

Assessment of Knowledge, Attitude and Practice of skilled assistance seeking for maternal healthcare services and associated factors among Women in West shoa zone, Oromia, Region, Ethiopia, 2017

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Abstract

Background: Access to skilled health services during pregnancy, childbirth and postpartum is crucial element which promotes the health and wellbeing of the mother and new born. The aim of the study was to assess women's knowledge, attitude and practice of skilled assistance seeking for maternal healthcare services in West Shoa zone.

Methods: A community based cross sectional quantitative design was conducted in West Shoa zone, Oromia, Ethiopia in 2017. A multistage, random sampling technique was used to select women who had birth in the past one year preceding the study. Interviewed administered structured questionnaire were used to collect the data. A total of 654 women were involved in this study. Data was analysed using SPSS version 20 statistical software package. Pre-tested and structured questionnaires were used to collect the data by trained data collectors. Logistic regression model was used to control the confounding variables at $p\text{-value} < 0.05$.

Results: Out of 654 respondents, 416 (63.6%) delivered at health facilities and 268 (36.4%) at home. Skilled assistance seeking for maternal health services was significantly associated with mother's education (AOR=3.0, 95%CI=1.18-7.84), mother's access to maternal health information (AOR=3.1, 95%CI=1.13-8.41). Women's awareness was significantly associated with antenatal-care attendance (AOR 1.9) and institutional delivery (AOR 3.1). Women who had experience obstetric problems were twice seek skilled provider than those who had not had complications (AOR=2.3, 95%CI=1.39-3.75. P-value=0.001). Women who experiences complications seek a skilled postnatal care more likely compared with those who did not have such characters (AOR=2.2, 95%CI=1.35-3.66. P-value=0.002).

Conclusion: The study revealed that low practice of sought care from skilled providers. Hence, it is highly recommended to improve the socioeconomic factors such as maternal literacy, availability of transport facility in case of emergency referral and service availability may increase care seeking from health facilities. **Keywords:** Skilled assistance, Seeking and Maternal healthcare services.

Background

Maternal mortality remains a substantial concern globally. Worldwide an estimated 303 000 mother died due to maternal causes during pregnancy and childbirth. Two thirds of this death (201 000) occurs in Sub-Saharan Africa in 2015 (WHO, 2015(a)).

Achieving the ambitious target of the Sustainable Development Goals (SDGs 3.1) in reducing maternal deaths to less than 710 per 100,000 live births by 2030 would require rigorous improvements in skilled maternal health care (Transforming our world...2015). However, only half of women in developing regions receive the recommended amount of health care services they need (Strategies maternal mortality... 2015).

Ethiopia has made a significant improvement in reduction of maternal mortality. According to Central Statistics Agency (CSA, 2016) describes maternal mortality ratio (MMR) has declined from 676 in 2011 to 412 in 2016 per 100,000 live births. Despite the progress in improving maternal healthcare, there still remain significant barriers to access and relatively low rates of utilization. Many studies identified several factors that influences an individual's decision to seek care at a facility such as socio-demographic, economic, behavioural and cultural factors affects (Feyissa and Genemo, 2013; Asfaw et al 2016:415).

Even though maternal healthcare services is the most important interventions to decrease maternal morbidity and mortality but only access to care alone is not enough to improve maternal health outcomes. According to (Wontumi, GM, 2017) describes poor quality of care and inaccessible infrastructure is responsible for persistently high levels of maternal and child mortality in low- and middle-income countries.

The behaviour of women's skilled assistance seeking to maternal health services in a given population is critical to improve maternal and neonatal wellbeing (Engmann et al 2016). However, a great proportion of women in Ethiopia do not access health care services. For example the Central Statistical Agency (CSA, 2016) reports only 62%, 28% and 17% of women received skilled antenatal care, skilled delivery from health professionals and postnatal care, respectively. There are very limited studies in the study area that investigated community factors which might hinder the utilization of skilled maternal healthcare services. Therefore, this study comprehensively explored the women's knowledge, attitude and practice regarding maternal healthcare services.

Methods

A community based cross sectional quantitative design was conducted on April 03 to May 28, 2017 among women who had birth in the past one year preceding the study. The study was conducted in West Shoa Zone, Oromiya region, Ethiopia. The administrative center for West Shoa Zone is Ambo city which is located 112 km west of Addis Ababa, capital city of Ethiopia. The zone has 19 woredas with over 528 rural kebeles and 58 urban kebeles. Currently, the west shoa zone consists of 7 governmental hospitals, 92 health centers and 578 health posts.

ELIGIBLE CRITERIA

Inclusion criteria

- Women of reproductive age 15–49 years who gave birth in the last one year before the survey
- Women who lives in the study area at least for six months.

Exclusion criteria

- Women with physical and mental illness were excluded from the study.

Sample size and sampling procedures

The sample size was calculated using single population proportion formula $[(n = (Z\alpha/2)^2 p (1 - p)/d^2)]$ using a proportion of mother's seeking behavior, $p = 73.8\%$ (Lakew et al 2015:109) with 5% of marginal error (d) and 95% confidence level, design effect of 2 to correct the design effect and 10% non-response rate yields final sample size was 654 respondents. Multi-stage random sampling technique was applied to select the study participants. Initially, five weredas was selected by simple random sampling from a total of 19 wereda of West shoa zone. Then the five woredas was stratified by residence (urban and rural kebeles), then the kebeles of the five woredas was allocated proportionally. Then the target population (women who get birth in the last 12 months) was allocated by proportionally to each urban and rural kebeles. Finally, eligible mothers who had birth in the past one year were interviewed consecutively until the required sample sizes were fulfilled.

Study variables

Dependent Variables

Variables used in this study consists of three dependent variables (antenatal care, safe delivery and postnatal care; each variable was dichotomous in nature) regarding seek skilled assistance to obstetric care. Definitions of these three dependent variables are:

- Antenatal Care indicates whether the mother received at least three antenatal care visits (coded as 1 and if care was not received, it is coded as zero (0)). Full antenatal care has been defined as at least three antenatal care visits, consumed 90+ Iron and Folic Acid tablets and two or more tetanus toxoid injections taken.
- Safe Delivery indicates whether the delivery is assisted by skilled providers (coded as 1) if not coded as zero (0). Safe delivery is defined as either institutional delivery or if home delivery assisted by doctor, auxiliary nurse midwife, nurse, midwife, lady health visitor or other health personnel.
- Postnatal Care indicates whether the women received care from skilled providers within 42 days of the birth (If yes coded as 1, if not coded as 0)

Independent Variables

The independent variables included the socio-demographic, obstetric and services related factors.

***Socio-demographic factors:* residence, age, ethnicity, religion, marital status, mother educational status, income, occupation, husband education, decision making**

Obstetric characteristics: Parity, Age at first pregnancy, pregnancy planned, antenatal care visit, Knowledge and attitude towards skilled obstetrics services

Service Factors: Distance to facility, transport and telephone access

Operational definitions

Skilled providers: Health professionals (midwife, doctor, nurse), who have been effectively educated and trained in the skills necessary to manage normal and complicated pregnancies, childbirth and the immediate postnatal period (WHO 2006).

Skilled obstetrics care: The elements of obstetric care needed for the management of normal and complicated pregnancy, delivery and the postpartum period by a competent health care provider with the necessary equipment and effective health care system including referral facilities for emergency obstetric care (WHO 2006).

Seek skilled assistance: respondents who sought assistance from Doctors, Nurses, Midwives, or Health Officers for any one of the recent pregnancy complications.

Non-skilled providers: include health extension workers (HEWs), traditional birth attendants (TBAs) and relatives or family members who cannot fulfill the definition of a skilled provider.

Transport access: includes availability of vehicle and transport (car, ambulance, bus, or bajaj), and comfortable road.

Knowledge on skilled obstetric care:

A total of six questions were given to the respondents to assess their level of knowledge on skilled obstetric services. Those who scored between 3–6 marks (above 50%) were said to have good knowledge, while those who scored between 0–2 marks (below 50%) were said to have a poor knowledge of skilled obstetric care.

Attitude towards skilled obstetric care:

Attitude related questions were graded according to Likert scale. Each item score between 1 to 4 points. The options were: 1 point for 'Strongly agree', 2 points for 'agree', 3 points for 'disagree' and 4 points for 'strongly disagree'. Then the collected answers were then converted to 1 (Agree and Strongly agree) and 0 (Strongly disagree and Disagree). A total of four questions were given to assess the respondent's attitude

towards skilled obstetric care. Those who scored between 2–4 marks (50 % and above) were considered as having a positive attitude while those who scored between 0–1 marks (50% and below) were considered as negative attitude towards skilled obstetric care.

Practice of skilled obstetric care seeking:

A total of three questions relating to the respondent's practice of seeking care from skilled provides in health institution for pregnancy, childbirth and postnatal. Those who scored above 50% were said to have good practice and those who scored below 50% were said to have poor practice.

Data collection tools

Interviewed administered structured questionnaire were used to collect the data. The questionnaire focused on socio-demographic characteristic, obstetric history, and service related factors includes infrastructure, knowledge, attitude and practice of women's skilled assistance seeking for obstetric care. Training on data collection techniques was given for data collectors for two days before the actual work about the aim of study, sampling procedures, ways of administering and collecting the questionnaire and technique of interviewing was given. Each data were checked for completeness and consistency.

Data quality assurance

To assured the quality of data the following measures was undertaken. The questionnaire was initially prepared in English, translated to local language Afan Oromo, and back to English by different individuals to check for consistency of meaning. It was then pre-tested on 5% of the sample and necessary corrections and amendment was done. Six BSc Nurse/midwife data collectors were recruited. Training on data collection techniques was given to the data collectors for two days. The structured questionnaire was discussed in detail going through every question and clarification was provided.

Informed consent was obtained to ensure the willingness and confidentiality for all of the study subjects. Then the collected data was reviewed and cross checked for completeness and consistency by principal investigator on daily bases at the spot during the data collection time and necessary corrections and changes were made.

All filled questionnaires were checked daily for completeness, accuracy, clarity and consistency by the supervisors and the principal investigators and necessary corrections and changes were made. Completeness and consistency of variables during data entry and analysis was checked using frequency distributions and cross tabulations.

DATA PROCESSING AND ANALYSIS

Data were entered and cleaned using Epi Info software, and then exported to SPSS version 24.0 statistical software packages for analysis. Bivariate analysis between dependent and independent variables was performed separately using binary logistic regression.

The degree of association between independent and dependent variables was assessed using Odds ratio and other statistical tests with 95% confidence interval and P-value (<0.05). Bivariate and multivariate logistic regression analysis was employed to examine the relationship or statistical association between independent and outcome variables. Variables which have association in bivariate analysis were included in multivariate analysis. Then multivariate analysis using forward stepwise multiple logistic regression technique was done to evaluate independent effect of each variable on three dependents variables such as (antenatal care, institutional delivery and postnatal care) by controlling the effect of other variables. Finally the results were presented using tables, figure and texts.

Results

Socio-demographic characteristics of study participants

A total of 654 were enrolled in to the study in West shoa zone. The mean age of the study participant was 26.12 years. Majority 405 (61.9%) of the respondents were residing in rural areas. Majority (78.2 %) of the women at the time of last pregnancy were 20–34 years of age with mean age of 25.7 years \pm 6.3. The dominant ethnicity in the study area was Oromo 568 (86.9 %). Majority 583 (89.1 %) of the women were married. Most of the women's educational status was grade 1 up to grade 8 which was 266 (40.7%). 30.1% of mother's were a house wives. The median monthly income of the family was <500 birr (Table1).

Obstetric Characteristics of respondents

477 (72.9%) of mothers have 2–4 children. 323 (49.4%) of the mothers were 15–19 years old and 139 (25.5%) were age 20–24 years during their last recent birth. Majority 541(82.7%) of the respondents had planned their last pregnancy. Majority of the respondents 376 (57.5%) had experienced pregnancies complications in their last pregnancy. 223 (34.1%) of the mothers encountered at least one complication of labor during the last recent birth out of whom 112 (50.2%) had excessive vaginal bleeding (Table2).

Services related factors and women decision making for healthcare services

Regarding transport access majority of the respondents 556(85%) mentioned there is no transport facility in case of emergency referral. Majority of the respondents 379(58%) replied that it takes two to three hours to reach to health facility from their house. Considering decision-making to deliver in health facility, more than half 334(51.1%) decided by both husband and wives (Table3).

Knowledge and Attitude about antenatal, delivery and postnatal care Services

Out of 654 women surveyed, majority of the respondents 632(96.0 %) of them heard about skilled maternal health services and their main sources of information were health professionals 265 (40.5%).

Regarding the knowledge on skilled maternal healthcare, majority of the respondents 96.0% knew that every pregnant mother should receive antenatal care. Considering safety, 84.1% referred institutional delivery as safe, while 15.9% mentioned home delivery as a risk. Regarding skilled providers, 85.3% mentioned health professional as skilled, 12.8% TBA as skilled and 1.8% relatives as skilled providers. Among the respondents, 72.9% knew that PNC is important and 27.1% knew that PNC is not important (Table 4).

Regarding the level of attitude on the need of skilled maternity care, it was found that, all the respondents had a positive attitude towards the importance of seeking assistance from skilled providers for pregnancy and childbirth. However, 49.7% of the respondents had a poor attitude towards delay in seeking care results maternal death. Majority of the respondents had a positive attitude towards importance of hospital delivery (Table 5).

Practice of respondents towards skilled maternal healthcare services

About 89%, 63.6% and 58.6% of the women had sought skilled providers for their antenatal, skilled delivery and postnatal care respectively. Found that 249(42.8%) respondents had four and above antenatal checkup.

Out of 416(63.6%) of respondents attended their recent childbirth in health facilities, 42.8%, 12.7%, 5.4%, and 1.2% attended by Midwives, Doctor, Nurses and Health officer respectively. Majority 582(89%) of the mothers had antenatal checkup. However, 36.4% gave birth at home.

Out of those mothers delivered at home, 95(39.7 %) were assisted by TBA. Regarding the reason for home delivery, 101(42.2%) labor was urgent, 92(38.5%) usual experience, 27(11.3%) health facility are distant, 14(5.9%) presence of traditional attendants and 5(2.1%) due to lack of transportation. 376(57.5%) encountered birth complication in their recent childbirth. Among those who delivered at health institutions, only 24(5.8%) had given birth at hospitals while the remaining had delivered at the health centers (Table 6).

Factors associated with skilled assistance seeking for antenatal services

On multivariate analysis, planned pregnancy, transport access, awareness about skilled obstetric care providers and mother's positive attitude were found to be significantly associated with antenatal care. However, socio-demographic variables were not significantly associated with seek antenatal care.

Respondents with good knowledge were twice sought skilled antenatal care than low level of knowledge (AOR = 1.9, 95%CI = 0.04–0.87, P-value = 0.01). Unplanned pregnancy were less likely to seek antenatal care than planned pregnancy (AOR = 0.1, 95%CI = 0.05–0.16, P-value = 0.000).

Respondents with positive attitude regards to antenatal care were found to be statistically significant with skilled antenatal care (AOR = 0.1, 95%CI = 0.01–0.72, P-value = 0.02). Respondents with planned

pregnancy and access to transport were found statistical significance to skilled antenatal care attendant (Table 7).

Factors associated with skilled assistance seeking for delivery services

In multivariate analysis, women having one child, attend at least one antenatal care, experienced birth complications and had awareness about skilled obstetric care were found to be statistically significant with skilled birth attendance.

Mothers having at least one antenatal care in their recent pregnancy were about three times more likely to attend birth by a skilled provider compared with those who had no antenatal visit (AOR = 3.1, 95%CI = 1.13–8.41. P-value = 0.03). Women who had experience birth complications were twice seek skilled provider than those who had not had complications (AOR = 2.3, 95%CI = 1.39–3.75. P-value = 0.001). Women who had awareness about skilled obstetric care were three times more likely to have birth attendance by a skilled provider with their counter parts (AOR = 3.1, 95%CI = 1.13–8.41. P-value = 0.03) (Table 8).

Factors associated with skilled assistance seeking for postnatal services

In multivariate analysis, number of ANC visit, experience pregnancy complication and source of information about skilled obstetric care were significantly associated with postnatal care by a skilled provider.

Similar to skilled delivery, women who seek skilled provider for their pregnancy complications, and women who had experience of at least one antenatal care for their previous pregnancies used a skilled postnatal care more likely compared with those who did not have such characters (AOR = 2.2, 95%CI = 1.35–3.66. P-value = 0.002) and (AOR = 2.1, 95%CI = 1.1–4.2. P-value = 0.025) respectively (Table 9).

Discussion

This study assessed the women's knowledge, attitude and practice of skilled assistance for obstetric services. The study revealed a relatively high level of knowledge of skilled maternal services and positive attitude, but the practice showed relatively low utilization of ANC, skilled delivery and PNC 42.8%, 62% and 58.6% respectively.

Women who planned their pregnancy were eight times more likely to seek antenatal care than those women who unplanned their pregnancy (AOR = 8.2, 95%CI = 3.39–19.78). Women who had access to transport were two three times more likely to seek antenatal care than those women who had no transport access (AOR = 3.1, 95%CI = 1.46–6.61). These finding is consistent with the study done in Sidama, Zone, Ethiopia (Rodamo, KM et al 2015:69).

Mothers with secondary school and above were three times likely to deliver at health facility than mothers who do not have formal education (AOR = 3.0, 95%CI = 1.18–7.84). These finding is consistent with other study done in Ethiopia which showed that better educated women were more likely to attend their

childbirth by skilled birth attendants (Taye et al 2017; Demisew et al 2016; Ejeta et al 2015). The reason could be an educated woman may have more access to health services than illiterate women.

Mother's having information about the benefit of skilled obstetric care were three times more likely to give birth in health institution than those who have no information (AOR = 3.1, 95% CI = 1.13–8.4). This finding was similar to the study done in Horro Guduru Wollega Zone that showed mothers who had access to health information on benefit of giving birth in health institution were more likely to give birth in health institution (Demisew et al 2016).

The study finding revealed that 89.0% mothers had received antenatal care at least once for their previous pregnancy, but only 63.6% mothers gave birth at health institutions. This implies that mothers who follow ANC service at health center tend to deliver at home. This could be a serious challenge to promote safe delivery service. This is consistent with other previous finding (Dida et al 2014:288). Regarding the knowledge on skilled maternal healthcare, out of 654 women surveyed majority of the respondents 96.0% knew that every pregnant mother should receive antenatal care. Considering safety, 84.1% referred institutional delivery as safe, while 15.9% mentioned home delivery as a risk. Regarding skilled providers, 85.3% mentioned health professional as skilled, 12.8% TBA as skilled and 1.8% relatives as skilled providers. Among the respondents, 72.9% knew that PNC is important and 27.1% knew that PNC is not important.

Regarding the level of attitude on the need of skilled maternity care, it was found that, all the respondents had a positive attitude towards the importance of seeking assistance from skilled providers for pregnancy and childbirth. However, 49.7% of the respondents had a poor attitude towards delay in seeking care results maternal death. Logistic regression model was used to examine the association of all possible variables with skilled assistance seeking for maternal health services were presented in the Table 2. Skilled assistance seeking for maternal health services was significantly associated with mother's education (AOR = 3.0, 95%CI = 1.18–7.84), mother's access to maternal health information (AOR = 3.1, 95% CI = 1.13–8.41), ANC visit during last pregnancy (AOR = 3.1, 95%CI = 1.13–8.41) at $p < 0.05$. The findings are consistent with other studies as (Mbonu and Ebere 2018; Sodere et al 2017; Taye et al 2017; Demisew et al 2016; Ejeta et al 2015).

Conclusions

In this study even though the majority of mothers were knowledgeable about skilled maternity care services and had a positive attitude towards maternal health services, but their practice to utilized the health services were low. This study revealed poor practice of mother to seek care from skilled providers. Thus the study recommend to improve socioeconomic factors such as maternal literacy, available transport facility in case of emergency referral for obstetric care and service availability may increase care seeking from health facilities.

Abbreviations

<h1 data-xsweet-outline-level="0">AOR- Adjusted Odds Ratio</h1>
<h1 data-xsweet-outline-level="0">ANC- Antenatal Care</h1>
<h1 data-xsweet-outline-level="0">CI- Confidence Interval</h1>
<h1 data-xsweet-outline-level="0">CSA- Central Statistical Agency</h1>
<h1 data-xsweet-outline-level="0">EDHS- Ethiopian Demographic Health Survey</h1>
<h1 data-xsweet-outline-level="0">HCW- Health Care Worker</h1>
<h1 data-xsweet-outline-level="0">MDG- Millennium Development Goals</h1>
<h1 data-xsweet-outline-level="0">MMRs: Maternal Mortality Ratios</h1>
<h1 data-xsweet-outline-level="0">MOH- Ministry of health</h1>
<h1 data-xsweet-outline-level="0">OR- Odd Ratio</h1>
<h1 data-xsweet-outline-level="0">PNC- Postnatal Care</h1>
<h1 data-xsweet-outline-level="0">SDG- Sustainable Development Goal</h1>
<p>SPSS- Statistical Package for Social Sciences</p>
<h1 data-xsweet-outline-level="0">TBA- Traditional Birth Attendants</h1>
<h1 data-xsweet-outline-level="0">UNAIDS - United Nations Program on HIV/AIDS</h1>
<p>UNDP- United Nations Development Program</p>
<h1 data-xsweet-outline-level="0">UNFPA - United Nation Population Fund</h1>
<h1 data-xsweet-outline-level="0">WHO - World Health Organization</h1>

Declarations

Ethics approval and consent to participate

The study was approved by College Research and Community Service Ethical Committee (CRCSEC) of Ambo University. Official permission to conduct the study was obtained from the respective District Health Offices. The purpose of the study, potential risk and benefits and rights of participants were explained. The participants were assured about the confidentiality of the information they provided. All study participants provided written informed consent and for participant's age under 16 written consent was obtained from their parents. The participation in the study was voluntary, and so participants could withdraw from the study if they felt any inconvenience.

Consent for publication

- Not applicable.

Availability of data and materials

- The data sets used during the current study is available from the corresponding author on reasonable request.

Competing interests

- The authors declare that they have no competing interest.

Funding

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Authors' contributions

- E G has developed in research concept, research methodology, coordination of the study, data entry, statistical analysis, interpretation of data and development of the draft manuscript. F W involved in supervision of data collection process and statistical analysis and collaborated to draft the manuscript M M has participated on supervision of data collection, data entry and analysis and draft the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1 Socio-demographic characteristics of respondents

Variable	Category	Frequency	Percent (%)
Residence	Rural	405	61.9
	Urban	249	38.1
Age	15-19	21	3.2
	20-24	137	20.9
	25-29	262	40.1
	30-34	152	23.2
	35-39	69	10.6
	40-44	11	1.7
	45-49	2	0.3
Marital status	Single	15	2.3
	Married	583	89.1
	Divorced	37	5.7
	Divorced	19	2.9
Educational status of the mother	Unable to read and write	171	26.1
	Grade (1-8)	266	40.7
	Grade (9-12)	139	21.3
	College and above	78	11.9
Occupation	Farmer	181	27.7
	House wives	197	30.1
	Daly worker	41	6.3
	Merchant	111	17.0
	Office worker	108	16.5
			2.4
Income	<500 birr	419	64.1
	500-1000 birr	141	21.6
	>1000 birr	87	13.3
	None	7	1.1

Table 2 Obstetric Characteristics of respondents

Variable	Category	Frequency	Percent (%)
Number of children	1	97	14.8
	2-4	477	72.9
	≥5	80	12.2
Age at first pregnancy	15-19	318	48.6
	20-24	323	49.4
	≥24 years	13	2.0
last pregnancy planned	Yes	541	82.7
	No	113	17.3
Birth outcome	Live birth	630	96.3
	Still birth	24	3.7
Experience complication in your recent pregnancy?	Yes	376	57.5
	No	278	42.5

Table 3 Services related factors and women decision making for healthcare services

Variable	Category	Frequency	Percent (%)
Transport facility in case of emergency referral	Yes	98	15
	No	556	85
Distance to facility per hour	<1hr	2	0.3
	2-3hr	379	58
	>3hr	273	41.7
Telephone access	Yes	404	61.8
	No	250	38.2
Decision maker to deliver in health facility	Self	133	20.3
	Husband	170	26
	Both	334	51.1
	Relatives	17	2.6

Table 4 Knowledge of respondents towards skilled maternal healthcare

Variable	Category	Frequency	Percent (%)
Ever heard about skilled maternal health services?	Yes	628	96.0
	No	26	4.0
Source of information about skilled maternity care?	Friends	92	14.1
	HEW	160	24.5
	Media Radio/ TV	31	4.7
	Families	80	12.2
	Health professionals	265	40.5
Know every pregnant mother should receive antenatal care	Yes	632	96.6
	No	22	3.4
Which is safe for child delivery?	Health facility	550	84.1
	Home delivery	104	15.9
Which provider skilled for delivery?	Health professional	558	85.3
	TBA	84	12.8
	Relatives	12	1.8
Know PNC important?	Yes	477	72.9
	No	177	27.1

Table 5 Attitude of respondents towards skilled maternal healthcare services

Variable	Strongly agree	Agree	Disagree	Strongly disagree
Do you agree the importance of skilled health providers for maternity care?	442(67.6)	212(32.4)	-	-
How do you agree that the need of having a plan on possible pregnancy complication?	214(32.7)	432(66.1)	8(1.2)	-
Do you agree delays in seeking care for obstetric complication contributes to maternal death	83(12.7)	325(49.7)	234(35.8)	12(1.8)
How do you agree the importance of planning delivery place?	149(32.8)	498(76.1)	7(1.1)	-

Table 6 Practice of respondents towards skilled maternal healthcare services

Variable	Category	Frequency	Per cent (%)
Attend ANC for last pregnancy?	Yes	582	89.0
	No	72	11.0
Number of ANC visit	1	20	3.4
	2-3	313	53.8
	4 and above	249	42.8
Place of delivery	Home	238	36.4
	Health institution	416	63.6
Delivery assisted by	Doctor	35	5.4
	Nurse	83	12.7
	Midwives	280	42.8
	Health officer	8	1.2
	I don't remember	9	1.4
Home assisted by	TBA	95	39.7
	Neighbor	88	36.8
	Relatives	51	7.8
	HEW	5	2.1
Reasons for home delivery	Usual experience	92	38.5
	Labor is urgent	101	42.2
	Presence of TBA	14	5.9
	Health facilities are far away	27	11.3
	Lack of transportation	5	2.1
Birth outcome	Live birth	630	96.3
	Still birth	24	3.7
Did you attend PNC from health facility for last pregnancy?	Yes	383	58.6
	No	271	41.4
Experienced obstetric problem the last pregnancy?	Yes	376	57.5
	No	278	42.5

Table 7 Binary logistic regression model to examine the association of ANC services

Variable	Category	Seek ANC		Crude OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
		Yes	No				
Age at last delivery	15-19	17	4	0.56(0.01-44.49)	0.56		
	20-24	131	6	0.04(0.03-0.82)	0.04	1	
Marital status	Single	9	6	1.2(0.12-12.5)	0.8		
	Married	536	47	0.06(0.02-0.66)	0.000	1	
Mothers education	No formal education	141	30	1.0(0.59-17.15)	0.99		
	formal education	107	33	10.9(1.46-81.1)	0.02	1	
Husband education	No formal education	107	17	2.0(0.36-11.18)	0.42		
	formal education ³	203	30	0.09(0.04-0.25)	0.000	1	
Income	<500 birr	86	1	3.7(0.11-121.75)	0.46		
	>1000 birr	366	53	0.03(0.002-0.38)	0.007	1	
Planned pregnancy	Yes	513	28	0.1(0.05-0.15)	0.08	8.2(3.39-19.78)*	0.000
	No	69	44				
Number of children	1	89	8	0.7(0.14-3.96)	0.74		
	2-4	440	37	0.1(0.09-0.29)	0.000	1	
Transport access	Yes	298	25	0.5(0.3-0.85)	0.01	3.1(1.46-6.61)*	0.003
	No	284	47				
knowledge about skilled maternity care	Yes	565	63	0.2(0.09-0.49)	0.000	1.9(0.04-0.87)	0.01
	No	17	9				
Attitude about skilled obstetric care	Favorable	408	34	0.38(0.23-0.63)	0.000	1	

Significant for (P-value<0.05) * *Statistically significant for (P-value<0.01)*

Table 8 Binary logistic regression model to examine the association of delivery services

Variable	Category	Seek skilled delivery		Crude OR (95% CI)	P-value	Adjusted OR (95% CI)	P-value
		Yes	No				
Residence	Rural	248	157	1.3(0.94-1.83)	0.1		
	Urban	168	81				
Marital status	Single	9	6	0.1(0.04-0.81)	0.025		
	Married	384	199	0.1(0.004-0.42)	0.001		
Mothers education	No formal education	88	83	6.4(3.0-13.28)	0.000		
	formal education	98	41	2.8(1.3-6.06)	0.007	3.0(1.18-7.84)*	0.02
Husband education	Illiterate	76	48	0.5(0.26-1.1)	0.09		
	9-12	93	33	0.3(0.14-0.64)	0.002		
	College	110	22	0.1(0.07-0.37)	0.000		
Planned pregnancy	Yes	382	159	0.17(0.11-0.28)	0.000	0.3(0.21-0.75)*	0.004
	No	34	79				
Number of children	1	13	7	0.04(0.02-0.09)	0.00	0.07(0.03-0.19)	0.000
	2-4	221	92	0.09(0.05-0.17)	0.00	0.11(0.05-0.24)	0.000
ANC attend	Yes	389	193	0.29(0.17-0.49)	0.000	1	
	No	27	45				
Number of ANC	at least once	13	7	2.7(1.59-4.72)	0.000	3.1(1.13-8.41)	0.03
	2 and above	221	92	0.6(0.48-0.97)	0.04		
Experience complication	Yes	205	171	2.6(1.86-3.69)	0.000	4.7(2.7-8.43)*	0.001
	No	211	67				
Transport access	Yes	214	109	0.7(0.58-1.09)	0.16	1	

knowledge about skilled delivery	No	202	129				
	Yes	407	221	0.28(0.13-0.65)	0.003	3.1(1.13-8.41)	0.03
Attitude about skilled delivery	No	9	17				
	Positive	305	111	0.4(0.35-0.69)	0.000	1	
	Negative	137	101				

Significant for (P-value<0.05)

** Statistically significant for (P-value<0.01)*

Table 9 Binary logistic regression model to examine the association of PNC services

Variable	Category	Seek PNC		COR(95% CI)	P-value	AOR(95% CI)	P-value
		Yes	No				
Number of children	2-4	385	92	0.34(0.1-0.83)	0.01	-	
Number of ANC	4&above	184	65	0.44(0.23-0.84)	0.01	2.1(1.1-4.2)*	0.025
Transport access	Yes	249	74	3.3(1.39-8.0)	0.007	-	
Experience pregnancy complication	Yes	256	120	2.2(1.0-5.14)	0.04	2.2(1.35-3.66)*	0.002
Source of information About skilled providers	Health professional	231	34	2.3(1.03-5.07)	0.04	3.7(1.68-12.79)*	0.003
Planned pregnancy	Yes	454	87	0.3(0.14-0.66)	0.003	0.3(0.22-0.68)*	0.001

Significant for (P-value<0.05)

** Statistically significant for (P-value<0.01)*

Figures

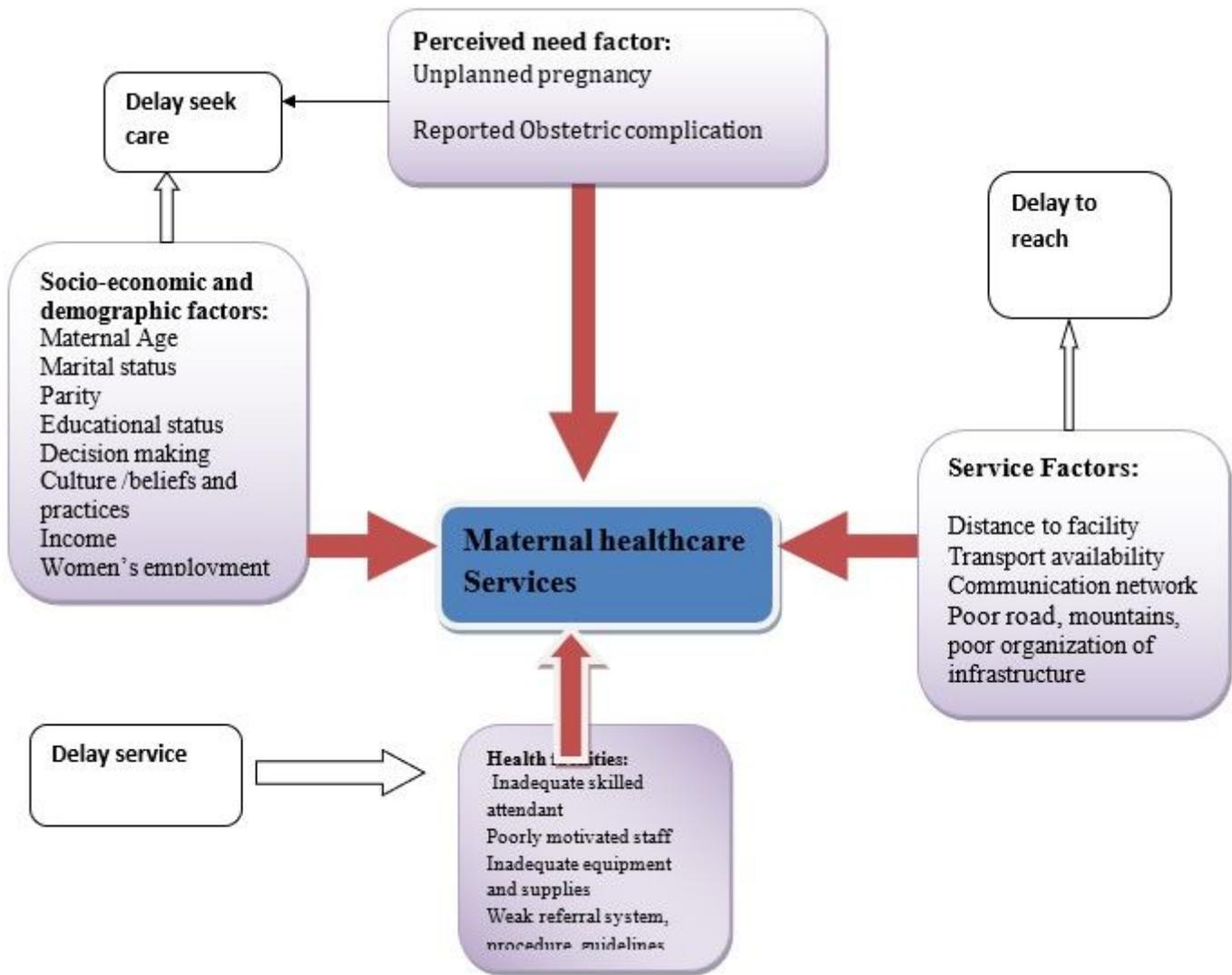


Figure 1

Conceptual framework adopted and modified from the Three Delays Model (Thaddeus, S and Maine, D 1994:1110).