	Previously Pregnant	0.237	0.297	1.267	-0.168	0.267	0.845	-0.47	0.257	0.625
	Currently Pregnant	0.182	0.224	1.2	-0.35	0.229	0.705	-0.07	0.195	0.932
Monthly income	N0-N500	-0.383	0.243	0.682	-0.285	0.237	0.752	-0.027	0.215	0.973
	N501-N1000	-0.384	0.309	0.681	0.017	0.295	1.017	-0.015	0.274	0.985
	N1001-1500	-0.656	0.427	0.519	-0.84	0.459	0.432	0.124	0.374	1.132
	N1501-2500	-0.77	0.338	0.463*	-0.542	0.337	0.582	0.395	0.305	1.484
Occupation	Employed	-1.522	0.606	0.218*	-0.77	0.661	0.463	0.073	0.469	1.075
	Self-employed/Unemployed	0.06	0.225	1.062	0.172	0.229	1.188	-0.221	0.201	0.802
	Constant	4.836	1.382	125.966	5.105	1.434	164.902	1.019	1.351	2.769
Calculation Index										

Model Chi-square	181.558 (p-value<0.001)	99.827 (p<0.001)	16.953 (p=0.568)
-2 log likelihood	764.521	780.85	913.144
Cox and Snell R^2	0.232	0.109	0.135
Nagelkerke R^2	0.31	0.152	0.189

Table 3: Logistic regression analysis results for factors affecting WTP for ANC, Delivery and PNC (*p<0.05, **p<0.001).

Discussion

In this study, we found several factors having relationship with women's willingness to pay for maternal services from their demographic and socio-economic characteristics. WTP for ANC was associated with more factors as compared to WTP for delivery and PNC. Membership of savings and loan groups, availability of primary health care facility close to the women, education (reading and writing in English) and employment were significant factors predicting WTP for ANC. Marital status, average monthly income and number of visits to the health facility was also found to have relationship with WTP for ANC. These results are consistent with findings from previous studies where living within 5 km radius of a facility was associated with ANC use [12].

Past experience of childbirth, distance and cost of transportation to health facility were equally associated with ANC use [13]. Previous studies found that Income and education for women affect WTP for maternal health [6,14]. Since maternal health information, education and communication materials are in English, women especially in the urban and rural areas who can read and write in English are likely to have more WTP for ANC in comparison to the women who do not have that ability. In the same vein, membership of savings and loans group, marital status, education and number of previous visits to the facility in the last 6 months were also found to be significant predictors of WTP for delivery in a health facility from the regression results. Women that had at least 1-10 visits to the health facility were more likely to be willing to pay more for delivery services as compared to those with more visits.

This could be due to the additional out of pocket expenses with each additional visit to the health facility. Interestingly, the respondents' independent decision on money spending and seeking health were not found to have any relationship with WTP for pregnancy in this study. This is in contrast to what Fawsitt and colleagues found out that if women were involved in decision-making actively during labour, it increased their willingness to pay more in order to have improvement of maternity services [15]. Mohale and colleagues documented the relationship between women's literacy and improved utilization of maternity care [16]. This agrees with the significant relationship of education in this study as a factor affecting WTP for delivery.

The regression model for willingness to pay for PNC and socio-demographic variables did not show any significant association between the variables and willingness to pay for PNC except membership of saving and loans group. The lack of association between the women's willingness to pay for PNC and their socio-economic and demographic characteristics on the other hand might be an indication of their ignorance on the importance of PNC in preventing maternal and child mortality.

This confirms the findings of Nigeria demographic and health survey where the percentage of women with a post-natal check up in the first two days after birth was only 32.8% [2]. This is also in agreement with the findings of Albers where they identified postpartum care as the most neglected component of maternity services [17]. In a recent qualitative study, low post-natal visits have been associated with limited value placed on post-natal care by women and providers [18]. All these might explain why willingness to pay for PNC has not been found to be associated with any of the variables tested apart from membership of savings group. However, we suggest further studies on the association of WTP and PNC and the prompt intervention of the State Government towards more funding and political support to improve PNC in the state.

Ethical Considerations

Ethical clearance was obtained from the Gombe state Ministry of Health Ethical Research Committee prior to the commencement of the study. All eligible women who participated in the survey signed consent forms describing this study and providing sufficient information for them to make an informed decision about their participation.

Conclusion

In conclusion, the most important factors associated with the willingness to pay maternal services according to the findings of this study are membership of savings and loan group, closeness to a health facility, education, income and marital status. Occupation and number of previous visits to the health facility were equally found to be significant predictors of willingness to pay for maternal services.

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