ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACTORS ASSOCIATED WITH DELIVERY CARE AMONG WOMEN OF REPRODUCTIVE AGE IN OROMIA ETHIOPIA

BY

BIRHANU BUTA

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This is to certify that the thesis prepared by Birhanu Buta Berga Entitled; **'Factors associated with delivery care among Women of reproductive age in Oromia Ethiopia'** and submitted in partial fulfillment of the requirements for the degree of master of science in population studies (Reproductive Health) complies with the regulations of the university and meets the accepted standards with respect to the originality and quality.

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Acronyms and Abbreviations

ANC	Antenatal Care
CPR	Contraceptive Prevalence Rate
CSA	Central Statistical Agency
DHS	Demographic Health Survey
EDHS	Ethiopian Demographic and Health Survey
FBD	Facility Based Delivery
FMoH	Federal Ministry of Health
MGD	Millennium Development Goal
MMR	Maternal Mortality Ratio
TBA	Traditional Birth Attendants
UNFPA	United Nation Population Fund
UNICEF	United Nation Children Fund
WHO	World Health Organization

Abstract

In Oromia region, the magnitude of births occurs in health facility remain low and skilled birth attendants attend few births since high numbers of births take place outside health facility. By taking into account these facts, this study assess factors associated with institutional delivery care service utilization in Oromia region, using data from the third and fourth round Ethiopia demographic health survey 2011 and 2016. Using cross sectional research design and the binary logistic regression model, the study indicated that women living in rural area, women who did not attend antenatal care visit; women their husband did not educate or primary education; women from poorest and poor wealth quantile, households; husband occupation ,women did not use contraception, women those deliver in short birth space, high birth order, religion, age of mother at child birth young age group were less likely deliver in health facility compared to their counterpart. In addition, the study found that ethnic back ground women belongs to Amhara ethnic group, large family size were significant predictors of institutional delivery. Further the study indicates significant change between the two survey years. Based on these findings, it can be recommended that there should be plan and intervention to enhance health education on recommended standard antenatal care visit, benefit of delivering in health facility that enables more women to utilize skilled facility care services including delivery care. To tackle these problems attention should be given to rural and outreach areas since the region majority population live country side. It should also target on counseling of women on family planning program, and awareness creation on the risk that may happen during pregnancy period. Finally, women attitudinal change, and improvement of socioeconomic status is vital to enabling more to get service from health facility during pregnancy and delivery.

Key words: Delivery care, Facility delivery, antenatal care, Birth Attendants

1. Introduction

1.1 Background of the study

On the globe, very few number of women deliver in health facility; majority delivered outside health institution without the help of skilled birth attendants and exhibit risk of mortality and morbidity. About half of mothers in the developing countries have access to skilled care (WHO, 2013 and Folashade, etal. 2013).

Nearly 99% of neonatal and maternal deaths are in the low and middle economic status countries. Vast number of deliveries attended by unskilled birth attendants and the magnitude is increase especially in the rural areas (WHO, 2013). About 35% of women in developing countries receive no antenatal care during pregnancy .In these countries, home deliveries are over 60% taking place largely in rural areas with unskilled birth attendants (WHO etal, 2008; Mwanakulya etal, 2008).

Similarly ,the world health organization (WHO) has reported that the proportion of deliveries attended by skilled health providers rose from 58percent in 1990 to 68 percent in 2008 worldwide, but remained at only about 50percent in Africa (WHO,2011).

In Ethiopia, maternal mortality level is among the highest in the world. The corresponding figure reported in the Ethiopian demographic health survey was 676 and 412 deaths per 100,000 respectively (CSA, EDHS, 2011and 2016).

The safe motherhood initiatives strongly emphasizes on ensuring the availability and accessibility of skilled care during pregnancy and child birth, of which institutional delivery is one component of maternal care. Delivering in a health facility would avoid most maternal deaths occurring from preventable obstetric complications. However, as recent Ethiopia demographic and health survey clearly demonstrated, the utilization of existing maternal health services is very low in Ethiopia particularly in Oromia (CSA, EDHS, 2016).

Previous studies have identified many factors hindering maternal delivery care service utilization. However few attempts have been made to show women attitudinal problem,

demographic and socioeconomic factors at individual, house hold level in Oromia at regional level.

This study therefore has tried to fill the gaps in understanding the status of women using health care services for delivery by identifying determinants of facility delivery in Oromia and changes over time. The finding of this research could inform the government to implement programs that improve institutional delivery service utilization in the region.

1.2. Statement of the Problem

The recent Ethiopia demographic and health survey shows that only sixty two percent of women who gave birth in the five years preceding the survey received antenatal care from a skilled health provider at least once for their last birth. Three in ten women (thirty two percent) had four or more ANC visits for their most recent live birth (CSA, EDHS, 2016).

Slightly over one in four live births in the five years preceding the survey were delivered by a skilled provider (twenty eight percent) at national level. The percentage of live births delivered by a skilled provider remained virtually unchanged for a period of five years from 2000 to 2005. But increased substantially after 2005; from six percent in the 2000 and 2005 Ethiopia demographic and health survey, to ten percent in 2011 survey, and reached twenty eight percent in 2016 survey. Furthermore the latest Ethiopian demographic and health survey indicates, only twenty six percent of births occur in a health facility; the remaining 74% of births occur at home. In case of Oromia only 24.2% percent of births occur in health facility while seventy five percent still deliver at home; this indicate high regional variation and Oromia is the third region where low institutional delivery is practiced next to Somali and Afar ; because women do not want to deliver at health facilities due to various reasons. But by 2015, the global target for skilled attendance is 90%, and for countries with the highest maternal mortality ratios, the target is set at 60%. This indicates Ethiopia is far from the target and still too far to walk in order to attain the target (CSA, EDHS, 2016).

So, unsafe delivery care is one of the most important predictor for maternal and neonatal mortality. High unskilled birth attendant and low institutional delivery practice leading to high - risk birth outcomes are emerging as significant problems in our society.

The in secured delivery practice resulting in negative effects on different segments of society, mother, newborn baby, family and nations too.

Furthermore, giving birth outside facility can pose life threatening situations in case complications occur during the process.

Few studies such as Teferra, Alemu & Woldeyohannes, (2012), Mekonnen Y and Mekonnen A (2003),Kidist (2013),Kassu and Eshetu (2013) had investigated the factors that influence women choices place of delivery with skilled birth attendants in context of Oromia region and Ethiopia too. Some variables did not studied and no research conducted on this topic in regional level needed to carry out the study in an area factors associated with delivery care. And find out the possible reasons for low prevalence of facility delivery. This may serve as an important tool for any possible interventions aimed at improving the low facility delivery service.

1.3. Research Objectives

1.3. 1. General objective

The general objective of this thesis was to assess the socio demographic and economic factors affecting reproductive age women delivery care in the study area.

1.3.2. The Specific Objectives of the Study

- to identify socio demographic factors associated to low delivery care of women in Oromia
- to analyze determinants of low facility delivery care
- to assess magnitude of institutional delivery care among reproductive age women in Oromia region.

1.4. Research Questions

The research questions are:

1. What are the factors associated with delivery (institutional) care in Oromia?
2. What is the magnitude of institutional delivery in Oromia?

1.5. Significance of the Study

It is believed that, the outcome of the study would be helpful in understanding and describing the main factors that contribute to low institutional delivery in the study region. The result of this study may help the local government and NGOs in understanding the potential determinants clearly and to plan a new strategy to come up with a solution and implementation of different maternal health care related services and promoting institutional delivery. The study may also be used for regional health administrators to promote the utilization of institutional delivery care services and mitigate the factors that hinder the community to use the maternal service in the study area.

1.6 Scope of study

Study would conduct in Oromia regional state at state level in Ethiopia. The study population is reproductive age women (15-49).

Target population: the target population is women those delivered in the last five years at least one birth and focused only on the most recent birth preceding each Ethiopia demographic and health survey of 2011 and 2016 data of Ethiopia, particularly data women living in Oromia regional state. The 2011 and 2016 survey data were selected to evaluate the national development goal.

1.7 Strength and Limitations of the Study

1.7.1 Strength

Demographic health survey uses a well established methodology that is used in many countries and subject to good quality assurance procedures.

This study is based on a large nationally representative population based survey whose findings are relevant for comprehensive national policy initiatives.

1.7.2 Limitation

Since this a secondary data analysis it cannot provide additional information about many of the other recognized factors related to service utilization such as cultural influences psychological factors, the influence of family and friends ,the quality of health services , the attitude of health care providers towards clients and physical accessibility . Nevertheless, the information collected on the studied variables is valid, and important. The 2011 and 2016 EDHS data were collected retrospectively and may be associated with recall bias. Finally, the cross sectional nature of the survey does not allow for cause and effect inferences.

CHAPTER TWO

2. Literature Review

This chapter deals with review of related literature under the following sub-headings: conceptual literature review, theoretical literature review and empirical literature review on determinants of delivery care. Relevant studies in both developing and developed countries are reviewed giving a special emphasis on the findings and methodological issue in developing countries. Conceptual framework and synthesis of the literature were also indicated.

2.1. Conceptual literature review

Health facility delivery can occur at private or public facility. Public facilities are usually owned and financed by the government and/or supported by some faith based organizations. In these settings costs are usually minimal but available amenities are often sub-optimal. Although private facilities are more expensive, they are often perceived as having the best amenities and offering the best standard of care (Umurungi 2010).

According to Izugbara and Duru (2009), in Nigeria and many parts of Africa we have other types of health care providers and these include both professional health care providers and traditional healthcare providers. Professional healthcare providers are those approved and certified by their professional bodies to take care of women during pregnancy, labour , delivery and immediate post natal period and also to care for the newborn.

According to WHO (2004) a skilled attendant is a health professional – such as a midwife, doctor, nurse – who has been educated and trained to proficiency in the skills needed to manage normal (uncomplicated) pregnancies, childbirth and immediate post natal period and to identify, manage or refer women and their Newborns with complications . Recognizing that the qualifications attributed to health providers not only vary between countries but can change over time within a single country, the WHO, the International Confederation of Midwives (ICM) and the International Federation of Gynecology and Obstetrics (FIGO) have developed a competency based definition of a skilled attendant.

WHO(1978) in Mbiydzenyuy(2012)defined the traditional birth attendant as a person (usually a woman)who assist the mother at child birth and who initially acquired her skills delivering babies by herself or working with other TBAs .

Umurungi (2010) observed that the majority of births in sub Saharan Africa still occur at home or in other non-hospital settings. In resource poor settings, home delivery is usually the cheapest option but is associated with attendant risk of infection and lack of available equipment should complications occur. In rural areas of Nigeria, the proportion of institutional deliveries is as low as 4% even in urban areas like Lagos, a significant proportion of women (19%) still deliver at home. This is in spite of a relatively easy access to institutional maternity services in urban areas. Health facility delivery can occur at private or public facilities. Public facilities are usually owned and financed by the government and/or supported by some faith based organizations. In these settings costs are usually minimal but available amenities are often sub-optimal. Although private facilities are more expensive, they are often perceived as having the best amenities and offering the best standard of care (Umurungi 2010). In Nigeria, use of reproductive health services remain low and home delivery among women of childbearing age is widespread (Aremu 2011). According to Babalola & Fatusi (2009),the roles of traditional and religious beliefs as well as the perception of women with regards to comparative efficacy of the medical versus traditional birth attendants may also be contributing to failure to have skilled attendants at birth .Modern (medical) and indigenous maternal health care services coexist in most African countries particularly in rural areas and women may have to choose between the two options He stated that many Nigerian women particularly those in rural areas rate the services of TBAs as being of higher quality than that of medical healthcare practitioners particularly with regards to interpersonal communications and relationship. TBAs have been reported to be more considerate and to provide more compassionate care other places that delivery occurs.

Facility delivery is a place where pregnant women deliver their baby in health institution either private or government where skilled birth attendant and safe environment is available. In Nepal (81%) deliveries take place at home. Unskilled birth attendants such as family members, relatives and Traditional Birth Attendants (TBAs) are common while some women 7% give birth without any one support. World health organization evidence implies that having skilled

attendants at delivery is one of the key interventions for reducing maternal mortality. Developing countries where professional attendants are used at delivery have reduced maternal mortality up to 50 per 100,000 live births. Local traditional birth attendants whether they trained or untrained are not recognized by world health organization because they are generally not trained to deal with birth-related complications (Sulochana Dhakal etal, 2011).

The increased proportion of the deliveries at traditional birth attendant homes may also be associated with the prevalent supernatural concept of disease in many African communities. Traditional birth attendants may for economic reasons also rank strongly in the preference of some Nigerian women as their services have been reported to be more affordable. Additionally, unskilled birth attendants may offer more convenient user charges that allow payment to be spread over a period of time or be made in kind which this is similar with Ethiopian case (Iyaniwure, and Yusuuf, 2009).

The majority of births in sub Saharan Africa still occur outside facility or in other non-hospital settings. In resource poor settings, home delivery is usually the cheapest option but is associated with attendant risk of infection and lack of available equipment should aggravate complications to happen (Umurungi, 2010).

In rural areas of Nigeria, the proportion of institutional deliveries is as low as 4% even in urban areas like Lagos, a significant proportion of women (19%) still deliver at home. This is in spite of a relatively easy access to institutional maternity services in urban areas which is true in case of Ethiopia too. Health facility delivery can occur at private or public facilities. Public facilities are usually owned and financed by the government and/or supported by some faith based organizations. In these settings costs are usually minimal but available services are often sub-optimal. Although private facilities are more expensive, they are often perceived as having the best services and offering the best standard of care). In Nigeria, use of reproductive health services remain low and home delivery among women of childbearing age is widespread (7, Aremu etal 2011 and Umurungi, 2010). Socio-Cultural Factors considered here are: Maternal age is often presented as a proxy for use of facility delivery. Older women are also influential in household decision making than younger women and the adolescent in particular. Furthermore, older women may be told to deliver in a health facility since older age is a biological risk factor.

On the other hand, older women may belong to more traditional cohorts and thus be less likely to use modern facilities than young women. Age is highly correlated with parity, and in some settings, with educational level (Gabrysch and Campbell, 2009).

Marital status may influence the choice of delivery place, probably via its influence on female autonomy and status through financial resources. Single or divorced women may be poorer but enjoy greater autonomy than those currently married. Young single mothers may be cared for by their natal families which may encourage skilled attendance especially for a first birth. On the other hand, single mothers may be stigmatized and prefer to deliver at home because they anticipate a negative provider interaction (Umurungi, 2010). In the same citation Family size/family composition is an important determinant of health care utilization. Women from large families under-utilize various health care services because of excessive demands on their time. Larger families also cause resource constraints which have a negative effect on health care utilization.

Education also affects a woman's childhood background, including familiarity with health services and certain beliefs and norms. It has also been suggested more highly educated communities organizing themselves and demanding better public services. Having access to information through modern media television, radio and newspaper could influence women's knowledge about delivery risks and availability of services.

Financial capability of the family and cost of a facility delivery including transportation costs while directly affecting whether a woman can actually have a facility for delivery (second delay) the anticipation of a high cost will affect whether a decision for a facility delivery is made in the first place or first delay (Gabrysch and Campbell,2009). Place of residence: Since service and social environment are typically very different in urban and rural areas; strong urban-rural differences in use of delivery care are expected. Place of residence may be associated with education and ability to pay. Distance to health services exerts a dual influence on use as a disincentive to seeking care in the first place and as an actual obstacle to reaching care after a decision has been made to seek it many pregnant women do not even attempt to reach a facility for delivery since walking many kilometers is difficult in labor and impossible if labour starts at night and transport means are unavailable. Those trying to reach a far off facility often fail and Women with serious complications may die on rout (Gabrysch and Campbell, 2009).

2.2. Review of Related Theories

The Theory of Planned Behavior (TPB) predicts an individual's intention to engage in a behavior at a specific time and place. It posits that individual behavior is driven by behavior intentions, where behavior intentions are a function of three determinants: an individual's attitude toward behavior, subjective norms, and perceived behavioral control in using and not using facility services (Ajzen, 1991). This theory explains predict relationship between variables.

Choice theory represents how women can make proper judgment on the appropriate place of delivery (Glasser, 1998). Choice Theory teaches that people are always motivated by what they want at that moment. Women's choice of care provider and place of delivery are determined by medical cover, geographical distance from their place of residence to the health facility, and the availability of midwives. Choice is further limited by the withholding of information or providing information to women that is consistent with benefits of health facility delivery. This theory helps investigators what is push and pull the women to deliver at facility. This theory explains the relationship among given phenomena, for explaining, predicting phenomena. The theory helps to guide the relation, association and connection of the variables.

2.3. Empirical literature Review

Previous empirical studies have found that the use of maternal health services is related to demographic, cultural, and socio-economic factors, such as age of women, birth order, size of household, women and husband education, wealth index, place of residence, religious background, employment, women's decision making power, and income level. These factors are discussed in turn

In many developing countries large proportion of deliveries (47%) take place outside the formal health care system often assisted by a relative or Traditional Birth Attendant.(Jallow,2007) Again in developing countries facility deliveries are less than 60% taking place largely in rural areas with unskilled attendants (Wanjira etal,2011).

In Asian context a study conducted in Nepal, shown that poor maternal education and multi parity are important independent factors in determining choice of delivery place. According to

study in Malaysia more than 90% of births occur outside facility with unhygienic conditions and without assistance of trained birth personnel (Sychareun etal, 2009).

Study conducted in West Africa, outside facility delivery and newborn care practices among women in a suburban area of western Nigeria findings showed that, 66.7% of births occur non institutional setting were planned while. 33.3% were unplanned. Only 13.4% of deliveries had a skilled birth attendant present and (15.7%) gave birth alone (Adelaja L.M, 2011).

Study carried out on determination of place of delivery among women in semi-urban settlement in Zaria, findings showed that there is high rate of outside facility deliveries and deliveries not supervised by skilled attendants of 70% and 75% respectively. Mothers' educational level, husbands' occupation and age of women at the first pregnancy were the main determinants of place of delivery service use (Indris, Gwarzo and Shehu, 2006).

From the literature reviewed, mothers' level of education, previous use of health facility, attitude of Health care provider, mother's age and distance to health facility are all factors that influenced the choice of birth place and use of birth attendants during delivery.

Another study conducted in Nepal indicates that 30% of women had delivered their last baby in hospital while 69% had delivered their baby at home; Of the deliveries ,8%were assisted by doctors ,23% by nurses 53% by a family members (mainly mother-in law) ,and 7% by a traditional birth attendants. However, 9% of the women did not get help from any one at birth and no single delivery in the home was attended by a skilled attendant (Sychareun, Phenagsavanh, Hansana, 2009).

Even study conducted on a country-by-country basis ,the finding indicate the number of women who gave birth alone in 7 countries (Nigeria, India, Niger, Tanzania, Ethiopia, Uganda, and Kenya) made up 78% of the total number of women who gave birth alone.(Orobatan etal,2016).

Similarly research conducted in one region of Kenya revealed, the proportion of women delivering in the health facility and those having skilled care at birth was 47.2% while 52.8% delivered under unskilled care; the finding shown that Majority of the home births were delivered by relatives (33.92%). The low skilled birth attendant results are also similar to other studies done in other countries such as Ethiopia and Tanzania and also comparable to studies

done in other parts of the country such as Western Kenya and Nyandarua South District of Kenya (mwinyikione SW teal, 2016).

A study in Malawi (2016) showed that women consult Traditional Birth Attendants for antenatal, child delivery and postnatal services. The consultations did not only happen during the time the TBAs were allowed to practice, but they also happened during the time the TBAs were banned from practicing.

In Ethiopia, maternal health has received attention for the last two decades aiming of reducing maternal mortality is one of the goals of the Health Service Development Program of the country. Maternal and newborn health is also among the six priority areas in the reproductive health strategy which Ethiopia implementing in the country (FDRE, MOH, 2006).

According to research conducted by two Ethiopian researchers reasons for low skilled assistance in delivery among women who intended to deliver at Health Facility (49.6%) of respondents who had delivered without assistance of skilled attendants were intended to deliver in health facilities and the rest (3.2%) wants to deliver at home(Kababa and Gemechu,2015).

A study conducted in Arbamich zuria revealed that most women prefer to deliver at home; the finding shown that 346(79.4%) of women gave birth at home and out of that many women (75.2%) was attended by un skilled birth attendants.(Ayele,etal,2015)

Another research finding in Ethiopia shown less than one-fifth of mothers are assisted by skilled birth attendants. Similarly the finding of study conducted in Zala woreda southern Ethiopia ; indicate that 67.6% women gave birth at home for their last pregnancy and the rest, 145 (32.4%) at health facility. Among the 302 mothers who gave birth at home, 78 (24.5%) gave birth at home due to preference of traditional birth attendant. (Alemayesu and Mekonnen, 2015)

As the finding of many studies conducted in Ethiopia indicate majority of pregnant women (78%) deliver with the assistance of unskilled birth attendant, despite receiving antenatal care from a health professional. Reasons that make women not seek facility care include beliefs that of unskilled birth attendants are culturally acceptable, high cost associated with hospital deliveries, inaccessibility of health facilities, and poor quality of care and negative experience with hospital staff (61, Nyirenda and Maliwichi,2016;Titaley etal,2010).

2.4. Synthesis of the Reviewed Literature

Literature on delivery care was reviewed under Conceptual review which showed different concepts of preference of delivery place; most of the literature reviewed indicate small number of developing countries women deliver at health facility.

Empirical review showed the finding of many research indicate in developing countries less than half of deliveries take place at health facilities and low prevalence of delivery care is take place in health facility.

Theories related to the topic were also reviewed. The theoretical review for this study was choice theory which used primary determinants, health behavior and health outcome to further show inter relatedness between demographic factors, health behavior (use of health services), and health outcome. From the literature reviewed, mother's level of education, previous use of health facility, attitude of health care provider, mother's age and distance to health facility are all factors that influenced the choice of delivery place. The review of literature further showed that no known study has been carried out on delivery care and factors that influence delivery care in Oromia regional state at state level using demographic health survey data.

Hence gaps were identified that this study intends to bridge the gap. The need to carry out the study in an area with a unique combination of factors associated with delivery care.

2.5. Conceptual framework

The conceptual framework explains the relationship between the independent variable and dependent variable. Independent variables include demographic variables socio-cultural and economic factors. The dependent variable is delivery care/place of delivery. Independent variables affect dependent variable directly or through the intervening variable.

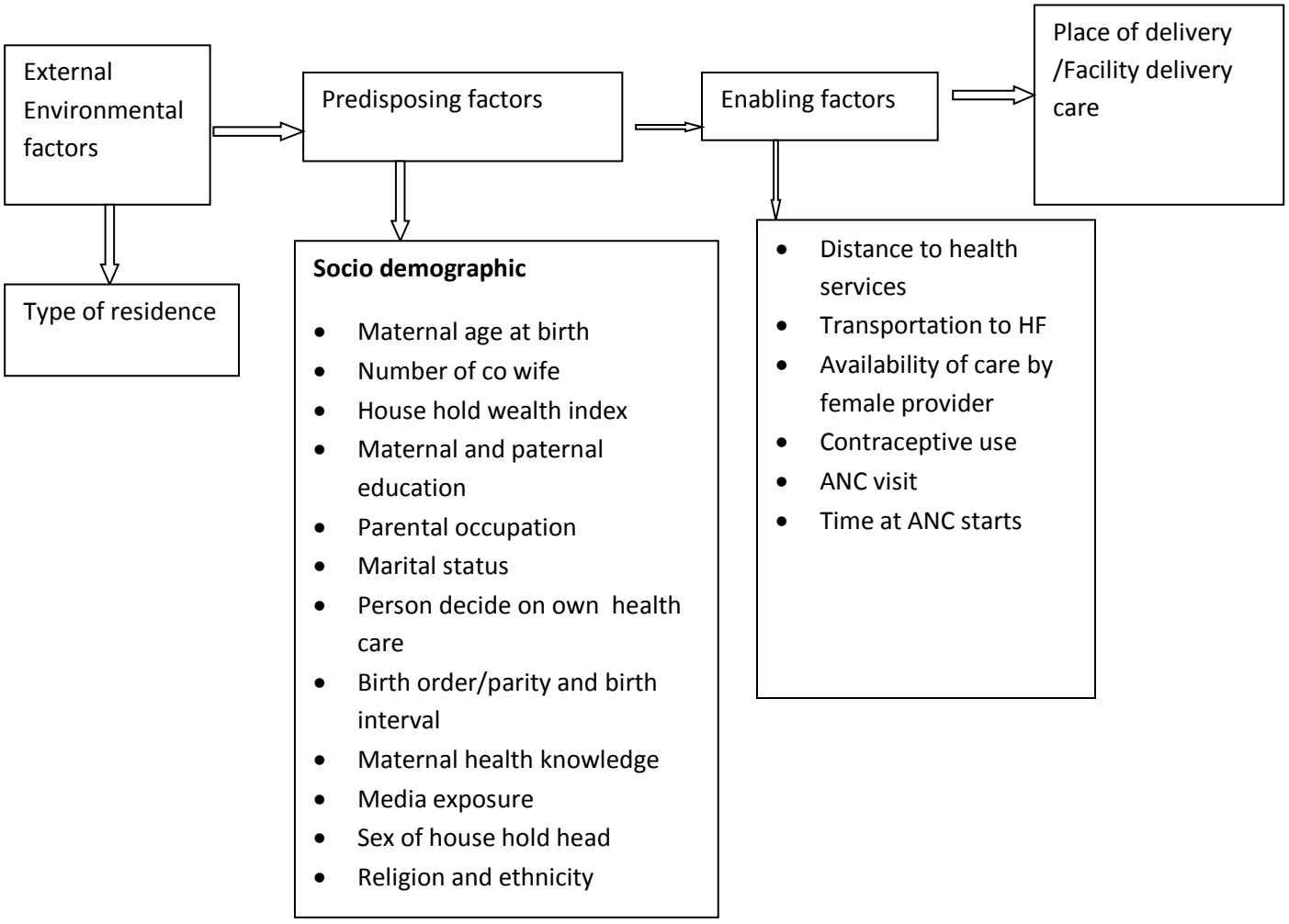

Figure.1 Conceptual Framework of factors associated with underutilization of delivery care in Oromia**.** Note: Framework adapted from Andersen behavioral model. Andersen, R.M. (2008), the theory of planed behavior.

CHAPTER THREE

THE RESEARCH METHODOLOGY

This topic explains the methodology for the study. It is discussed under the following subheadings: area of the study, design of the study, the population of the study, the sample and sampling techniques, instrumentation, procedure for data collection and method of data analysis

3.1 Study area and Period description

With 353,690 square kilometers of land area (32% of the country), Oromia represents the largest regional State. The region population was estimated at 35,467,001 in mid July 2017. The largest population size of any region (35.4% of the country's total population. Administratively, Oromia is divided into 20 zones, 245 Weredas, and 36 town administrations with 6500 kebele. The Oromia regional State extends from the western end of the country in western Wellega to the eastern parts of eastern Harrarge from 34°E latitude to 43°E latitude. Its north-south extent stretches from 4⅔° North to 10⅔°North latitude.(FDRE, CSA,2013). The study was conducted from October 2017 to May 27, 2018.

3.2 Data source

This study used data from Ethiopia demographic and health survey 2011 and 2016.

The study population is comprised of women aged between 15_49 years who reported to have given birth in the past five years at the time of survey.

The third and fourth round Ethiopia demographic health survey data was used to conduct this study. The secondary data is used for the purpose of conducting the association of factors with delivery care by extracting the Oromia region women data and specifically the most recent birth in the five years preceding each survey.

3. 3. Research Approach

This research approach was quantitative in nature and data were obtained from the Ethiopia demographic and health survey 2011 and 2016.

3.4. Research Design

Co relational /cross sectional study design was selected to assess factors associated with delivery care among women aged 15–49 years using the 2011 and 2016 demographic and health survey

data from national survey, extracting data of Oromia regional state examining delivery care and associated factors.

Co relational study design used to determine whether and to what degree, a relationship exists between two or more variables and allows the investigator/s to look at numerous things at once (age, income, education, parity, autonomy) as they naturally affects the study population).

3.5.1. Sampling techniques and sample size

The sampling frame used for the 2011 and 2016 EDHS is the Ethiopia Population and Housing Census (PHC), which was conducted in 2007 by the Ethiopia Central Statistical Agency (CSA)

Two stage stratified cluster sampling is used to conduct an interview. For the purpose of this study only the most recent births in the five years preceding each survey considered and 2209 women selected.

3.5.2. Data collection techniques and procedures.

In the primary survey, data was collected using three questionnaires: a household, woman and man questionnaire. For this study, only selected data collected using the woman's questionnaire was used.

3.6. Variables Description

In this study one response variable was created from questions included in the maternal health components of the EDHS questioners. The main focus is a number of specific questions asked of women about their most recent live birth in the two consecutive national surveys.

Women where asked whether they deliver in health institution or not. In this case the response variable is coded "1" if woman got services from health institutions and"0" otherwise.

The choice of these variables will be guide by the determinants of maternal service utilization literature and conceptual framework.

The variables in this study were independent variables which include demographic factors (age of a mother, number of children, number of household members and marital status), socio cultural factors (education of the mother, husband's education and decision maker in the family)

and economic factors (accessibility to health services, employment status, and level of wealth quintiles of household). Dependent variable is place of delivery care which could be dichotomous in to health facility or not.

The use of facility delivery is related to availability, quality and cost of service as well as social structure, health belief and personal characteristics of the user. Birth place and health care provider during delivery is determined by different factors which act singly or in combination to enhance or deter women from choosing skilled healthcare provider during delivery. The gap between antenatal care attendance and attendance during delivery suggests that there are factors making women not to return to the health facilities during delivery and these factors need to be explored and taken care of. Using the themes developed linked to the conceptual framework developed by Anderson, the determinants are categorized into Socio-cultural, factors, Economic factors, Physical accessibility of health facility (Gabryschand Campbell, 2009).

The determinants of delivery care			
Socio-Cultural Factors			
Themes	Operational definition	Code	Measurements
Maternal Age at child Birth	15-19	1	Categorical
	20-34	2	
	35-49	3	
Marital Status	Not married	0	Categorical
	married	1	
Ethnicity	Oromo	1	Categorical
	Amhara	2	
	others	3	
Religion	Muslim	1	Categorical
	Protestant	2	
	Orthodox	3	
	Traditional	4	
	others	5	
Family Size	2-4	1	Categorical
	5-7	2	
	8-15	3	
Mother Education	No education	0	Categorical
	Primary	1	
	Secondary and above	2	
Husband's Education	No education	0	Categorical
	Primary	1	
	Secondary and above	2	
Women's Autonomy	Mother alone	1	categorical
	Both/jointly	2	
	Husband alone	3	
Sex Of House Hold Head	Male	1	Categorical
	female	2	
R/Ship Of Person Delivered To House Hold Head	Wife	1	categorical
	head	2	
	Daughter	3	
	others	4	
Number of co wife	No other wife	1	
	Have other wife	2	
Perceived Need			
Themes	Operational definition	Code	Measurements
Media Exposure	No exposure	0	Categorical
	Less than once a week	1	
	At least once a week	2	
Number of ANC visit	No visit	0	categorical
	1-3	1	
	4+	2	

Time of ANC visit	0-3	1	categorical
	4-6	2	
	7-9	3	
Contraceptive Use	No use	0	Categorical
	Traditional use	1	
	Modern use	2	
Birth Order	1-2	1	Categorical
	3-5	2	
	6-13	3	
Birth Interval	8-24	1	Categorical
	25-36	2	
	37+	3	

Economic Accessibility

Themes	Operational definition	Code	Measurements
Mother Occupation	Not working	0	categorical
	Agriculture	1	
	Sales	2	
	Services	3	
	Manual	4	
	others	5	
Husband Occupation	Not working	0	categorical
	Agriculture	1	
	Sales	2	
	Manual	3	
	Professional	4	
	others	5	
House hold Wealth Index	poorest	1	categorical
	Poorer	2	
	Middle	3	
	Richer	4	
	richest	5	

Physical Accessibility

Themes	Operational definition	Code	Measurements
Place of Residence	urban	1	categorical
	rural	2	
Place of Delivery	home	0	categorical
	facility	1	
Problem of Health Access	Big problem	1	categorical
	Not big problem	2	

Table1. The determinants are categorized into Socio-cultural, factors, Economic factors, Physical accessibility of health facility

3.7.Data Analysis Techniques

The data were analyzed using the Statistical Package for Social Sciences (SPSS) version 20.

Frequency and cross tabulation were carried out to compute the prevalence of home and facility delivery as well as assess the statistical significance of the relationship between the outcome variable (facility delivery) and the independent variables. Bivariate and Multivariate binary logistic regression analyses were conducted to examine the adjusted association between the outcome variable and the independent variables. Logistic regression is mainly appropriate when the predicted outcome is binary. Binary logistic regression is used when the response variable has two categories. The predictor variables that are used for outcome prediction may be dichotomous, categorical, continuous or mixed. This study considers only those women who had at least one live birth in the five years preceding the survey. If women had more than one live birth in the past five years, only care received for the most recent live birth is considered. Since the interest is in identifying women at risk because they did not receive care, the outcome variables were coded as 1 if the women received delivery care and as 0 if she did not receive delivery care.

Variables significant at the 5% significance level ($P < 0.05$) were retained and reported along with their adjusted odds ratio (AOR), corresponding 95% confidence interval (CI) and P-value. AOR represents the measure of association obtained following adjustment for other factors/confounders.

Goodness of fit of the model measures how well the model describes the response variable.

Hosmer -Lemeshow test is a commonly used test for assessing the goodness of fit of a model and allows for many numbers of explanatory variables, which may be continuous or categorical.

The assumptions of binary logistic regression are the dependent variable to be binary and ordinary logistic regression requires the dependent variable to be ordinal. Secondly dependent variable should represent code "1" the desired outcome. Thirdly, the model should be fitted correctly. Fourthly the error terms need to be independent. Fifthly logistic regression assumes linearity of independent variables and log odds. Sixthly it requires large sample sizes.

3.8.Ethical clearance

This study was mainly based on a secondary data analysis of anonymous public use data; the data is available from CSA (Central Statistic Agency).

CHAPTER FOUR

PRESENTATION OF RESEARCH RESULTS

4.1 Summary of Descriptive Statistics

This chapter presents analyses result of the study.

The purpose of this chapter is to describe the effect of different socio-economic and demographic determinants.

In the two consecutive third and fourth Ethiopian demographic health survey weighted sample of 1094 and 1115 women selected for the study.

Among women who had a live birth in the five years preceding the surveys, 10%and 25% births were take place in health facility in 2011 and 2016 respectively.

As parity and birth order increase facility delivery decreases. Facility delivery for first to 3rd birth order were 6.7% in 2011 and 12.4% in 2016 while in the birth order above seven declines to 1% and 5% in the same year. Facility delivery care also varied by education level of mother ranged from 2.7% in 2011 to 9.9% in 2016 among women with no education whereas among women with secondary or higher education changed from 3% to 3.6%. With respect to occupation facility delivery is lower for those mothers who were not working. Women who belong to richest wealth quintile receive higher percentage of facility delivery than their counter part. Furthermore facility delivery was rapidly increased from 2011 to 2016.high access to either of the media radio, television or newspapers at least once a week have greater influence on the delivery care. For instance in 2016facility delivery was about 89% to those have media access at least once a week compared to 60% among those who did not have access.

Facility delivery was more common among women residing in urban area than rural counterpart in both 2011 and 2016 surveys. Regarding age category 15-19,20-34,35-49 in 2011 facility delivery were 5(0.5%),91(8.7%)5(0.5)and 40(3.8%),187(17.9%), 40(3.8%)and in 2016 .

Similarly religion of women who delivered in a health facility in 2011 and 2016 consist of Muslim23(2.1%),Protestant,59(5.4%),Orthodox20(1.8%),Traditional2(0.2%)and,others164(14.7%) and Muslim 54(4.8%), Protestant 59(5.3%), Orthodox 2(0.2%) respectively.

Women who used contraceptive method used facility delivery more than those who did not use contraceptive in both surveys. With regard to antenatal care women who attended antenatal care used facility delivery compared to those who did not attend antenatal care. The time of starting antenatal care also has had great importance for antenatal care visit. . Women who started antenatal care during second or third trimester but the antenatal care visit must start early during pregnancy period. World health organization's recommend antenatal cares at least four during pregnancy. In 2011 women did not attend antenatal care were 58.6% while in 2016 50.1%.

In case of ethnic composition in2011 each category account Oromo 82% Amara 8% and other ethnic groups 10% compared to in 2016 87% oromo,4% Amara 8% other ethnic groups.

The birth interval between each succeeded and preceded birth is also determinant factors of place delivery. The preceded birth interval for the last birth is categorized into three; less than two years, two to three years and above three years. As interval increase the chance of facility delivery increase. The birth interval and the percentage in 2011 10-24 months 20.9%, 25-36 months 38.5% and 37+ 40.7 % months compared to 2016 8-24, 22.8% ,25-36,31%,37+ , 46%.

Problem of health accessibility were another factors widely affect place of delivery.

The accessibility problem was combination, affordability, availability, accessibility, accommodation and acceptability. These problems were more explained by cost problem, availability of medical and service provider and distance from health facility and other related factors.

A significant difference was also observed in institutional delivery by women's exposure to mass media. Much higher proportion of births among women follow one of the media, watching television ,listening radio or reading news paper at least once a week took place in health facilities compared with women who had no exposure to those media.

In 2011 DHS women who did not utilize health facilities for delivery were asked about their reason for not doing so. Most 63.6 percent living in Oromia reported that it was "not necessary" to utilize health facilities for delivery care.

The second most frequently mentioned reason was "too far/no transport" (18.7 percent of women). About 82.8 percent of women gave just one reason for not giving birth in a health facility, while 17.2 percent gave 0-3 reasons as big problem. Regarding ethnicity, majority of the respondents 82.1% are belonging to Oromo ethnic group while Amhara and other accounts for 7.6% & 10.3%, respectively. Concerning religion, 56.4% do follow muslin religion,22.9% protestant ,17.4% orthodox and the rest 3.3% were other religious follower (catholic and traditional).

Concerning occupation, majority of the respondents are not working (48.4); 24% agricultural employee, sales 17.2% manually working 7.4% and those are participated on other unspecified work account 2.7%.

Similarly partners /husbands of the respondents as majority of our rural people participate 81.4% are agricultural employee. partners those participated on sales work 7%,manual work 5.6%,professional /then cal and managerial 3.5%and husbands participate on other works are account only 2.5%. In terms of contraceptive use about 70.2% of respondents/women did not use any contraceptive methods when we compare with traditional contraceptive user 1.4 and modern contraceptive user 28.4%. With regards to\birth order about half (48.2%) deliver their first to third child and those deliver 7^{th} and above child comprise 22.8%.

Among respondents delivered their most recent birth in the last five years preceding the survey their relationship with house hold head 83.2% were wife, 8.2% head, 5.1% daughter and 3.4 are other persons living in the house hold. 87.8% of households headed by male while 12.2% headed by women.

48.2 % of family/house hold have had 1-3 children.29% have had seven and above children.

As mention above majority of households headed by male; similarly 60% of male decide alone on the health care of their wife/partner while only 10.1 % women decide alone on the health care of themselves. Total health facility deliveries were only (9.5%), majority of the deliveries were at home (90.5%).Most women (58.6%) did not follow any ANC visit (41.4%) had one or more ANC visit as indicated in table in 2011.

Majority of women are start ANC visit late; 59.8% start their visit during the month of 4to6 their first visit while only 23.9 % start their ANC visit in the first three months of their pregnancy.

Women who did not give birth at a health facility gave reasons such as hurdles to get permission, money needed for treatment, distance to health facility, transport problem, lack of person who go with her, unavailability of female health provider, lack of health provider in general and work load inside / outside home summarized as women specifying0-3 those factors as big problem 15%.and women specifying four to all factors as big problem are 85 %.

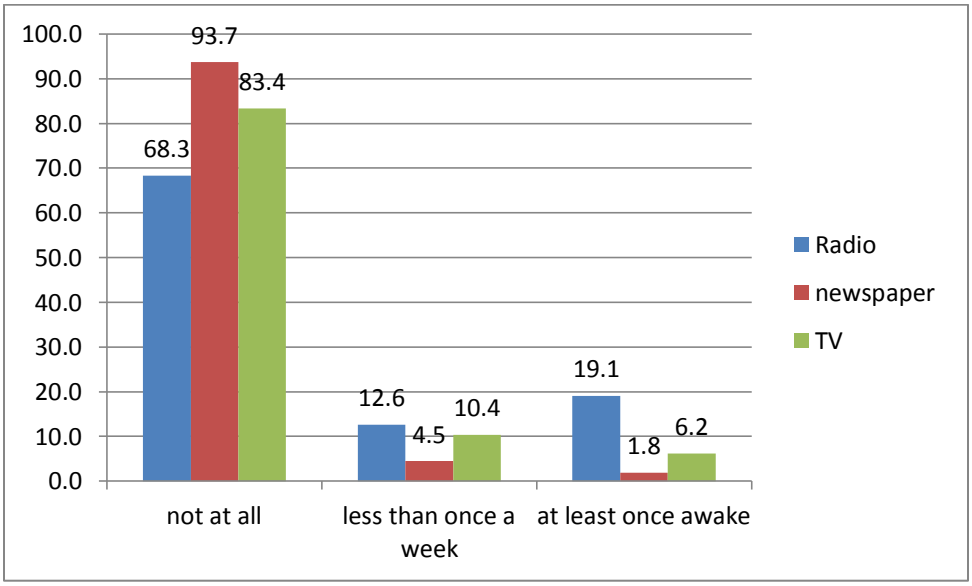

Figure 1. 2011 media exposure of women Delivered in Oromia region in the last 5 years preceding the survey.

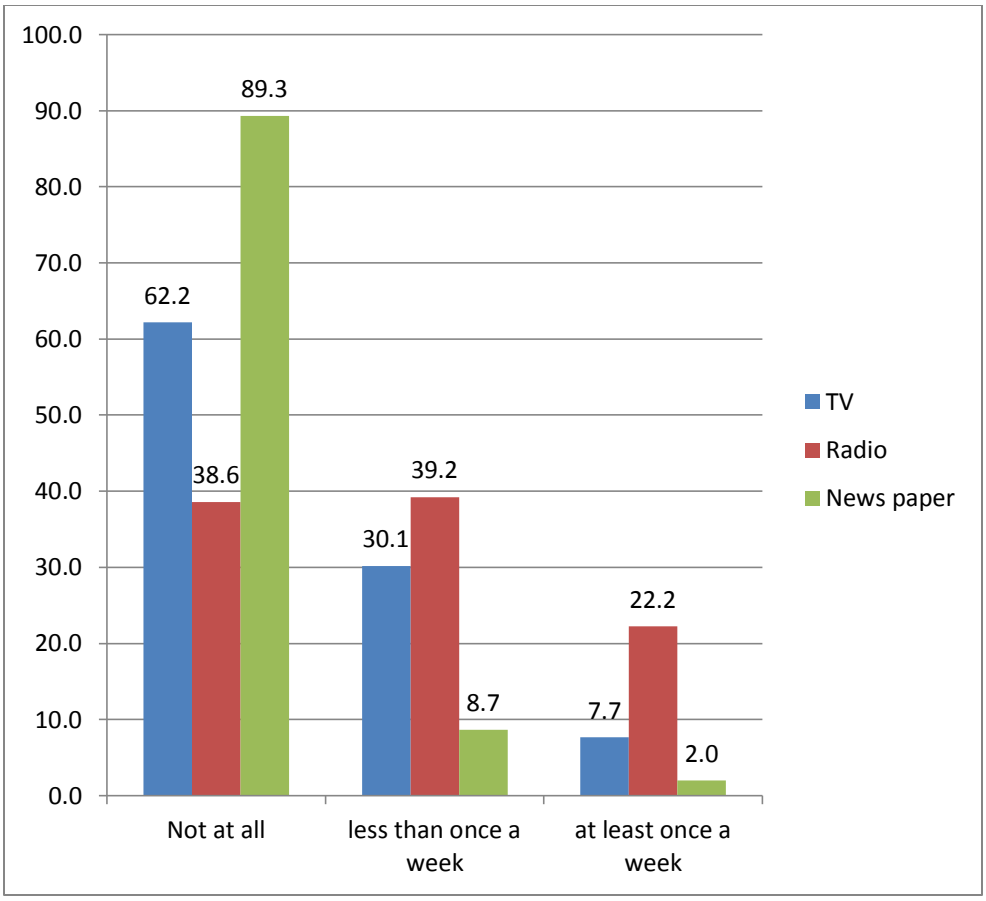

Figure2. 2016 EDHS Media Exposure of Women Delivered in Oromia region in the last 5 years preceding the survey.

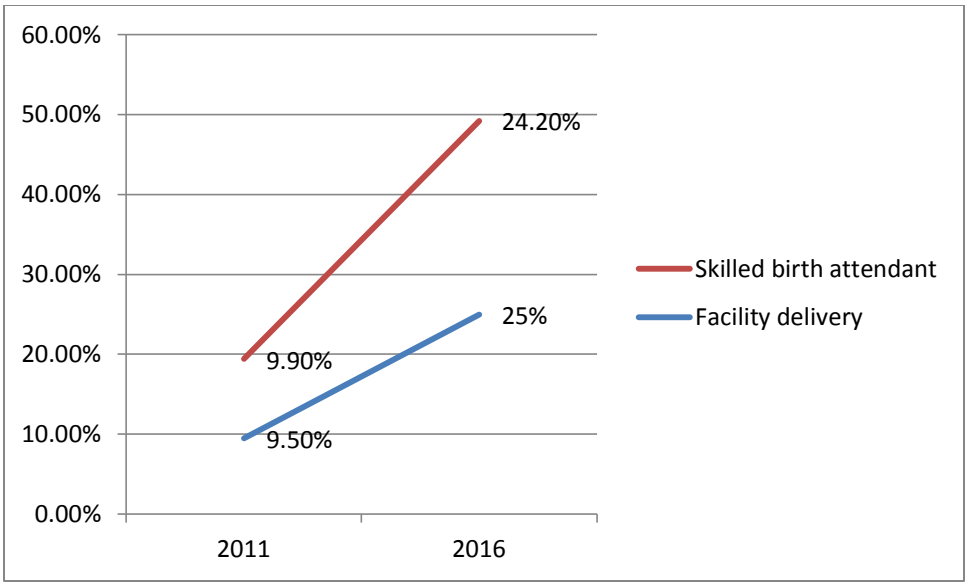

Figure 3 Magnitude of delivery care in Oromia region .among women deliverd in the most recent EDHS 2011 AND 2016.

Table.2. Reason mention by women did not deliver at health facility in 2011 EDHS .

Reason	Percent
Cost too much	2.50%
Did not trust facility/poor quality service	0.50%
No female provider	0.10%
Husband/family did not allow	1.6%
Not necessary	63.6%
Facility not open	1.10%
Too far/no transportation	18.70%
Not customary	27.80%
Other problem	3.20%

In the 2011 survey women live in Oromia who did not utilize health facilities for delivery asked about their reason.

63% of women reported that it was not necessary to utilize health facilities for delivery care seen table above. The second most frequently mentioned reason was not customary 27.8%.

The third most reason women reported was facility too far /no transportation 18.7%.

4.2. Bivariate Statistical Analysis

The bivariate statistical analysis addresses the marginal effect of a predictor variable on the response without taking into account other predictors.

This shows the association between the outcome variable and other predictor variables independently. Age of mother at child birth, religion, maternal and husband education level, occupation and wealth status of house hold were predictors that have shown statistically significant association with institutional delivery care.

Place of residence : women lived in the rural area were less likely delivered in health facility as compared to those in urban area in both 2011and 2016 EDHS. Mother who were living in rural area less likely delivered in facility delivery compared to those living in urban dwellers in two survey 95%CI=.047=95% (.029-.075) P=.000 ;.023(.009_.060)respectively.

In EDHS 2011 Sex of house hold head is predictors of place of delivery; house hold headed by women 95%CI (2.681 (1.643-4.375) more likely deliver in health facility compared to house hold headed by male. In contrast to previous survey sex is insignificant in the survey of 2016.

Media exposure was other predictors of delivery care women those did not had and less than once a week media exposure less likely deliver in health facility compared to those had media access at least once week either of television, radio or news paper. by the odds ratio 95%CI=COR .131(.063.234) P=.000; .55(.356-.845) and .370(.270-.517),.452(.249-.821) EDHS 20011 to in EDHS 2016. Respect to house hold head house hold headed by female more likely deliver at health facility compared with house hold headed by Male or 2.681(1.643,4.375) in 2011.

Women those did not have media exposure less likely deliver at health facility no media access COR.131 (.063-.271) and less media access .550(.356-.848) compared to those had at least once a week.

The findings of this study indicate, wealth index also have impact on the health of the women. Richest women more likely deliver at health facility as compared to poor and middle level

wealth status women.COR.028=95% (.011,.075),.030(.013,.067),.016(.005-.049,),.078(.044-.139).

The educational level of mother were another factors associated with place of delivery and the bivariate COR.017= 95 % (.008-.036), and OR.054 =95% (.026-.110).

The educational level of husband had also direct influence on the place of delivery. Husband did not or attend primary education was less likely OR .70=95% (.30_.129),.171(.104,.281) delivered in health facility compared to those attend more than primary education. About 30% and 88% lower when compared to those attend primary and secondary education.

Preceding birth interval of the most recent birth is associated with place of delivery and had had direct relationship to utilization of facility delivery care. Birth interval less than two years and three years interval less likely COR.379 =95% (.171, .839), .399(.216, .740) delivered in health facility compared with birth that had interval of above three years. About 62% and 60% lower compared to birth interval of three years and above.

Ethnic back ground of the women was related with place of delivery Amhara ethnic back ground women were four times more likely deliver in health facility compared with Oromo ethnic back ground women COR 3.964=95% (2.301, 6.828).

With respect to Respondent Occupation agricultural workers were less likely deliver in health facility COR.37=95%CI(.166_.836);while women engaged on manual 5.968(3.357,10.611);and other work39.573(16.156,96.933) were more likely delivered in health facility compared to not working.

Husband engaged on agricultural work sales manual and other occupation had positive relationship with place of delivery compared to agricultural employed workers by COR 5.394=95%(2.877,10.113);10.56(5.73_19.461);16.491(8.134_33.435);5.42(2.08_14.124)respecti vely.

Women did not use contraceptive method were less likely delivered in health facility compared to those used modern contraception COR .248=95% (.163-.378). This implies 25% lower compared to those were using modern contraceptive.

Regarding to age of mother women found in the age category 20-34 COR 4.417=95% (1.796, 10-.863) four times more likely delivered in health facility compared with that age group 35-49.

In 2011 data mothers age 15_19 more likely delivered in health facility compared with mothers of age 35_49. Mothers belong to orthodox and protestant religion was COR 11.427 = 95%(6.822_19.14); 2.175(1.171_4.041) two times more likely delivered in health facility as compared with muslin religious followers. As birth order increase the chance of delivery in facility decrease. They had inverse relationship between women their birth is fourth and above were less likely use facility compared to women their birth was less than fourth COR .517=95% (.319_.837);.169(.075_.382). These indicate 52% lower in using health facility.

Delivered person relations with the households head in the house hold also show impact on the place of deliver. Daughters were COR 1.329=95% (1.065_ 1.658) 33% more likely delivered in facility compared to her mothers in the house hold. Women those did not had health access COR .254 =95% (.163, .394) 75% less likely delivered in health facility compared to those had access. Mothers those did not decide on their own health care means decided about her health care by both husband and wife or husband alone were COR .522=95% (.301_.907);.116(.050_.271) 48% less likely use health facility compared to women decide by themselves.

Women attend antenatal care visit more likely delivered in health facility.

Women attend no or 1-3 antenatal care visit were COR .068=95% (.038, .124); .450(.280-.723) less likely use facility compared to those follow up 4+.

Generally In 2011 house hold headed by female, ethnic group of Amhara, husband occupation, women of orthodox religion followers and daughters of a house hold were more likely delivered in health facility. whereas women living in rural area, women did not had media exposure, mother and husbands did not have/primary education, birth interval less than three years, women did not use contraceptive, birth order more than four, mothers did not decide on their own health care, women did not or visit antenatal care late and less than four, women had number of children ever born more than three, and house hold those in the poorest, poorer and middle wealth quantile were less likely deliver in health institution.

In 2016 demographic health survey

Rural women .023(.009_.060) less likely deliver in health facility compared to urban reside women. Lower economic status women poorest .063(.034_.115), poorer .16(.101_.253), middle.347 (.232_.521) and richer .269(.176_.412) less likely delivered in health institution compared to women of richest house hold quantile.

Women age 15_19 2.62(1.546_4.445) three times more likely deliverd in health facility compared to women age 35_49.

Women those did not educated or primary education less likely deliverd in health facility compared to women of secondary and higher .043(.021_.090) and .149(.072_.311) respectively.

Women followers of orthodox religious three times more likely deliverd in health facility compared to women followers of Muslim religious 3.041(2.050_4.512).

Women belong to Amhara ethnic group four times more likely deliverd in health facility compared to women belongs to Oromo ethnic group.

4.3 Multivariate analysis 2011 and 2016

Women live in rural area less likely use facility delivery as compared to urban counterpart aOR .159=95% (.031-.732) and .061(.008,.483) in 2011 and 2016.

Age of women at the time of delivery had its impact o place of delivery. In 2011 women of 20-34 age categories were less likely use facilities for delivery compared to 35-49 age group aOR .336=95% (.160_ .705) while in 2016 women of the same age more likely delivered in health facility compared to old women age 35-49.

In 2011 Orthodox religion followers were 4.79(1.155-19.8) more likely delivered in health facility compared to muslin religious followers. While in 2016 protestant religion followers were.483 (.259, .901) less likely delivered in health facility compared to muslin religious followers. 2016 survey n ethnicity remain significant in multivariate analysis and found that Amhara was 4.410(1.446, 13.446) more likely delivered in health facility compared to Oromo ethnic group.

Number of house hold members was enabler of facility delivery. The findings of 2016 indicate that having 7.078(2.942_17.025) more than five members in the house more likely delivered in heath facility compared to house hold that have 2--4 family size. In contrast the size of the family was not associated with the use of delivery care.

In case of relation of person delivered in the house hold to heads of house hold daughters in the house hold was. 172(.031_.962) less likely delivered in facility compared to her mother.

In 2016 birth order 3-5 and 6+ were .297(.12_.710) and .225(.060_.838) less likely delivered in facility compared to1st _2nd birth order.

Similarly birth interval less than three years .514(.282_.937) less likely delivered in health facility compared to birth took place in the interval of above 3 years.

Another predictors of place of delivery were contraceptive use .women did not use contraceptive method 2.61(1.555-. 4.381) less likely delivered in facility compared to women using modern contraceptive.

Women did not or less than four ANC visit 173(.099-.304) .498(.292_.850) less likely delivered in health facility compared to women attend 4+ ANC visit.

House hold those have other wife 446(.202_.985) less likely delivered in facility compared to husband did have a single wife. Parental occupation is another factors associated to delivery place.

Husband engaged on sales work was 14.215=95% (3.722_54.284); fourteen times more likely delivered in facility compared to those did not work. Whereas mother engaged on sales and manual work were three times and five times more delivered in facility compared to not working mothers 2.603=95 %(1.313_ 5.160); .5.037(1.573 _16.130); .539(.074-3.954). Husband education level also affect place of delivery. Husband/partners those not or only attend primary education .211(.091- .492); .227(.104- .496) 79% less likely his wife/partners delivered in health institution compared to husband attend education above primary education

Results of the descriptive, bivariate and multivariate analysis*:* the distribution of Oromia women/ mothers who had a live birth in the five years preceding 2011 EDHS survey by utilization of delivery care for the most recent birth is given in table 3 below

Variables	Factors	N	%	COR	Sig(P)	AOR	Sig(P)
Age of mother at birth					.001		.019
	15-19	107	10.2	1.502(.421,5.353)		1.553(.000-7.846.92)	.919
	20-34	760	73	4.417(1.796-10.863)	.531	15.662(2.229-11.06)	.006
	35-49(ref)	174	16.7	1		1	
					.001		
religion					.000		.189
	Muslim (ref)	615	56.4	1			.189
	Orthodox	190	17.4	11.427(6.822,19.140)	.000	2.272(.572-9.020)	.243
	Protestant	250	22.9	2.175(1.171,4.041)	.014	4.790(1.155-19.864)	.031
	others	37	3.3	1.257(.257,6.137)	.778	.000(.000,_0.12)	.998
Occupation of husband					.000		.004
	Agriculture(ref)	888	81.4	1	.000	1	
	Sales	76	7	5.394(2.877,10.113)	.000	.083(.011-.605)	.014
	Manual	61	5.6	10.56(573,19.461)	.000	.154(.015-15.75)	.115
	Profe/manag/techn	38	3.5	16.491(8.134,33.435)	.000	.003(.000,.072)	.000
	others	28	2.5	5.42(2.08,14.124)		.043(.003-.531)	.014
Contraceptive use					.000		.283
	No method use	768	70.2	.248(.163,.378)	.000	1.229(.386-3.911)	.727
	Traditional	15	1.4	1.034(.280,3.812)	.96	.7.233(.626-.83.5548)	.113
	modern(ref)	311	28.4	1			
Mother occupation					.000		.137
	Not working(ref)	529	48.4	1		1	.486
	Agriculture	262	24	.372(.166_.836)		.438(.074-2.580)	.362
	Sales	192	17.5	.757(.374P_1.531)		.626(.131-2.985)	.557
	Manual	81	7.4	5.968(3.357_10.611)		3.881(1.779-19.348)	.098
	others	30	2.7	39.573(16.156_96.933)		.335(.009-11.970)	.549
ethnicity					.000	1	.806
	Oromo (ref)	897	82.1	1	.000		
	Amhara	83	7.6	3.964(2.301,6.828)		1.089(.175-6.797)	.927
	others	112	10.3	.824(.383,1.776)		.489(.047-5.085)	.550
Problem of health accessibility	Women specifying 0-3 factors as big problem	164	15	.254(.163_.394)	.000	1.598(.447-5.713)	.471
		928	85	1			
	Women specifying four to all factors as big problem(ref)						
Wealth index	Poorest						.000
	Poorer	182	16.6	.028(.011,.075)	.000	.015(.001-.196)	
	Middle	264	24.1	.030(.013,.067)	.000	.007(.001-.066)	.0.001
	Richer	235	21.5	.016(.005,.049)	.000	.000(.000-.433)	
	richest(ref)	266	24.3	.078(.044,.137)	.000	.015(.003-.083)	.000
		147	13.4	1		1	
							.031
							.000
Media exposure					.000		.392
	Not at all	348	31.8	.131(.063,.271)	0.00	1.746(.217-.14.065)	.601
	Less than once a week	467	42.7	.55(.336,.848)	.007	.557(.182-1.707)	.306
	At least once a week (ref)	280	25.6	1		1	
Place of residence					.000		.026
	Urban(ref)	122	11.2	1	.000		
	rural	972	88.8	.047(0.029,0.0175)		.159(.031_0.799)	
Sex of house hold					.000	53.731(.008_.368)	.377
	Male	961	87.8	2.681(1.643_4.375)	.000		

	Female(ref)	133	12.2				
parity				1	.000	-exclude in	
	1-3(ref)	528	48.2	.517(.319,.837)	.007	multivariate analysis	
	4-6	317	29	.169(.075,.382)	.000	due to	
	7-13	249	22.8			multicollinearity	
Time of ANC visit					.000	exclude in multivariate	
	1-3 month (ref)	108	23.9	1	.000	analysis due to	
	4-6 month	270	59.8	.296(.176,.496)	.000	multicollinearity	
	7-9month	74	16.3	.229(.102,0.515)			
Number of ANC				.	.000		.001
visit	No ANC visit	642	58.6	068(.038,.124)	.000	.70(.016_.305)	.000
	1-3 visit	257	23.5	.45(.280,.723)	.001	.247(.079_.776)	.017
	4+ visit(ref)	196	17.9	1			
Education level of				.	.000		.377
mother	No education	702	64.2	017(.008,.036)	.000	.125(.006-2.653)	.182
	Primary	345	31.6	.054(.026,.110)	.000	.119(.006-2.409)	.165
	Secondary and above(ref)	47	4.3	1		1	
Husband education					.000		.283
	No education	473	43.7	.070(.038,.129)	.000	.172(.020-1.543)	.112
	Primary	506	46.7	.171(.104,.281)	.000	.283(.041-1.934)	.199
	Secondary and above(ref)	105	9.7	1			
Person decide on				1	.000		.013
health of mother	Motheralone(ref)	102	10.1	.1522(.301_.907)			
	Both/jointly	609	60	116(.050_.271)	.021	.885(.212-3.750)	.868
	Husband alone	303	29.9		.000	.057(.006-.563)	.010
Birth order					.000		.474
	1-3rd (ref)	528	48.2	1	.007	1	.222
	4-6th	317	29	.517(.319_.837)	,000	2.159(.628-7.483)	.723
	7-13th	249	22.8	.169(.075_.382)		1.318(.286-6.034)	
r/n to house hold					.009		.873
head	Wife (ref)	911	83.2	1		1	
	Daughter	56	5.1	2.854(1.428,5.706)	.003	.187(.000-776.1)	.693
	Head	90	8.2	1.601(.822,3.117)	.166	.032(.000-.296.3)	.460
	others	37	3.4	2.12(.857,5.243)	.104	.755(.028-20.432)	.867
Preceding birth				.	.003		.395
interval	10-24 month	191	20.8	379(.171,.839)	.017	1.488(.313-7.05)	.617
	25-36 month	354	38.5	.399(.216,.740)	.004	.564(.157-.2043)	.381
	37+ month(ref)	375	40.7	1	1	1	
hurdles	Big problem			.254(.163,.394)	.000	1.598(.447-5.743)	.471
	Not big problem(ref)			1			
Marital status	Married	78	7.1	.944(.436-2.042)	.883	Insignificant	
	Not married	1016	92.9				
Family size	1-4	322	29.5	.464(.342-.630)	.000	insignificant	
	5-7	508	46.5				
	8-14	264	24.1				

Results of the descriptive, bivariate and multivariate analysis*:* the distribution of Oromia women/ mothers who had a live birth in the five years preceding 2016 EDHS survey by utilization of delivery care for the most recent birth is given in table 4 below.

variables	Factors	N	%	COR	sig	AOR	sig
Age of mother at birth					.001		.002
	15-19	101	9.6	2.622(1.546-4.445)	.000	.869(.286-2.638)	.804
	20-34	746	71.3	1.326(.903-1.946)	.150	.336(.160-.705)	.004
	35-49(ref)	199	19.1	1		1	
religion					.000		.119
	Muslim(ref)	710	63.6	1		1	
	protestant	236	21.2	.978(.689,1.389)	.903	.483(.259-.901)	.022
	orthodox	123	11	3.041(2.050,4.512)	.000	.705(.332-1.499)	.364
	traditional	27	2.5	.224(.048,1.052)	0.058	.498(.082-3.037)	.450
	others	19	1.7	.038(.001,2.736)	0.134	.007(.000-8.798)	.172
Occupation of husband					.000		.000
	Not working(ref)	91	8.8	1			
	Agricultural employee						
	Sales	766	74.1	.190(.085-.422)	.000	1.855(.702-4.904)	.213
	Manual	50	4.8	.267(.148-.483)	.000	14.215(3.722-54.284)	.000
	Profe/manag/techn	52	5	1.359(.612-3.018)	.451	.303(.068-1.343)	.116
	others	27	2.6	.433(.191-.983)	.045	.306(.040-2.346)	.254
		48	4.7	1.009(.394-2.583)	.985	.762(.167-3.476)	.725
Contraceptive use	No method use	859	77.1	1	.000	2.610(1.555-4.381)	.000
	Modern method use	256	22.9	3.2(2.372_4.317)		1	
Mother occupation					.000		.001
	Not working(ref)	674	60.4	1		1	
	Agriculture	212	19	.950(.648-1.395)	.795	.900(.509-1.589)	.715
	Sales	120	10.8	3.335(2.228-4.992)	.000	2.603(1.313-5.160)	.006
	services	47	4.2	1.175(.586-2.353)	.650	.215(.045-1.022)	.053
	Manual	33	3	3.238(1.595-6.576)	.001	5.037(1.573-16.130)	.006
	others	29	2.6	2.649(1.231-5.700)	.013	.539(.074-3.954)	.543
ethnicity							.010
	Oromo(ref)	979	87.8	1		1	
	Amhara	47	4.2	4.495(2.464,8.198)	.000	4.410(1.446-13.446)	.009
	others	90	8.1	.956(.571,1.599)	.0862	.508(.191-1.351)	.175
Problem of health accessibility	Women specifying 0-3 factors as big problem	449	40.2	1.733(1.298,2.314)	.000	1.189(.742-1.907)	.472
	Women specifying four to all factors as big problem(ref)	666	59.8	1		1	
Wealth index					.000	.	. 104
	Poorest	217	1.4	.063(.034,.115)	.000	.503(.167-1.515)	
	Poorer	238	1.5	.160(101,253)	.000	.779(309-1.961)	.222
	Middle	259	1.7	.347(.232,.521)	.000	1.434(.623-3.302)	.596
	Richer	236	1.5	.269(.176,.412)		.905(.396-2.067)	.397
	richest(ref)	166	1.1	1			.812
Media exposure					.000		.406
	Not at all	730	69.4	.373(.270,.517)	.000	.745(.434-1.279)	.286
	Less than once a week	82	7.8	.452(.249,.821)	.009	.591(.245-1.425)	.241
	At least once a week(ref)	240	22.8	1			

Place of residence	Urban(ref) rural	59 1056	5.3 94.7	1 0.023(.009,.060)	 .000	1 .061(.008-.483)	 .008
Sex of house hold	Male female(ref)	927 188	83.1 16.9	1.253(.883-1.778) 1	.206	-	
parity	 1-3(ref) 4-6 7-13	 493 331 292	 44.2 29.7 26.1	 1 .464(.336,.643) .256(.173,.380)	.000 .000 .000	 .644(.319-1.298) .377(.119-1.192)	.244 .218 .097
Time of ANC visit	 1-3 month(ref) 4-6 month 7-9month	 147 349 60	 26.4 62.8 10.8	 1 .420(.283,.622) .308(.161 ,589)	.000 .000 .000	-	
Number of ANC visit	 No ANC visit 1-3 visit 4+ visit(ref)	 558 301 254	 50.1 27.1 22.8	 .106(.073,.154) .498(.353,.703) 1	.000 .000 .000	 .173(.099-.304) .498(.292-.850) 1	.000 .000 .011
Education level of mother	 No education Primary Secondary and above(ref)	 728 338 50	 65.2 303 4.5	 .043(.021,.090) .149(.072,.311) 1	.000 .000 .000	 .293(.023-3.723) .391(.033-4.653)	.423 .344 .458
Husband education	 No education Primary Secondary and above(ref)	 456 444 136	 44 42 13.1	 .104(.067,.161) .212(.141,.318) 1	 .000 .000	 .211(.091-.492) .227(.104-.496) 1	.001 .000 .000
Person decide on health of mother	 Mother alone(ref) Both/jointly Husband alone	 101 701 233	 9.7 67.9 22.4	1 .735(.468,1.155) .488(.286,.833)	 .182 .008	1 .887(.392-2.010) .919(.372-2.271)	.957 .774 .854
Birth order	 1-2rd (ref) 3-5th 7-13th	 331 396 388	 29.7 35.5 34.8	 .415(.301,.572) .212(.147,.306)	.000 .000 .000	1 .297(.125-.710) .225(.060-.838)	.022 .006 .026
r/n to house hold head	 Wife(ref) Head Daughter others	 844 145 57 68	 75.7 13 5.2 6.1	 1 1.092(.727,1.641) 2.127(1.225,3.695) 1.425(.830,2.445)	.040 .671 0.007 .199	 1 2.133(.772-5.892) .172(.031-.962) .367(.111-1.216)	.072 .144 .045 .101
Preceding birth interval	 8-24 month 25-36 month 37+month(ref)	 254 346 515	 22.8 31 46.2	 .354(.242_.518) .351(.250_.493) 1	.000 .000 .000	 .514(.282-.937) .677(.402-1.140) 1	.071 .030 .142
Number of other wife	No other wife(ref) Have1-3 wife	846 188	81.8 18.2	1 .313(.193_.510)	 .000	1 .446(.202-.985)	 .046
marital status	Married Not married			.752(.454-1.246)	.269	Insignificant	
Family size	1-4 5-7 8-14			.808(.584-1.117) .505(.344-.740)	.002 .196 .000	Insignificant	

CHAPTER FIVE

5. DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1. DISCUSSION

This study investigated individual, demographic, socioeconomic and health services related factors that were associated with the place of delivery. Parity, women's and husband educational level, their wealth index status ,age of mother, family size, birth order, contraceptive use, occupation of husband and wife, birth interval, number of co-wife and the number of ANC visits were most predictive of where the delivery occurred.

Study conducted in Rwanda was revealed that young 15-19 and 20-34 women were more likely to deliver at facility, compared to old women age. This might be due to education and media exposure. The finding of this study also resemble with study conducted in Rwanda. Urban women were significantly more likely to deliver at facility than their rural counterparts. This might be because of urban women exposure to media, more access of education, and facility. In the same study Women with higher parity were less likely to deliver in facility (Umurungi, 2010). This might be due to not apart very young children alone and financial problem since the family become large.

As expected higher percentages of women delivering at health facilities were found among educated women and in those with educated partners. The estimated reason were more educated women and partners aware complication during pregnancy, and economically more earned or employed. Farmers' women were less likely to deliver at facility compared to women engaged in manual work as well as those in sales domains and Women classified as belonging to the poorer and poorest categories were less likely to deliver at facility (Umurungi, 2010). These might be women participated in unskilled work less earned than women employed to skilled work. Similarly Women who started ANC in the first trimester were more likely to deliver in facility; they were also more likely to have an adequate number of visits as per World health organization recommendations (at least 4 ANC visits).the early start of visit might help women

to check different pregnancy related complication and aware women the advantage of facility visit and delivery.

Women with secondary and above education are significantly more likely to deliver at a health institution compared to women with primary or below education. The finding of this study was indicated less educated husband and wife less likely prefer facility use for delivery than secondary and higher level educated (Ahmed, 2010, Amano etal, 2012 Aremu, etal 2011). Education might be help to get awareness and increase communication skill on health issue including delivery.

Women who had large family and high birth order and many children less likely delivered in health facility and this is consistent with most of the research conducted in sub Saharan Africa but contradict with this finding that large family size house hold more likely delivered in health facility (Aremu. etal 2011, Kruk etal 2010, Mbonye 2010). House hold with large family size more likely use facility delivery compared to small family house hold (Garish and Campbell, 2009). This might be large family help to help small children in home when their mothers go to facility for delivery and taker for their property at home.

Old age women 35-49 more likely deliver in health facility since they got experience in the presence pregnancy; whereas some research findings indicate young women more prefer facility delivery than old age group women. Other research result shown adult women more likely delivered n health facility compared to young and old group. (Aremu etal, 2011and Ononokpono, 2014). This might be old women could have experience in the past delivery and more autonomous at home to decide on their health matter.

In case of occupation women engaged on non agricultural work more likely deliver compared to those agricultural employees and not working (Fotso etal, 2009, Idris etal, 2006, Iyaniwuri and Yusuuf 2009).

Women attend antenatal visit earlier and recommended number of times more likely delivered in health facility than those did not or less antenatal visit. Women those did not and attend antenatal care less than four times less likely delivered in health facility compared to those attend 4+ health facilities. This finding confirms the importance of antenatal care in determining place

of delivery; this might be if women attend antenatal care and start early could easily get treatment on pregnancy related complication. The results reported here suggested that regarding place of delivery, antenatal care visit is the main predictors before and after adjusting for other variables. Study conducted in Ghana also shown the same results (Akazil etal, 2011). In 2016 place of residence (rural) wealth status poorest, poorer education no or primary education of mother, number of house hold members greater than four, birth order greater than 1-3, birth intervals than two years, parity four ANC visit no visit and 1-3 visit were less likely delivered in health compared to urban residents, richest, secondary or higher education level, family size more than three, more children ANC visit 4+ (Akazili etal, 2011; Ochako etal, 2011, Spangler and Bloom, 2010).

Economic status indicated great association with place of delivery .women in the economic status of different from richest wealth was more likely use facility for delivery.

The odds of having facility delivery for women in the poorest, poorer, and middle wealth quintile are lower than that for women in the highest wealth quartile. This result is resembled with the result of (Ahmad etal 2010). Another study in Nigeria revealed that delivery in a health facility was higher for women who were in the richest wealth quintiles (Ononokpono etal, 2014).

Increasing socio economic status was associated with greater odds of having a delivery in a health facility.

In case of mother occupation; sales workers, manual workers, and other type of working groups were more likely delivered in health facility compared to those did not work; whereas agricultural employee had no association care. With respect to occupation of husband agricultural employee, sales, professional occupation were less likely delivered in health facility than not working husbands but manual and other workers were insignificant with place of delivery (Ahmad,etal; 2010, Faye etal,2011,Fotso,etal2009 ;Gage ,2007 , Indris,Gwanzo,and Shehu,2006) .

Place of residence also had determinant influence on delivery care women live in urban area had high tendency to deliver in health facility compared with their rural counterpart (Babalola and Fatusi, 2009. De Allegri etal; 2011; Fotso, etal 200919). In addition to this finding of

weldemicael 2010, resemble with this studies finding that urban women are significantly more likely to use safe delivery care than women in the rural area.

Ethnicity had its own impact on place of delivery. Women tied with cultural issues, beliefs did not deliver in health facility compared to women more inverted from cultures, customs and traditional practice.

Orthodox and other religion follower were more likely delivered in health facility compared to muslin religion follower women. The protestant and traditional religion follower indicate no association with place of delivery.

Women followed Muslim and traditional religion less likely delivered in health facility (Olusanya, Alakija and Inem, 2010; Onah, Ikeako, Iloabachie, 2006).

Protestant women more likely deliverd in health facility compared to muslin religious followers. Similar study conducted in Nigeria (Ononokpono, etal, 2014) reached on the same conclusion.

Women those had media access were more intend to use facility delivery compared to those did not or less media access. Sex of house hold also affect place of delivery; house hold headed by women more free to go facility compared with house hold headed by male.

House hold headed by female was more liberal and more relied on facility delivery. They had high linkage with facility (Faye etal2011; fotso etal 2009; Gyimah, Takyiand Addai, 2006).

Birth interval greater than two year was more gave chance for women to deliver in facility.

Number of co wife also had negative influence on place of delivery.

As number of co wife increase the probability of delivering in heath facility decrease.

In 2011 survey, husband engaged in sales, professional and other works were less likely delivered in health facility compared to those engaged in agricultural work.

The study results showed that maternal age was significantly associated with health facility delivery, with in 2016 adult women(20-34) having lower odds of delivering in health facility compared with old women age 35-49.

This result was confirmed by result finding in Nigeria by (Ononokpono etal, 2014).

Age of mother at child birth 15-19 more likely deliver in health facility compared with 35-49 age group while 20-34 became insignificant compared to the old group.

Women those use modern contraceptive three times more likely delivered in health facility compared to those did not use contraceptive.

In addition higher level of husband's education significantly improves women use of facility delivery. This is corresponding with the finding of (wolde micael, 2010).

women whose health care is decided by their husband alone were lesslikely deliverd in health facility compared with women decide about their health care by their own .this finding was consistent with the results in (Ononokpono etal,2014).

5.2. CONCLUSION

Maternal and child mortality remain high in Ethiopia and Oromia too, despite the progress that has been made in the country in improving maternal and child health care. While many factors contribute to maternal and child health outcomes, the use of maternal health care services provided by well-trained and equipped health professionals is widely recognized as an important protective factor. However, in Ethiopia, particularly in Oromia region maternal health services utilization, especially health facilities for delivery, remains unacceptably low. This study identified a number of individual, demographic, socioeconomic and health services related factors that influence the use of health services for delivery. The most predictive factors were place of residence, occupation of husband, age of mother , religion , women empowerment , household wealth, the number of ANC visits, ethnic back ground , family size ,relationship of delivered person to house hold head ,birth order ,birth interval ,contraceptive use, husband education level and mother education level. The findings are congruent with many other similar studies reported in Africa and other developing countries. Recognition of these determinants now allows for more specific targeting of interventions and strategies to identified high-risk groups of women.

5.3. RECOMMENDATIONS

The findings of this study have important policy implications. The identification of factors that are significantly associated with a woman's decision to deliver a child in a health facility is a first step. This knowledge now needs to be converted into development of adequate interventions that aim to increase service use.

The availability and accessibility of health facilities was very, low; usage of health institution delivery services in rural areas raises the problem of inaccessibility and unavailability of maternal services in rural settings, where the majority (85%) of the Ethiopian population live. The local government and federal ministry of health of Ethiopia collaborating with other stalk holders fulfill staff, facilities and improve road and ambulance more than before.

In addition to mother education also very important because if husband educated both parents discuss health issue, support mother during pregnancy period including birth, and make free the wife and enhance decision power of women. So government should focus on education for all.

Birth order and birth interval were a potential predictors of place of delivery. Birth spacing is very important. The government and NGO should create awareness and initiate women to use family planning.

Regarding ethnic back ground groups of people those had high linkage with cultures, beliefs, and norms should be focused and awareness on the benefit of institutional delivery by health extension workers.

If the person delivered is house wife, she was focused and under attention more than the other person live in the house. The health bureau should focus on to avoid unplanned pregnancy and care for the people need help.

The most pregnancy risk age is adult where mortality relating to pregnancy is concentrated so, the regional health bureau and health workers such as nurses, health extension workers and midwifery should focus on this segment of women age group (20-34).

Antenatal care is another predictors of place of delivery; pregnant women recommended to use the standard care which is 4+ by world health organization and beyond depending on the

complication that she may face during pregnancy period. In addition to this early start of antenatal care also helpful to identify complication and treatment needed; initiate women to deliver in health facility.

Wealth and occupation of husband and wife were potential determinant factors of delivery care.

If parents engaged in professional and skilled they will get better earning (payment) and can pay cost needed for health care including indirect and direct facility delivery payments.

The governments and non government organization should pay attention more than before on enhancing the coverage of maternity health services, and other issues related to pregnancy treatment, skill delivery and transportation. Further follow up and qualitative study should conduct to identify factors associated to skilled facility delivery care in the region.

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