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HUSBANDS' INVOLVEMENT AND WOMEN'S UTILIZATION OF MATERNAL HEALTH CARE IN SIDAMA ZONE, SOUTHERN ETHIOPIA

BY

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PhD DISSERTATION FOR THE DEGREE OF DOCTOR OF PHILOSOPHY (PHD) **IN PUBLIC HEALTH, ADDIS ABABA UNIVERSITY, ETHIOPIA**

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HUSBANDS' INVOLVEMENT AND WOMEN'S UTILIZATION OF SKILLED MATERNAL HEALTH CARE IN SIDAMA ZONE, SOUTHERN ETHIOPIA

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DEDICATION

This dissertation is dedicated to the late Prof. Misganaw Fantahun (MD, MPH), Professor of Public Health (Maternal and Child Health/Reproductive Health) at the School of Public Health of Addis Ababa University, Addis Ababa, Ethiopia.

Original Papers

This dissertation is based on the following original research papers, which are referred to in the text by their respective Roman numerals (I-IV):

I. Kidane WT, Deressa W. Husbands' involvement in maternal health care and its determinants, in Sidama Zone, Southern Ethiopia. *(Submitted to Research Journals:* Journal of Research in Nursing and Midwifery on March 10, 2019).

II. Kidane WT, Deressa W. Barriers to husbands' involvement in maternal health care in Sidama Zone Southern Ethiopia: a qualitative study. *(Under Review: BMC pregnancy and childbirth)*

III. Kidane WT, Deressa W. Husbands' involvement in antenatal care visit and its association with women's utilization of skilled birth attendants in Sidama-Zone, Southern Ethiopia. *(Published online: August 03, 2018: BMC Pregnancy and Childbirth (2018) 18:315 https://doi.org/10.1186/s12884-018-1954-3).*

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Acronyms and abbreviations

AAU	Addis Ababa University
AIDS	Acquired Immuno-Deficiency Syndrome
ANC	Antenatal Care
ASE	Attitudes-Social influence - Self-efficacy
aOR	adjusted Odds Ratio
BEmOC	Basic Emergency Obstetric Care
B.Sc	Bachelor of Science
CEmOC	Comprehensive Emergency Obstetric Care
CI	Confidence Interval
CL	Confidence Level
DE	Design Effect
DFID	Department for International Development
EDD	Expected Date of Delivery
EDHS	Ethiopia Demographic and Health Survey
ETB	Ethiopian Birr
FGDs	Focus Group Discussions
FP	Family Planning
GA	Gestational Age
HEWs	Health Extension Workers
HIV	Human Immunodeficiency Virus
HSDP	Health Sectors Development Program
ICPD	International Conference for Population Development
IDIs	In-Depth Interviews
IMR	Infant Mortality Rate
IRB	Institutional Review Board
KIIs	Key Informant Interviews
LMIC	Low and Middle Income Countries
LNMP	Last Norman Menstrual Period
MMR	Maternal Mortality Ratio

NMR	Neonatal Mortality Rate
NGOs	Non-Governmental Organizations
OPV	Oral Polio Vaccine
OR	Odds Ratio
PI	Principal Investigator
PNC	Postnatal Care
PMTCT	Prevention of Mother to Child Transmission
RCT	Randomized Controlled Trial
RH	Reproductive Health
RR	Relative Risk
SNNPR	Southern Nations, Nationalities, and Peoples Region
SBA	Skilled Birth Attendant
SPSS	Statistical Package for the Social Sciences
SRH	Sexual and Reproductive Health
SRHB	South Region Health Bureau
SRHR	Sexual and Reproductive Health Right
SSA	Sub-Saharan Africa
STIs	Sexually Transmitted Infections
TBA	Traditional Birth Attendants
U1	Under one-year children
U5	Under five year children
UN	United Nation
UNDP	United Nations Development Program
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VIF	Variance Inflation Factor
WHO	World Health Organization
ZHD	Zonal Health Department
ZHO	Zonal Health Office

Glossary

Antenatal Care: is a health care given to a mother and partner during pregnancy

Delivery care services: are health care given to the pregnant mother after onset of labour until complete expulsion of the baby, placenta, and membranes.

Gestational week: Gestational age in weeks as measured by Last Normal Menstrual Period or fundal height

Highlands: Geographical area located above 2300 meters above sea level.

Husband: is a male partner of a woman; it refers to a man of the age eighteen years and above, having a right to marry and to start a family.

Husbands' influence: for purposes of the study, refer to any effort of men or partners that could be enhancing or hindering their wives' use of the available maternal health services.

Husband involvement in maternal health care: refers to an activity when a man accompanies his female partner to seek maternal health care services (i.e. for at least one ANC or PNC, or during childbirth at health facility).

Husband participation: refers to the provision of care and support activities (physical, psychological, and financial support, or either of the one) by the husband that are performed at home and/or health institution.

Involvement: refers to someone who participation or included in some activities and provide something as part of whole, or to make a matter of concern or affect somebody or to make somebody to participate.

Lowlands: Geographical area located below 1750 meters above sea level.

Maternal health care: for purposes of the study, refers to antenatal care, delivery and postnatal care that are provided by skilled professionals at health care institutions or at home.

Midlands: Geographical area located 1750 to 2300 meters above sea level.

Perception: refers to awareness and understanding of the issue, including knowledge and attitude of an individual.

Postnatal care: is the health care given to the mother and baby after childbirth up to six weeks.

Utilization of maternal health care: is the use of antenatal, delivery, and postnatal services at health facilities by a mother.

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Abstract

Background: Husband involvement is an important intervention for improving maternal health, and is considered as a crucial step in scaling up women's use of prenatal care. The idea of men's involvement in reproductive health was first emerged at Cairo's conference in 1994. Nevertheless, to implement this idea into practice several challenges have been faced. Even today, emphasis has not been given to the concept of men involvement in maternal health in most developing countries. Until recently, there is limited evidence of husbands' involvement and its contribution for women's use of skilled maternity care in Ethiopia, a country with low coverage of maternal health care but with high maternal and neonatal mortality. Therefore, there is a need to generate contextual evidence for policy formulation, designing and implementing programs that remove barriers and to promote husbands' involvement in maternal health care.

Objectives: The aims of this study were to assess the magnitude and determinants of husbands' involvement in maternal health care, and to examine its association with women's utilization of skilled birth attendants and postnatal care services in Sidama zone, Southern Ethiopia.

Methods: The study used mixed research methods. The quantitative methods employed both cross-sectional and follow-up study designs. Data were collected from sample of 1318 men and 709 antenatal women using interview questionnaires from December 2014 to January 2015 and June 01 to November 30, 2015, respectively. The data were analyzed using SPSS ver.20. A descriptive statistics: univariate and bivariate analyses, and inferential statistics: a chi-square test, and binary logistic regression analyses with the corresponding odds ratios, 95% confidence intervals (CI), and p-values were computed. The qualitative method was also employed to explore contextual evidences on barriers to husbands' involvement in maternal health care. The data were collected using open-ended questions and analyzed thematically using ATLAS.ti software. Before data collection, ethical clearance was assured at every steps of the data collection process.

Results: Husbands' involvement during antenatal care (ANC), skilled delivery care, and postnatal care (PNC), in this study, were 19.9%, 42.7%, and 11.8%, respectively. In the multivariate analysis, offering an invitation letter [adjusted odds ratio (aOR) 6.1, 95% CI: 4.0, 9.1], having <3 under five (U5) year children (aOR=3.3, 95% CI: 2.1, 5.1), and early initiation of ANC visit (aOR 3.0, 95% CI: 1.3, 7.0) were significantly associated with husbands' involvement

during ANC visits. In addition to early initiation of ANC visits and having <3 U5 year children, place of residence (aOR 4.8, 95% CI: 2.4, 9.4) and husbands' involvement in the preceded ANC visit (aOR 2.1, 95% CI: 1.3, 3.4) were found to be a significant predictors of husbands involvement during delivery care. Similarly, having <3 U5 year children (aOR 3.8, 95% CI: 1.5, 9.5), offering invitation letter to husbands (aOR 3.3, 95% CI: 1.3, 8.0), husbands' involvement in the preceded ANC visit and couples' communication were also found to be a significant predictors of husbands' involvement during PNC services. Respondents in the qualitative study further reported the existed social norms, men's lack of awareness about when and how to involve, health staffs' and women's attitudes towards men's involvement, and absence of guidelines were the main reasons for un-involvement of husbands in their wives' maternal health care. In the multivariate analysis of the cohort study, women whose husbands involved at least for one ANC visit were 6.27 times and 7.45 times more likely to receive skilled birth attendants and PNC services, respectively, compared to women attended ANC alone, [aOR: 6.27; 95% CI: 4.2, 9.3; and aOR 7.45; 95% CI: 4.18, 13.3].

Conclusions and recommendations: The proportion of husbands' involvement in maternal health care in the study areas was lower than the proportion reported from other African countries. Offering an invitation letter to husbands, number of U5 year children alive during the recent pregnancy, husbands' involvement in the preceding ANC, couple's communications, initiation of ANC visit and place of residence were found to be significant predictors of husbands' involvement in maternity care. The observed associations between husbands' involvement during ANC visit and women's utilization of skilled birth attendants during birth and PNC services were strong and significant. This implies that woman's utilization of skilled birth attendants' and PNC services can be improved by involving their husbands in at least one ANC visit. Therefore, to bring a behavioral change and communication at community and facility levels, a contextual based awareness creation programs that focused on husbands' involvement during maternal health care need to be launched; secondly, a national guideline on husbands' involvement in maternity care, at each level of health facilities, need to be prepared and executed.

1. INTRODUCTION

1.1. Background of the Study

Globally, the interest of men's involvement in reproductive health (RH) has been growing among health professionals in the past few decades [1, 2]. In the past four to five decades (in 1960s and 1970s), the western countries' health service system encouraged men to participate in their partners' maternity care and to take a more active role [2]. Landmark events in this process include the 1994 International Conference on Population and Development (ICPD) held in Cairo and the 4th World Conference on Women held in Beijing in 1995, where they were emphasized that men's attitudes, knowledge, and ways of reacting influence not only their own but also women's RH [1, 3]. Then, since the 1994 'ICPD' in Cairo, there has been an effort to increase the role of men in RH services [3]. Despite that, the existed programs mostly done through the exclusion of men, for example in family planning education program. Until today, there continues to be a lack of emphasis on the involvement of men in RH including maternal health care, yet they remain crucial partners in this area [3-5].

Men's involvement is considered as an important intervention for improving maternal health [6]. In many developing countries men are the key decision-makers and chief providers, often determining women's access to economic resources. This practice has implications for maternal health as it determines the nutritional status of women during pregnancy, women's access to maternal health care, as healthcare systems in most developing countries require payments, and women's chances of receiving emergency obstetrics care, which is vital in preventing maternal mortality [7].

Men's functioning as a partner, a father, and a support person is central to the lives of the mother and the baby. A father can contribute significantly to their well-being, even under the most difficult circumstances, and if his support is not forthcoming, this represents a significant deficit for the family [8]. This is supported by many of the literatures that have investigated the significance of fathers' early engaging on pregnancy, labor, and postpartum care [2, 9, 10]. Father's support during labor promotes mother's well-being in the future, and enhances his

attachment to the upcoming baby. The fathers who were given the chance to participate in the labor process reported more satisfaction in their experiences. It is proven by an idea that a close contact between the couple would assist in better child development [2, 11].

The benefits of male involvement in maternal health care, further, include an increased maternal access to antenatal and postnatal services [12], discouragement of unhealthy maternal practices such as smoking [12, 13], improved maternal mental health [13, 14], increased likelihood of contraception usage [7, 15], and allayment of stress, pain and anxiety during delivery [7]. A study in Kenya shows that there was a clear association between male attendance in at least one antenatal care (ANC) visit and woman's use of a skilled birth attendant (SBAs) during birth [16]. Consistently, different studies also explore the benefits of men's involvement in the area of ANC, delivery and the postpartum period [4, 17]. Among men's responsibilities on their wives maternal health care are encouraging her to attend ANC services, accompanying with her to health facilities, preparing and saving money for delivery, and arranging transportation to the birthing center [18]. A study in Uganda reveals that the outcomes associated with male attendance during ANC includes improving his knowledge of ANC services, women giving birth at a health clinic, and men desiring no further children [19]. Moreover, the study reported that if men know more about ANC, they would have a more desire to accompany with their spouses [4, 19]. On the other hand, arguments on the consequences of male involvement have been highlighted an increased male dominance in decision-making [7] and the potential for escalating labor difficulty when husbands become anxious in delivery rooms [7, 12].

Despite those facts, fathers are not given the opportunity to attend ANC and postnatal care (PNC) services; particularly they are not always encouraged to engage during labor. Some cultural norms and practices proscribe fathers' involvement during labor [10]. In addition, the fathers' perspectives about their role during labor vary internationally from cultural prohibition of father presence during labor to full support physically and emotionally to laboring woman [2]. For instance, even in some developed nations' setting, men negotiating a space for their involvement can be challenging. Commenting on efforts in Europe to involve men in pregnancy and childbirth is noted that many men felt marginalized and inadequately informed since most education focused on women, with little space for their questions and concerns to be answered

[1, 4]. However, with such situations, more than 90% of husbands in developed countries have involved in their wives' maternal health care [20]. In most developing countries, not more than 30% of the husbands have involved in their wives' maternity care services [16].

The exclusion of men from maternal health services lead few women seeking the services, and as a result worsening the negative maternal and child health outcomes [21]. Throughout sub-Saharan Africa, the area of pregnancy and childbirth is still considered the responsibility of the woman. It is rare to see men accompany women for ANC, PNC and be present for delivery [4, 22]. This is due to the patriarchal family structures in African societies, in general, that limit the fathers' role and responsibility during maternity care. This perception is connected strongly to the idea that pregnancy and childbirth are a woman's issue [23]. The masculine mindset is relatively dominated in such African countries. This is also clear, by the norm, that fathers are the decision makers and are responsible for financial support of the family, while the mothers' roles are restricted to childbearing and providing care to children and the elderly [2, 23].

Research evidences on magnitude of husbands' involvement in maternal health care and its influence on women's utilization of the available services are limited in Ethiopia in general. So, bringing to light the existed status of husbands' involvement in their wives' maternal health care would be important for program planning and policy makers to deliver quality man-friendly or couple's-friendly maternal health care services. Therefore, this study examined the magnitude and determinants of husbands' involvement in their wives' maternity care and its influences on women's utilization of SBAs and PNC services in Sidama zone of southern Ethiopia. Husband's involvement in maternal health care, in this study, refers to a husband accompanied with his wife to a health facility at least for one ANC visit, labor and delivery care, or PNC visit, but not for his personal matter or other purpose.

1.2. Statement of the problem

Over the years, the issue of maternal health care has been predominantly seen and treated as purely feminine matter [24]. Even today, despite huge changes in how men and women share work and caring roles, there is still an underlying belief that motherhood is more essential than

fatherhood. In focusing almost entirely on mothers, most service providers tend to overlook fathers – both in terms of the support they could provide and any support they may need to play a positive role [25].

In recent years, however, the role that husbands play in RH outcomes and in maternal and child health issues has drawn increased interest. Particularly, a smaller but growing area of interest is men's role in maternal and child health issues, including their role on health care decisions, and their responsibilities and roles as fathers, husbands, and breadwinner. The heightened interest on both men's own RH and their participation in areas traditionally considered women's responsibility is the result of various factors. Those include men's role that played in the prevention and control of human immune deficiency virus or acquired immunodeficiency syndrome (HIV/AIDS) epidemic and the wider acceptance of more complex views of gender that highlight how relationships between men and women underline many aspects of sexual and RH. Those developments have brought driven efforts to better understand male's RH needs and male's involvement' in women's RH [26].

The concept of husband involvement in maternal health care services is not generally accepted in most developing countries [27]. This is due to poor attitude of men (especially most African men) towards maternal health care, which has been greatly attributed to the practice of male dominance, often called "patriarchy." Patriarchy is described as a family structure or society where a man is, as of right, the head of the family and regarded by the women as the lord and master whose decision is final. It implies that women have to depend almost entirely on men for every decision in the family, even when they are directly affected by such decisions [24, 28].

In developed nations, husbands' benefits by involving in maternal health care are well articulated. Literatures indicated that a positive husband involvement is defined as the mental and physical participation of husbands in maternal and prenatal health, and family planning (FP) in such a way as to increase maternal and infant survival rates and improve FP outcomes [28, 29]. Their involvements in maternity care, especially, starting from conception, throughout pregnancy, delivery, and PNC periods have positive influences on birth outcome [25, 30]. Despite these facts, coming to developing countries, in general, husbands' involvement in

maternal health care is very limited even though most husbands willing to participate in their wives' pregnancy care [31, 32].

With regard to Ethiopia, for many years global reports have marked the country, among Sub-Saharan Africa (SSA) countries, with high maternal mortality ratio (MMR) and neonatal mortality rate (NMR). Such burdens in SSA countries are still the major issues that show insignificant progress even after the 1994 ICPD declaration. Among the major factors for a high MMR and NMR is the low utilization of killed maternity care by women. Due to this reason, several studies have been conducted to assess the determinant factors for maternal health care utilizations. Almost all studies focused on women's utilization rate of maternal health care and its relationship with socio-demographic, maternal, and health care system's factors. However, in Ethiopia, a country with low utilization of maternal health care, there is limited research evidences on husbands' involvement in maternal health care and its association with women's utilization of the services. Therefore, this study was conducted to fill these gaps.

1.3. Rationale and significance of the study

Worldwide, every pregnancy faces an element of risk. To reduce these risks, husbands as partners and decision makers need to be involved in their wives' maternal health care. Low husbands' involvement results a low utilization of the services by women. Husbands' accompanying their wives in maternal health care is an important factor in contributing to the use of services, and for reduction of maternal morbidity and mortality. Husband can positively affect the prevention of maternal and child mortality by being able to recognize an obstetric emergency, take a decision to seek care, and being able to transport the pregnant women to obtain health services. The involvement of husbands during ANC visit presents an opportunity to the health workers to educate and empowering men to be able to recognize early an obstetric emergency for appropriate decisions and actions that may influence the outcome of the pregnancy [33].

In Ethiopia, male partners are mostly reported as the main barrier to women's utilization of RH services, particularly, FP services. Yet, few recent studies have reported the significance of

husbands' education and occupation with women's use of RH services. However, in Ethiopian context, in general, and in Sidama-zone, in particular, there is limited research on the magnitude of husbands' involvement in maternal health care and its relationship with women's utilization of skilled maternal health services. Hence, this study is important for the following reasons: - *First:* it contributes to better understanding of the magnitude and determinants of husbands' involvement in maternal health care. *Second*: it examine the relationship between husbands' involvement in antenatal care visit and women's utilization of skilled birth attendants during birth and postnatal care services.

Finally, the research findings bring out a more comprehensive view on the role of husbands in maternity care by taking into account gender-sensitivity. The information generated will be used for decision-making and actions that will lead to increase husbands' involvement in maternal health care, and to increase utilization of the services by the women. Consequently, it will contribute for reduction of maternal and infant mortality.

1.4. Literature review

Review of the literatures on maternal health, maternal health care, determinants of maternal health care utilization, male involvement in reproductive health (RH), benefits of male involvement in sexual and RH, male involvement framework, approaches, and outcomes, and male involvement in maternal health care and its determinants were presented in this section. Studies from both developing and developed countries were reviewed with particular emphasis on their findings and methodological issues.

1.4.1. **Maternal health**

Maternal health- *the health of women during pregnancy, birth, and the postpartum period*- and maternal health care are important global public health goals that determine the maternal and child health outcomes [34, 35]. Maternal mortality is a maternal health outcome, which are an important indicator of maternal health and the performance of any country's health system [36]. According to the World Health Organization (WHO), maternal death is defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the

duration and site of the pregnancy from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes" [37].

Although maternal mortality is not a big public health challenge in developed countries, it continues to be disproportionately high in many developing/low-income countries. In low-income countries, pregnancy and childbirth are still the leading causes of death and disability among women of reproductive age groups [38]. Almost all (99 %) of maternal deaths are in developing countries; of these, more than half in sub-Saharan Africa and about one-third are in South Asia, respectively [39]. Adult lifetime risk of maternal death - is the probability that a 15-year-old woman will die eventually from a maternal cause [40], which is estimated to be 1 in 3,300 in high-income countries compare with 1 in 41 in low-income countries [40]. Indeed, maternal mortality is one of the greatest sources of disparity between low-income and high-income countries. Equally, maternal mortality ratios in any given country vary considerably between various geographical locations and between rural and urban populations [39, 41, 42].

In Ethiopia, the maternal health status is still one of the worst in the world. The maternal mortality rate estimates in 2010 and 2011 vary from 350 to 676 per 100,000 live births, respectively. This variation could be due to the difference in the data source [43, 44]. Since there is lack of proper vital registration systems in the country and thus, the figures are only rough estimates [43]. Therefore, maternal mortality is a rare event, which is difficult to estimate statistically and needs a large sample to calculate [34].

1.4.2. **Maternal health care**

Maternal health care is a care given by skilled professionals to a woman during pregnancy, delivery and after delivery. Good quality maternal health care comprises skilled antenatal care, delivery care, and postnatal care [4, 45-47].

Maternal health care system had been established in the late 19th century; where the first clinics were founded in Europe. In the 20th century, most industrialized countries and their colonies had launched the first maternal and child health programs [48]. The programs gained wider

popularity after World War II. After that, the 1948's Universal Declaration of Human Rights and the WHO's core functions are the important actions that obligate governments to offer special health services for mothers and children and to promote maternal and child health. Ever since, mothers and children are started to get special attention and be widely regarded as vulnerable groups that need special focus in the health care systems. In 1978, the primary health care approach also helped in drawing more attention to prevention programs such as malnutrition and immunization that were also central in maternal and child health programs [34].

Finland is the first country that founded the first antenatal and well-baby clinics in 1920´s. Then, in 1960, the network of clinics was wide-ranging to other European countries. Finland's' maternal and child health care program has gained a good name abroad due to lower perinatal and infant mortality, especially in 1980´s, compared to some central-European countries. Since 1960´s, men in Finland have been allowed to accompany their partners to childbirth in hospitals [48].

The recent improvements in medical knowledge and advances in health technology have caused a change in the way services to pregnant women are provided. The previous paradigm utilized the "risk approach" where high-risk pregnancies were first identified and referred for closer attention during the prenatal period. Now, in contrast, every pregnant woman is considered at risk and should have access to a skilled attendant before, during, and after pregnancy. However, for the strategy to succeed, the "three delays" of deciding to seek care, reaching appropriate care, and receiving care at appropriate health facilities must be addressed [49]. In fact, in Africa countries, men are reported among the main factors and the main actors, in contrary, to address the "three delays."

In fact, one critical pathway to improve maternal outcome is to improve the accessibility, utilization, and quality of services for the treatment of complications during pregnancy and childbirth. This is based on evidence that at least 15% of all pregnant women will develop serious complications and require life-saving access to quality obstetric services. The single most critical intervention is to ensure the presence of a health worker with midwifery skills at every birth, and transportation to a more comprehensive level of 24-hour quality obstetric care in case

of emergency. It is recommended that the setting up of a facility with capability to provide comprehensive emergency obstetric care in an area with at least 500,000 population and a facility with capability to provide basic emergency obstetric care (BEmOC) in an area with at least 125,000 population [49].

For many years, like that of many other developing countries, Ethiopia has been implementing a narrow focused maternal and child health programs. Nevertheless, in recent years with better understanding of the complexity of social and cultural factors related with maternal health a more comprehensive reproductive health concept has been advanced. This concept emphasizes empowering and improving the status of women by creating equal opportunity for education, elimination of discrimination against women, and increasing their control over decisions in their household. The other related concepts include community participation and involvement of partners of the women in every aspect of the reproductive health issues [50]. The Ethiopian Health Sector Development Program has also given a great attention to maternal health by recognizing the importance of using assistance from skilled personnel during birth [51]. However, the weak organization and performance of health services due to lack of trained personnel, lack of basic equipment and poor referral linkage can be taken as possible reasons for the low utilization of maternal health services. This as a result creates a challenge to improve maternal health. It is also true that health-seeking behavior is influenced by much more factors than the availability and quality of the health services [52].

1.4.3. **Maternal health care utilization**

Utilization of antenatal, delivery, and postnatal care can be assessed by determining the percentage of the under-one children population whose mothers had at least one antenatal visit during pregnancy, labor attended by trained health personnel (nurse, midwife, or doctor) and records of postpartum counseling for family planning and immunizations such as oral polio vaccine (OPV1) and/or measles [52].

A) Antenatal care utilization

Today, the utilization of ANC services is nearly universal in most high-and middle-income countries [35]. Globally, over 70% of women have at least one ANC visit during pregnancy, but

the gaps between countries are large. Coverage is extremely high in high-income countries (98%) compared to in low-and-middle income countries (LMICs) (68%). The lowest coverage is seen in Southeast Asia, where only 54% of women use ANC throughout pregnancy [53]. In most African countries, less than 70% of pregnant women receive ANC, and most of them have only one or two visits, sometimes only late in pregnancy. In LMICs, more than 80% of women in the highest wealth index quintile use ANC compared to around 30% among women in the poorest quintile [54]. Many of the women who do not have access to prenatal care are those who need it most, typically poor women in rural areas and urban slums [55]. The quality of ANC in many countries remains very poor and requires renewed efforts [56-58].

In Ethiopia, the maternal health care utilization coverage is lower than other low-income countries. According to World Health Organization's (WHO´s) report, only 12 % of Ethiopian women had attended four antenatal visits in 2005 (even this included women attended by the health extension workers who are not a skilled provider); while the average for low-income countries was 36 %. In the same year, 28% of the women in Ethiopia had at least one ANC visit and they were attended by skilled providers [43]. However, the figures show some improvement of ANC coverage for four visits from 12% in 2005 to 19% in 2011 Ethiopian Demography and Heath Survey (EDHS) reports (and 34 % for one visit from a skilled provider) [44].

B) Skilled delivery care utilization

Regarding to the coverage of skilled delivery service utilizations, it is more than 95 % in most Northern American, European, and Eastern Asian countries compared to 65 % in developing regions where, since 1990 the progress has been varying [43]. However, in SSA by 2010, there was little advancement from 42% to 45 % [42].

Delivery care was introduced earlier than ANC. The key issue during childbirth is the use of skilled birth attendants (SBAs') services. According to WHO, a SBAs refers to a health professional, such as a midwife, doctor or nurse, who is trained and competent in the skills needed to manage normal childbirth and the immediate postnatal period, and who can identify complications and, as necessary, provide emergency management and/or refer the case to a

higher level of health care [59]. All countries had been called by United Nations to increase their efforts toward SBAs and set targets' coverage of 80% by 2005, 85% by 2010, and 90% by 2015 [60]. However, the WHO suggests that in countries with very high MMR, the goal should be at least 40% of all births assisted by SBAs by 2005, 50% by 2010 and 60% by 2015, [61]. During 2005-2010, estimates suggested that 69% of births in the world were supported by SBAs. While many wealthy countries have nearly universal coverage, less than 50% of all births in Africa take place with a SBA [62]. In some African countries, SBA is even less than 20% [60, 63]. Socioeconomic inequality in delivery care in LMICs exceeds the inequality of ANC use [54].

In Ethiopia, 6% of the deliveries were attended by SBAs compared to 46% for the countries in the same income group [43]. According to 2011-EDHS report, there was a slight increase in proportion of deliveries attended by SBAs to 10% [44]. In fact, SBAs in Ethiopia attended the births usually in hospitals or health institutions. However, the vast majority of Ethiopian women delivers at home with assistance of TBAs (28 %) or relatives (57 %), or alone (4 %), [44].

C) Postnatal care utilization

Postnatal care (PNC) period is generally the most neglected period in developing countries [64]; and most mothers and newborn-babies do not receive PNC services from a skilled health care providers during the critical first few days after delivery [65, 66]. In developed countries, virtually all women and their infants receive PNC services even though the nature and frequency of this care varies considerably [64]. Whereas, in developing countries, even the need for care and support after birth was less recognized and approximately one-third of women in sub-Saharan Africa give birth in facilities, and no more than 13% receive PNC within two days of delivery. Whether women deliver at home or in a health facility, PNC services are often absent in those countries. Moreover, where PNC services are available, often lack essential elements of care required for the optimum health of the mother and her newborn [65]. In Ethiopia, the proportion of mothers who attended PNC service is much lower than the proportion in SSA. The great majority of women (92%) who had live birth in the preceding five years did not receive PNC service. Among women who received PNC service, 4% were examined within 4 hours of

delivery, and 2% within 3-41 days of delivery. In general, only 7% of women received PNC service within two days, as recommended [43].

1.4.4. **Determinants for maternal health care utilization**

Previous research in developing countries has suggested several reasons for low utilization of maternal health care, which include problems in access, low educational level, and other factors describing socio-demographic factors, lack of woman´s autonomy, low quality of services, cultural beliefs and other community members´ influence [67-69]. In Ethiopia, among the reasons for women not delivering in an institution was stated as "it is not necessary" by 61%, "it is not customary" by 30%, and "the distance is too long or they had no transportation" by 14% of the participants [44].

A) Demographic factors influencing utilization of maternal health care

Various studies have found positive associations between socio-demographic factors (such as education and wealth) and maternal health care utilization. Since these factors are known to have an effect on health behaviors and outcomes [68, 70-73].

The findings of a systematic review in developing countries revealed a strong significant association between woman´s education and ANC visits in 16 of the 28 studies. Women that are more educated were more likely to receive the recommended number of ANC visits and start the visits earlier than less educated women [68]. With regard to the relationship between the economic status and attendance of ANC visits, it is not a straightforward because it is proposed that education has a mediator effect between them [70, 74]. Other factors significantly associated with use of services are place of residence and number of children alive. The study's findings shows that being urban residence and having lower number of children are usually contribute to higher service utilization [68, 75]. However, the results are not stable or more varying when other socio-demographic factors (age, occupation, marital status, religion and ethnicity)are examined. The findings of the review revealed that women in their thirties are more likely to use ANC services compared to teenagers and older women. Employment outside home and being married also contributes to better utilization of ANC and high frequency of ANC visits,

respectively, than their counterparts. Moreover, belonging to certain ethnic groups or confessions also matters when the levels of ANC use are assessed [75].

In Ethiopian context, a previous study in Sidama zone (southern Ethiopia) reveals that younger age, being literate, formal employment, and lower parity were predictors for ANC use among women residing in Sidama zone [76]. In the same study, being a civil servant/employee was the strongest predictor of ANC use. Similarly, a study in Hadiya zone in southern Ethiopia reveals significant associations between the utilization of ANC and lower number of children, having at least primary education compared to no formal education and, in contrast to usual findings, higher age compared to younger, or middle age groups. The observed association between lower parity and ANC utilization was very strong. Women with less than three children were eight times more likely to use ANC compare to those having more than five children. The study was included 691 women, which was stated to be "fairly representative sample" [77].

Another study in Ethiopia that used EDHS data was revealed that place of residence, women´s education, marital status, and religion being related to ANC utilization [78]. Factors such as urban residence and women at secondary or higher education pointed to be the strongest predictors NC utilization. The observed associations of marital status and religion with women's use of ANC services were significance. Married and Muslim women were more likely and most likely, receive ANC services compare to single women and traditional faith practitioners, respectively. However, for Muslims´ part, it is contradictory to findings in other studies.

Regarding to skilled delivery care utilization in Ethiopia, a study in Arsi zone, South-East Ethiopia reveals that urban residence, secondary or higher education (both of the woman and the husband), first time pregnancy, and young age were found to be predictors of women's use of SBAs' services during birth at health facility [79]. Young mothers (age less than 20 years) were six times more likely to receive SBAs' services during birth at health facilities compare to old mothers (aged 35 year and above). Comes to place of residences, urban women were two times more likely to deliver at health facilities compare to rural women. The odds for delivering in an institute were four times higher for women having at least secondary education than women unable to read and write. With regarding to husbands´ educational level, it seemed to be a

relatively strong predictor for delivery care utilization. There was a three-fold difference between the highest and lowest education groups.

Another study in Arsi-zone reveals significant associations of the use of safe delivery services with urban residence, maternal education, low parity, and religion [80]. Orthodox Christians and Muslims were less likely to utilize the skilled delivery services than other Christians were. Being urban residence turned out to be a strong predictor in the study. Urban women were eight times more likely to deliver in health institute than rural women were. Compare to illiterate participants, highly educated women had five-fold odds of service utilization.

In a study that used EDHS data reveals that urban residence, high educational status and low parity found to be significant predictors for women's utilization of skilled delivery service [78]. The women living in urban were more likely to have a skilled attendant at birth compared to the rural women. Women with secondary or higher education and women having only one child were eight times and two times, respectively, more likely to use the skilled services compared to women without formal schooling and those having a higher parity.

The trends of PNC services utilization between the 2000 and 2011 EDHS like that of ANC and skilled delivery care, show a significant variation by residence [44]. For instance, a study (using the 2000 EDHS data) shows that urban women were four times more likely to use PNC services than their rural counterparts [78]. This is usually explained by the fact that urban residents have better education coverage, access, and media exposure to get maternal health related information [78, 81]. In most developing countries, the proportion of receiving postpartum care tends to decline as age at birth increase [82]. Older age and multiparty, which are interrelated, showed similar patterns of effects on maternal service utilization in many studies. Reduced antenatal, delivery, and postnatal care utilization are observed in both older age and multiparous women [60, 82, 83]. In contrast, a study done in Botswana indicated that low parity women were less likely to use maternal services [84].

B) Socio-cultural factors influencing utilization of maternal health care

Socio-cultural factors primarily influence decision making on whether women seek care rather than affecting whether women reach a facility [85, 86]. Social and cultural norms that place women at a lower status than men limit their political commitment necessary to develop the human resources and systems necessary for skilled attendance. The same norms played out at household level constrain health care seeking even when the services are available. A study conducted on Afghani women reports that 87% of the women required the permission of their husbands before seeking health care and 45% believed a husband had a right to beat his wife if she disobeyed his orders [85]. A study in Bangladesh found out how disrespect of cultural norms by the health care providers in health centers discouraged women from seeking health care [87]. Lack of proper communication with the patients and disrespect for traditional birthing position practice, ignorance of privacy of patients, and misconduct by the female maternal health care providers made women to be reluctant to go to health centers for health care [88].

The role of traditional and religious beliefs as well as women's perception about comparative efficacy of the medical versus the traditional birth attendants could also contribute to failure of women to have SBAs [71]. In some regions of Malawi, it was believed that if women "revealed" the initiation of labor (for e.g. by making the journey to the hospital) this would attract the attention of the evil spirits who may bring harm to the mother and child. This can be a powerful deterrent to travel [89]. A study in rural India found that religion was a significant determinant in the utilization of safe delivery care [90].

C) Economic factors influencing utilization of maternal health care

Economic factor has an influence on women's accessing to pregnancy care, skilled birth care, and PNC [91]. Poverty is a key factor in limiting access to skilled birth attendants. For example, while it is recognized that traditional birth attendants (TBAs) provide emotional and social support to the mothers and can provide key health and education messages, most women rely on TBAs where they cannot afford the cost of professional services [85]. A study in rural India found that economic status was an important significant determinant in the utilization of safe delivery [90]. Adolescents from richer and richest wealth quintiles were more likely to use safe

delivery compared to those from poorest wealth quintiles. Similarly, a study in Nigeria shows that lack of access to SBAs especially in Northern Nigeria was due to high rates of poverty [92]. A study in India also found that use of SBAs remained considerably lower among poor mothers relative to their non-poor counterparts [93]. The effect of income is believed to be mediated by occupation. Mother's occupation played an important role in service utilization. Women who are working and earning money may be able to save and decide to spend their savings on a facility delivery under skilled care [86].

D) Institutional characteristics influencing utilization of maternal health care

The geographical location of services has a direct influence on skilled attendance for several reasons. The distance to be travelled, availability of affordable transport and the condition of the roads influences the decision to attend a service at a health facility [94]. A study in Malawi found that around 74% of maternal deaths could be prevented if all women had access to services, which would prevent or treat such complications associated with pregnancy and childbirth [95]. It is therefore clear that access to and provision of maternal health services are key determinants of maternal health [96].The further a patient lives from a health facility, the less likely they are able to utilize the services [71, 97]. A study in Kenya also identified distance, physical proximity of facility or care source among the barriers to use of skilled attendance [97]. The "preferred" care source was often the closest one. In the African context, the principle barriers to accessibility are transport and cost; so, distance is mostly reported as a single obstacle to the utilization of delivery care services [98]. Indeed, it is obvious that access to skilled assistance can reduce maternal morbidity and mortality and improve pregnancy outcomes [99].

The organization of the health system is also critical to the success of the strategy for the provision of skilled attendants. Health policies that support the work, the standards, and protocols that define their work and the arrangements for ensuring the availability of supplies of essential medicines and equipment are equally important [100]. A functioning health system also requires suitable buildings, enough staff, right mix of professional skills, and satisfactory terms of employment. There needs to be in place a referral system and effective monitoring, supervision and training of staff.

1.4.5. **Male involvement in reproductive health**

According to UNFPA report, the two dimensions of male involvement in RH are (1), men as supportive partners in women´s RH needs, choices and rights; and (2), men´s own reproductive and sexual behavior. Involving men in RH programs is considered beneficial in many ways, and this perspective has been justified for example through men´s various roles as sexual partners, husbands, fathers, family and household members, community leaders and many times as gatekeepers to health information and services [6].

A study in South Africa reveals that among many factors, families' and friends 'support was the strongest agent of maternal health care use [69]. As repeatedly mentioned in this document, the importance of men in sexual and reproductive health was officially recognized at the 1994 ICPD in Cairo, and further elaborated at the 4th WICB in Beijing the following year [3, 101]. After that, in 1997, a booklet published by UNFPA proposed a new role for men, who should be seen as central players in improving women´s status, instead of being the "threat" [102].

Although there is no consensus on the extent to which population programs and primary health care settings can satisfy the unmet sexual and reproductive health needs of men, there is general agreement that men's reproductive health concerns are not being met. Men require sexual and reproductive health services that are flexible, and respond to their sexual behaviors and changing needs throughout their lives. However, the services provided and their delivery may vary significantly due to local needs, cultural values, and available resources. Recognizing that men need sexual and reproductive services for themselves has been a factor in building partnerships with men in sexual and RH. Studies that examine the gap between men's positive attitudes about family planning and their failure to use contraceptives suggest that if men are provided with education and information about women's and men's reproductive systems, contraceptive methods and access to specific services, they may increase their participation in reproductive health [102].

1.4.6. **Benefits of men's involvement in sexual and reproductive health**

The benefits of husbands' involvement in SRH services can be grouped into six categories: social benefits, benefits to the community, benefits to couples, benefits to women, benefits to men and benefits to children. Among the benefits to women are: increased sense of entitlement and empowerment in reproductive health and rights; consensual and more pleasurable sexual relations; less heavy burden for contraception, pregnancy, child rearing and domestic chores; and fewer risks of HIV/AIDS/STDs and domestic violence. The benefits to children also include offering of positive father role models, better care and nurturing from both parents; and the reduction of sexual abuse and domestic violence [102].

1.4.7. **Men's involvement frameworks, approaches and outcomes**

There are, currently, four men's involvement frameworks that guide implementation. These frameworks are located on a continuum from the absence of a gender perspective to a fully-fledged one. First, the conventional *family planning model* predates Cairo but continues to inspire some strategies, including the research agenda. The emphasis was to reduce fertility by increasing women's contraceptive prevalence; men were simply problematic in family planning programs, but also absent from demographic research.

The second, the *men and family planning model*" in vogue immediately after Cairo views men mostly as "contraceptors" and decision-makers in reproductive health. This framework is a sort of transitional model placed between the pre- and post-ICPD paradigm. The motive behind involving men is still demographic in essence: it tries to encourage men to use contraception or to encourage their female partners to do so, in order to increase the overall contraceptive prevalence and to initiate and sustain fertility decline. This model had two approaches: the solidarity and responsibility approaches.

Third, the *male equality framework or model* aims at men as reproductive health clients. It assumes that men have been neglected and that their reproductive health needs, as clients, must be met. An approach of male equality model is the health marketing, or meeting men's reproductive health needs, approach. Historically, this approach has neglected the gender perspective. Finally, the most recent model can be called the *gender equity in reproductive and*

sexual health framework, and it integrates a gender perspective in line with the ICPD spirit. The gender equality framework concerns itself with the sexual and reproductive health needs of men as equal partners of women (and/or other men). These programs promote gender equity, and women and men's reproductive health through substantial male participation. Two approaches correspond to this framework are educational and human rights approaches [102].

1.4.8. **Men's involvement in maternal health care and determinants**

Recently, various studies emphasize on the contribution of men's role to better outcomes for their pregnant wives. Men in most families are financially empowered and are the main decision-makers in all issues including maternal health. By using this opportunity, they can ensure their pregnant wives seek maternity services or arrange for skilled care during delivery services. So, in order to make a right decision for their wives regarding place of delivery and professional attention, they need to understand the importance of maternal healthcare. To do so, they have to involve in the programs. There is a general agreement that men who know the danger signs of pregnancy are more likely to act fast to save the lives of their wives [16]. Studies in Kenya and Uganda reported that most of the education is given to the mother—and her spouse, if he accompanies her during ANC [16].

However, studies in Africa reported low proportion of men's involvement in their wives' maternal health care. A study in Uganda reveals that during antenatal care, 60 (42.9%) of the mothers reported having been accompanied by spouses, while for 58 (41.4%) of the spouse remained at home while looking after the home and children. Thirty-five (25.0%) mothers reported that their spouses helped them with household chores during the antenatal period. During labor, 96 mothers (68.6%) were accompanied by their spouses [22].

Regarding the determinants of male involvement in maternal health care, a study in rural Uganda reveals that the women who had a birth plan were more likely to be accompanied by the spouses to health facilities during ANC and to the labor ward during labor. They were also more likely to report more support from spouses in looking after children or assistance with household chores during pregnancy. The study also mentioned that men who were knowledgeable of ANC

services, obtained health information from a health worker, and whose spouses utilized skilled delivery at last pregnancy were more likely to accompany their spouses at ANC visit [22]. The study concluded that, unfortunately, men's involvement in maternal and child health is still low in many sub-Saharan African countries.

A reviewed of literatures from Sub-Saharan Africa (SSA) traced 34 studies that focused on male involvement in the prevention of mother to child transmission (PMTCT) of HIV [103]. Although the number of studies was quite high, most of them gave a relatively narrow definition for male involvement as participation during antenatal HIV testing or in HIV couple counseling. In the review, three main categories of determinants were identified, which are socio-demographic factors, health service related factors and sociologic factors. The analysis shows that socio-demographic factors such as age, marital status, education, and profession were associated with male participation in PMTCT services [103]. Older age and cohabiting seemed to be the most common predictors. It is also surprising that higher education was found to explain the involvement just in one of the studies. The men who had completed at least eight years of education were more likely to participate in PMTCT than those who had studied less than eight years of education [103]. Comes to profession, men in occasional and low-paid jobs were less likely to accompany their spouses to the health services compare to their counterparts [104].

Studies in Uganda and India support the view that men´s knowledge about pregnancy-related care increases its utilization. The Indian study further proposes men´s presence during antenatal visits might increase the odds of institutional delivery [19, 105]. Similarly, a study in Ethiopia concludes that husband's education (i.e. being at higher levels) is contributing to institutional delivery [79]. Regarding the relationship between husbands' attitude and women's use of maternal health care, two studies in Ethiopia found that husbands´ attitude was associated with ANC and safe delivery care utilization; which means, positive attitude contributing to more frequent utilization [77, 80]. One of those studies also shows that the effect of positive attitude was threefold compared to negative attitude [79]. In conclusion, this brief review shows huge disparity in the views and utilization rate of maternal health care between low and high-income countries. In addition, the studies indicate the importance of range of characteristics in determining maternal health care behavior. In western countries, almost all studies included

men's perspective or participation among the determinants of maternal health care utilization. However, rare studies in developing countries, including Ethiopia, show the relationship between men's involvement in maternal health care and women's use of skilled maternity care services by controlling other predictor variables. Therefore, based on the identified gap we formulated four research questions (see below, page 37).

1.4.9. **Theoretical and conceptual framework**

Review of the frameworks from existed researches is depicted, followed by construction of the framework that we used in explaining the determinants of maternal health care utilization, including husbands' involvement during ANC services as a factor. The framework covers all possible factors related with maternal health care utilization and specifies the mechanism through which they operate. The socio-demographic variables, maternal factors, health care system's related factors, husbands' involvement during ANC visit, deliver care and PNC visit, and women's use of skilled birth attendants (SBAs) and PNC services are considered in the framework. Aspects relating to women's socio-demographic variables (such as place of residence, age, education level, occupation type, and religions), the maternal factors (such as pregnancy intention, initiation and frequency of ANC visits, number of under five year children alive during a recent pregnancy), and husbands' involvement status during ANC, skilled delivery care, or PNC visit were then discussed (Figure 1 - 3). In addition, the relationship between husbands' involvement during ANC visit and women's use of maternal health care (skilled delivery care and PNC) is depicted (Figure 4).

The constructed analytical framework is adapted from Andersen's and Kroeger's framework of the behavioral model of health services use, and Amooti-Kaguna and Nuwaha's framework of *the attitudes, social-influence, and self-efficacy* [106-108]. The independent variables are determined based on previous relevance researches, particularly from developing countries.

Frameworks to examine the determinants of maternal health care utilization

Andersen has developed a behavioral model that portrays the multiple influences on health care services' use and, subsequently, on health status [106]. (Figure-1) There are two important key elements described in the model, which can effect health care behavior and finally influence the

health outcomes, namely environment and population characteristics. The components of the environmental factors are health care system and external environment. Health care system refers to national health policy, resources, and organization. The external environment factors involve physical, political, and economic components. Both factors are important input for population characteristics.

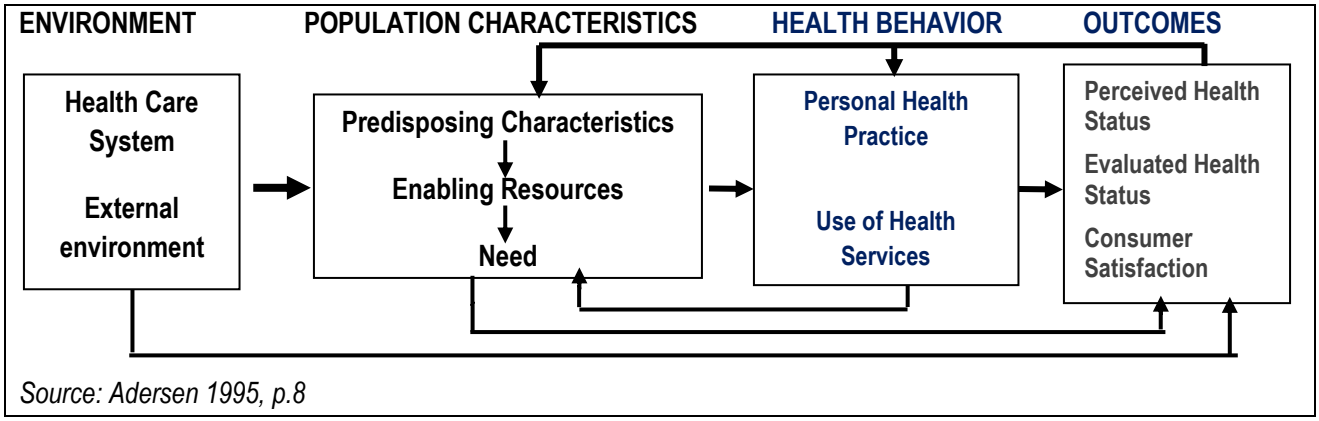


Figure-1: The behavioral model of health services use

This model suggests that *personal health practices* and people's *use of health services* are functions of the following three categories:

A. Predisposing characteristics are factors that present preceding the ill health and need for care, such as demographic factors, social structures, and health beliefs. Demographic factors such as age and gender represent biological urges the likelihood that people will need health services. Social structure is measured by a broad array of factors that determine the status a person in the community, his or her ability to cope with and command the resources to deal with these problems and how healthy and unhealthy the physical environment is likely to be (education, occupation, ethnicity, etc). Health beliefs are attitudes, values, and knowledge that people have about health and health care services that might influence their subsequent perceptions of need and use of these services [106].

B. Enabling resources are factors, which provide patients with the means to make use of the services. Community and personal enabling resources must be available to use in anytime

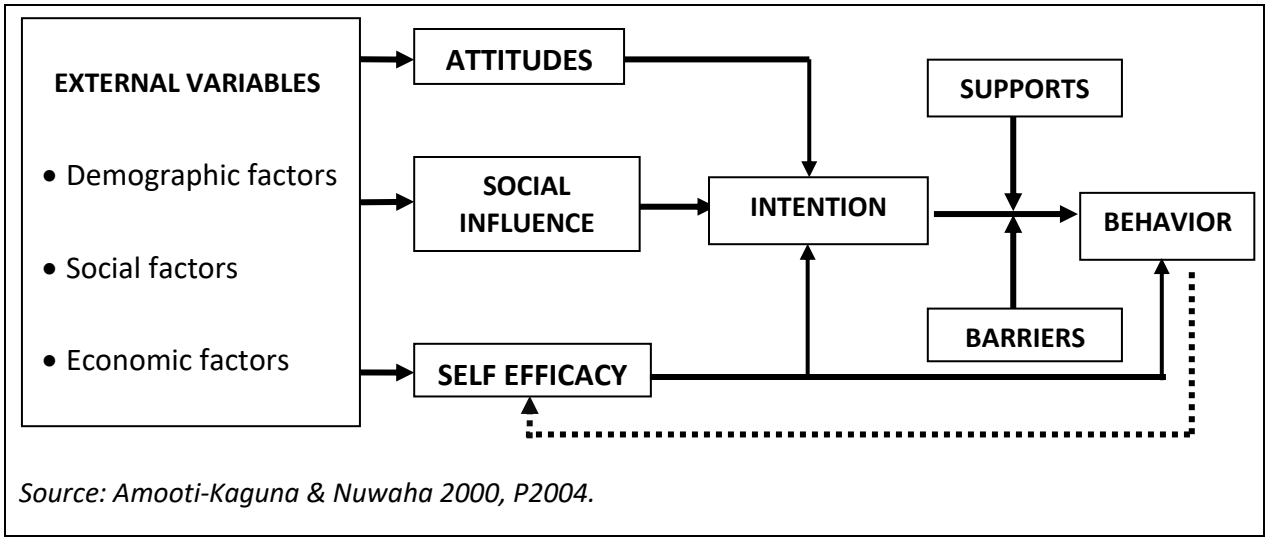
needed. For example, health personnel and facilities must be available and people must have the means and know how to get to those services and make use of them. Income, health insurance, a regular source of care, and travel and waiting times are some of the measures that can be important in this respect [106].

C. Need, which refers to health status perceived by the individual or evaluated by the health providers [106]. It is how people view their own general health and functional state, as well as how they experience the symptoms of illness, pain, and worries about their health and whether or not they judge their problems to be of sufficient importance and magnitude to seek professional health care.

Personal health practices such as diet, exercise and self-care interacts with the use of formal health care services to influence health outcomes. *The measures of health services' use* in this model include those representing type, site, purpose, and coordinated services received in an episode of illness. This model also consists of *health status outcomes* in order to extend the measures of access to include dimensions, which are particularly important for health policy and health reform. It also depicts *feedback loops* showing that outcome, in turn, affects subsequent predisposing factors and perceived need for services as well as health behavior [106].

Another similar conceptual framework has been developed by Kroeger [107]. This framework is for answering the question about how people enter the sick role and make choices regarding the use or non-use of different kinds of health services. Based on an extensive review of the anthropological and socio-medical literature of health care, Kroeger proposed that determinants of utilization in developing countries could be grouped under three broad headings: (1) characteristics of the subject (predisposing factors) including age, sex, marital status, household composition and size, ethnic group affiliation/relationship, occupation, assets and education; (2) characteristics of illness, expected benefits from treatment and beliefs about disease causation; and (3) characteristics of the health care system, including accessibility, acceptability, cost and quality of care.

The third model, from literature, that has been applied to study about determinants of utilization of health care services in general, and maternal health care services, in particular, is *"The Attitudes-Social influence- Self-efficacy (ASE)"* model. (Figure-2) It predicts various health related behaviors. There are three main psychosocial factors, which have been identified, that predict behavior intention: attitudes, social influences, and self-efficacy. A person's attitude towards a specific behavior is a result from performing the behavior, for example a person's attitude in deciding whether to use family planning or traditional practices. Social influence is because of social norms: influence from other peoples whether to perform or refrain from the specific behavior, and whether other people in society perform or refrain from doing specific behavior. Self-efficacy expectations can be seen as a person's belief whether she/he can perform the desired behavior and manage the barriers that may prevent him/her from doing specific behavior [108]. (Figure 2)



Source: Amooti-Kaguna & Nuwaha 2000, P2004.

Figure–2: ASE model for predicting behavior

The implication of the model is that a person's health behavior can be changed by changing person's knowledge and attitudes, person's perception of social norms and social support and her/his self-efficacy expectations [108]. Moreover, external variables, such as social, demographic, and economic factors are expected to influence behavior through behavioral determinants and intention. In this study, the model of maternal health

care service use draws on the three conceptual frameworks of health seeking behavior adapted from Andersen & Kroeger's and Amooti-Kaguana & Nuwaha's frameworks. However, we cannot use the entire determinants in all frameworks, because of the study objectives and the context. Thus, an adapted framework is developed corresponding with the availability of data for the study. Figure 3 and 4 present a description of the variables that are included in the models for a cross-sectional study and cohort study, respectively, in Sidama-zone, Southern Ethiopia.

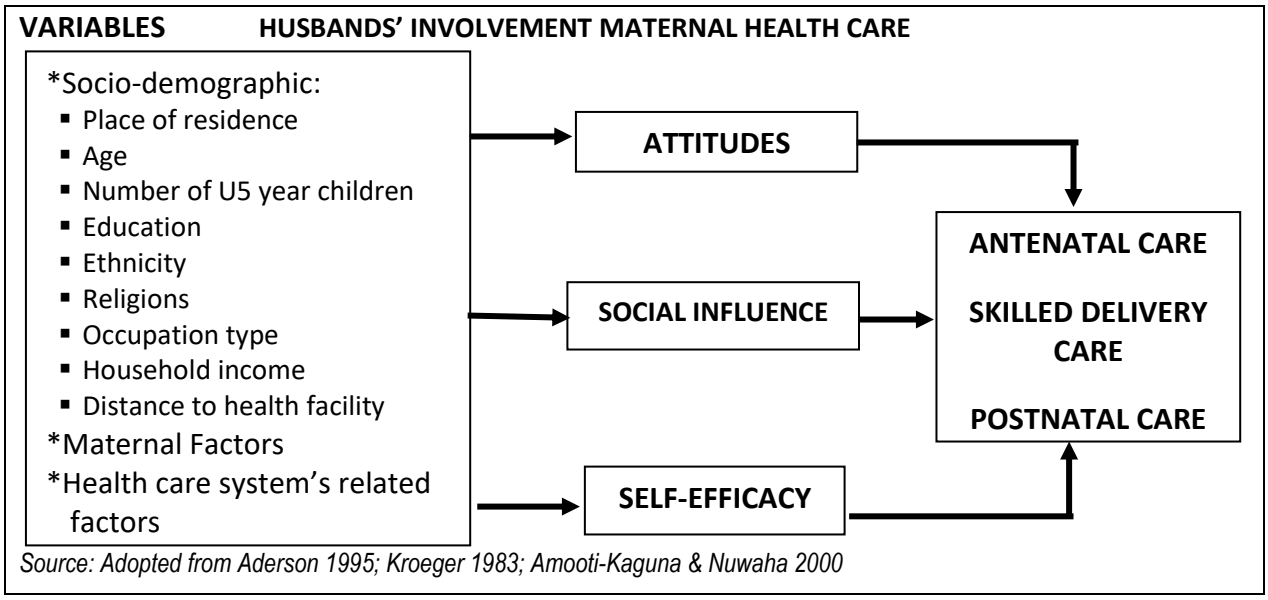


Figure-3: A framework to study determinants of husbands' involvement and maternal health care use in Sidama Zone, Southern Ethiopia.

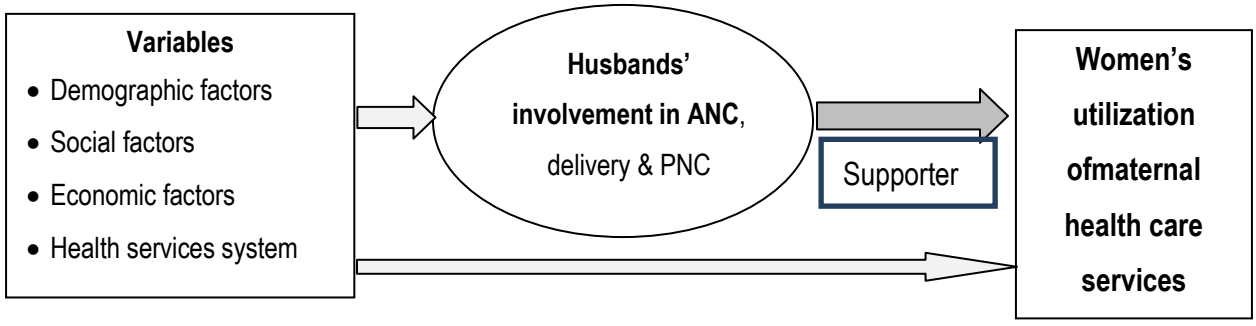


Figure-4: Relationship between husbands' involvement and women's utilization of maternal health services

2. RESEARCH QUESTIONS AND OBJECTIVES

2.1. Research questions

The following research questions have been addressed in the studies.

2.1.1. What proportion of men accompanied their wives at least for one ANC visit, for skilled delivery care, and at least for one PNC care visit?

2.1.2. What are the determinants to husbands' involvement in their wives' maternal health care (ANC, delivery care and PNC services)?

2.1.3. What are the main barriers to husbands' involvement in maternal health care?

2.1.4. Is there an association between husbands' involvement during ANC visit and women's utilization of SBAs and PNC services?

2.2. Objectives of the study

2.2.1. General objective:

To assess the magnitude and determinants of husbands' involvement in maternal health care and its associations with women's utilization of skilled birth attendants and PNC services, in Sidama-Zone, Southern Ethiopia.

2.2.2. Specific objectives

a. To determine the magnitude of husbands' involvement in their wives' ANC, delivery care, and PNC services, in Sidama-Zone, Southern Ethiopia (Paper I).

b. To identify factors associated with husbands' involvement in maternal health care services, in Sidama-Zone, Southern Ethiopia (Paper I).

c. To explore the main barriers to husbands' involvement in maternal health care, in Sidama-Zone, Southern Ethiopia (Paper II).

d. To examine the association between husbands' involvement in ANC and women's utilization of skilled birth attendants, in Sidama-Zone, Southern Ethiopia (Paper III).

e. To examine the association between husbands' involvement in ANC and women's utilization of PNC services (Paper IV).

3. MATERIALS AND METHODS

3.1. Study area and population

The study area of studies in this dissertation (paper I–IV) was in Sidama zone of Southern Nations Nationalities and Peoples Region (SNNPR) in Ethiopia. Ethiopia is a land-locked country located in East Africa, and bordered by Eritrea, Djibouti, Somalia, Kenya, South-Sudan, and Sudan. It is the second most populous country in Africa [109], which encompasses about 1.1 million km^2 area of land. An estimated population of Ethiopia was more than 100 million with an annual growth rate of 2.6%, and the average household size is 4.7 persons [110, 111]. Administratively, the country is divided into nine ethnic-based regional states and two self-governing administrations. The administrative structure of the country is organized as Federal, Region, Zone, Sub-city (or previously, weredas) and kebele [112]. A kebele is the smallest administrative unit in Ethiopia, which comprise approximately 1000 households [76, 113].

The region, SNNPR, is one of the nine regional states in Ethiopia, located in the southern part of the country. Administratively, it is divided into 14 zones and 13 special weredas [76, 110]. It is among the most populated regions with an estimated 14,929,548 population [111]. In the 2011EDHS reports, ANC, delivery, and PNC coverage of the region in the five years preceding the survey were 27.3%, 6.1%, and 5.5%, respectively. It is listed among the regions with lower maternal health care coverage in the country [44]. After two years, according to the 2014 Mini-EDHS report, the skilled ANC, delivery care, and PNC coverage in the five years preceding the survey were increased to 39%, 11.7% and 11.1%, respectively [44, 114].

Sidama zone is located in the north-eastern part of the region and bounded by Oromia Regional State in the North, East, and Southeast; Gedeo Zone in the South; and Wolayta Zone in the west (Figure 5). Total area of the zone is 6,981.8 Km^2, with 21 weredas. The total population of the zone is around 2,954,136, with ratio of 17.2 for rural to urban population and 1.019 for male to female population [76, 111]. The average projected population density of the zone is 461 person per/ km^2. This accounts for almost 20% of the regional population. It is one of the densely populated zones in the region with 524 rural and 39 urban kebeles [76, 111]. The capital of

Sidama zone as well as the region is Hawassa town, which situated 275 kilometers south of Addis Ababa [76, 111]. Geographically, the zone is characterized by three geo-ecological areas (zones): the lowlands (20%), midlands (50%), and highlands (30%) [44, 76, 111]. The total households enumerated were 592,539 [111]. Women of the reproductive age group (15-49 years) and children under-one-year of age in the zone were estimated to be 23% and 3% of the total population, respectively [76, 111]. Majority (93.09%) of the population in the zone is Sidama ethnic. The others population groups belong to Oromo (2.53%), Amhara (1.91%), Wolayta (0.79%), Guragie (0.5%), and the remaining ethnic groups account 1.18% of the population [111].Protestant is the dominant religion in the zone (84.38%), followed by the followers of Islam (4.62%), Orthodox (3.35%), Catholic (3.01%), and traditional (2.72%) religions [111].

The annual population growth rate of Sidama zone is 2.9 percent per year with an expected to double within 24 years [111]. The rapid population growth has become one of the major challenges facing Sidama society today. Due to these facts, population and reproductive health services are highly recommended in all administrative units of the zone [111]. The numbers of health facilities in the zone were one zonal hospital, one district hospital, 93 health centers, and 497 health-posts. The potential health coverage of the zone was reached to 86% in 2010/11 Ethiopian budget year. Health facilities ratio in the zone was one hospital for 1,609,336, one health center for 34, 609, and one health post for 6,476 people are serving [111].

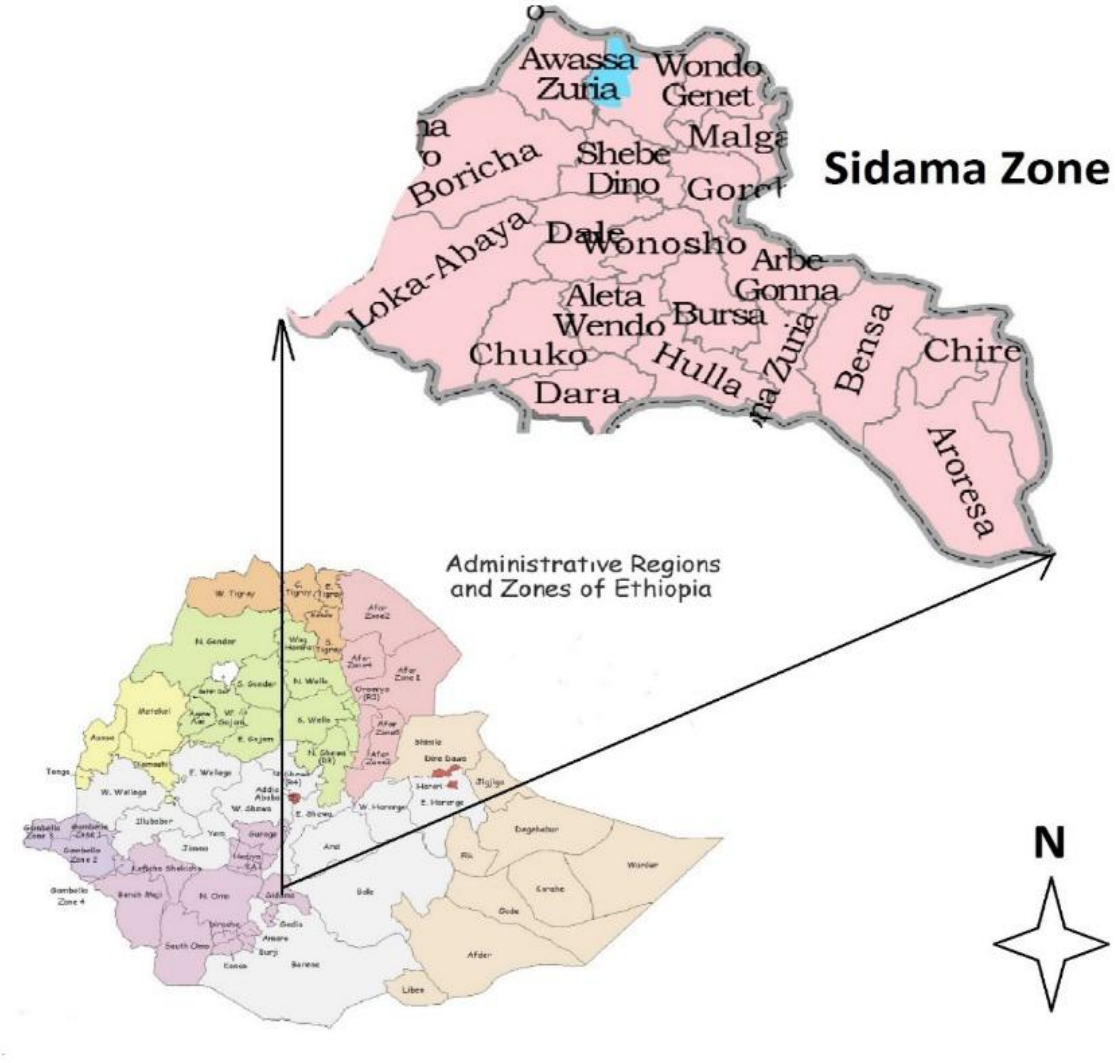


Figure 5: *Map showing the location of the study area (Sidama Zone).*

3.2. **Study designs and period**

3.2.1. **Study Design and period**

The study applied mixed research method (both quantitative and qualitative designs) with descriptive and analytic elements. The quantitative method used community-based cross-sectional and prospective cohort study designs to address the specific objectives.

For paper-I, to assess the proportion and determinant factors of husbands' involvement in maternal health care, a cross-sectional design was applied from December 2014 to January 2015. For the later, to identify determinant factors to husbands' involvement, a cross-sectional study with internal comparison between "involved" and "non-involved husbands" was used.

For paper-II, to explore contextual factors that hinder husbands' involvement in maternal health care, a qualitative method was applied from April to May 2015.

For analytical study, to examine the relationship between husbands' involvement during ANC visit and women's utilization of SBAs and PNC services (paper III and IV, respectively), a cohort study design was employed from June 01 to November 30, 2015. In the latter case, a cohort of mothers was followed to collect data on utilization of PNC services during postpartum period. Utilization of PNC was assessed within 42 days after birth.

3.3. **Source and study population**

3.3.1. **Source population**

For a population-based survey (paper-I), all husbands in Sidama zone who had lived with their wives and U5 year children at their home at the time of the survey were the source population.

For qualitative study (paper-II), married men and women, community leaders, religious leaders, TBAs, HEWs and health professionals from governmental and non-governmental institutions were the source population.

For analytical study (paper III and IV),to assess the relationship between husbands' involvement during ANC visit and women's utilization of SBAs and PNC services, the source population were all pregnant women in Sidama zone at the time of the survey.

3.3.2. **Study population**

All eligible husbands from the source population of randomly selected kebeles of Sidama zone were the study population for the cross-sectional study (paper-I).

Individuals who were selected using a purposive sampling from the studied communities of Sidama zone were the study population for qualitative study (paper-II).

For the follow-up study (paper III and IV), all eligible pregnant women from the source population in a randomly selected kebeles of Sidama zone were the study population.

3.4. **Sample Size calculation**

For paper-I, the following single-proportion sample-size calculation formula was applied to compute optimal sample size for estimating the proportion of husbands' involvement in maternal health care. The computation was made with the inputs of 95% confidence level ($Z_{\alpha/2}$=1.96) and the margin of error (d) with different sizes (i.e. depending on the rareness). The expected proportion (P) of 40% for ANC mothers who accompanied by their husbands for skilled ANC visits, from a study in Nepal [115], and a four percent degree of precision (d) were used. Since the study involved a multi-stage sampling technique, a design effect of two, and a 20% non-response rate for face-to-face interviews with men were considered in the sample size calculation.

$$\text{Sample-size (n)} = \frac{Z_{(\alpha/2)}^2 \, P\,(1-P)}{d^2} * (DE)$$

The sample size required to determine the magnitude of husbands' involvement during ANC visit was 1382, which is the largest sample-size compared to the sample-sizes calculated by taking the proportions of husbands' involvement during ANC, skilled delivery care and PNC visit from a study in Nigeria [116]. (Table 1) In addition, for analytical part of the cross-sectional study (i.e. to assess the determinants of husbands' involvement in maternal health care, i.e. for specific objective two of paper-I), we computed another sample-size. (Table 2)

Table 1: Sample size required for determining the magnitude of husbands involvement in maternal health care.

Objectives: Proportion of husbands' involvement during:	**Z**	**d**	**DE**	**Contingency**	**p**	**Required sample-size**
ANC visit[115]	1.96	4%	2	20% non-response	40%[115]	576 *2 *0.2= 1382
ANC visit[116]	1.96	4%	2	20% non-response	13%[116]	271 *2 *0.2 = 650
Skilled Delivery Care	1.96	4%	2	20% non-response	18.7%[116]	364 *2 *0.2 = 873
PNC visit	1.96	4%	2	20% non-response	12% [116]	253 *2 *0.2 = 607

The adequacy of the sample size to a*ssess the determinants of husbands' involvement in maternal health care*(paper-I) was evaluated using the following double proportion sample size calculation formula; where $Z_{\alpha/2}$ is the confidence level, Z_{β} is the power of the study, r is the ratio between "involved" and "not involved" subjects, 'P_1' and 'P_2' are the expected proportions of the exposures/factors in "involved" and "not involved" subjects, respectively, and 'P' is the weighted pooled proportion for 'P_1' and 'P_2'. Then, 'P_2' was calculated based on 'P_1' and Odds Ratio (OR) for the association between the exposures and outcomes of interest.

$$\boldsymbol{n = \frac{(Z\,\alpha/2\sqrt{\left(1+\frac{1}{r}\right)\,P(1-P)}\;+\;Z\beta\sqrt{P1\,(1-P1)+\left(\frac{p2\,(1-p2)}{r}\right)})^2}{(p1-p2)^2}}$$

The computation was made via STATCALC application of EPI-Info Version 7 with the inputs of 95% confidence level, 80% power and one to one ratio between "involved" and "not-involved" groups. Expected prevalence of the exposures in the control (not-involved) group and OR for the association between the exposures and outcomes were taken from previous study [116]. Finally, the largest sample-size (n=1382) of the numbers of "involved" and "not-involved" subjects in the dataset for the studies under consideration were judged to be adequate. (Table 2)

Table 2: Sample size calculation based on double proportion formula for examining determinants for husbands' involvement in maternal health care in Sidama zone SNNPR, Ethiopia, 2015.

Risk factors	Expected '*P*' of the factor in "not involved" group	Involved : Not-involved	OR	Required sample-size	
				Involved	Not-involved
Husband's age[1]	55.7%[(116)]	1:1	1.51	389	389
Education status[2]	62.1% [(116)]	1:1	1.93	173	173

1. Husband age "<30 years" compared to "≥30 years"
2. "Formal education" compared to "non-formal education"

The sample-size for qualitative method (paper II) was determined by the number of Focus Group Discussion (FGD), In-depth Interview (IDI), and Key Informant Interview (KII), which is based on the study objectives and source population. The level of information (data) at hand may determine the decision to continue the data collection process. If there is redundancy of information, which could be a sign of data saturation, so, the data collection process can be stopped [117]. However, participants' characteristics per FGD were determined as per rule of qualitative methods of data collection [117].

For cohort study design, (paper III and IV) the sample-size was computed using a 'Power and Sample-Size' (PS ver.3.1.2) software program' [118]. The computation was made with 95% Cl., 5% alpha, 80% power, and with 1:1 ratio of independent exposed and unexposed groups. We used findings of a Nepal's study, which shows 90% and 82% of laboring women received SBAs' services among women attended ANC education with husbands and women attended alone, respectively [115]. The result gave us an optimal sample size of 319 to each group. (Table 3) Finally, a 10% loss to follow-up was added, and the total sample-size of 702 pregnant women were included to test the hypothesis regarding an association between husbands' involvement in ANC visit and women's use of SBAs and PNC services.

Table 3: Sample size calculation to investigate the association between husbands' involvement during ANC visit and women's use of SBAs and PNC services, in Sidama zone, 2015

Exposures	Expected prevalence of women use SBAs		OR	Required sample-size		Expected prevalence of use PNC		OR	Required sample-size	
	Exposed	Un-exposed		**Exposed**	**Un-exposed**	Exposed	Un-exposed		Exposed	Un-exposed
Husbands' involvement during ANC visit	90% [114]	82% [114]	1.09	**319**	**319**	60.7% [115]	47% [115]	1.29	221	221

3.5. **Sampling technique and procedures**

The population based survey (paper-I), applied a multistage sampling method to select study subjects. Initially, all the kebeles in the zone were listed and stratified by rural and urban kebeles (456 rural and 80 urban kebeles). The total sample-size was divided for rural and urban kebeles proportional to their population size (94.2% for rural and 5.8% for urban) [111]. Then, based on the natural composition of the population of urban to rural kebeles (1:6), we determined to select three kebeles from urban and 18 kebeles from rural. The rural kebeles in the zone were stratified into the three agro-ecological zones, namely lowlands (20%), midlands (50%), and highlands (30%). The sample size of rural kebeles was divided to each of the three stratums proportionally to their size. Then, six kebeles were randomly selected per stratum from the three agro-ecological zones. Similarly, three kebeles from the list of urban kebeles were randomly selected. Once again, the sample size for each stratum of rural kebele was distributed to the six rural kebeles, and the sample-size of urban kebele was distributed for three urban kebeles, proportionally to their population size.

Then, the PI and data collectors, with assistances of HEWs, reviewed registrations and family folders in the health posts. This was just to estimate and identify potentially eligible households in the selected kebeles. Then, all potentially eligible families were listed using the household heads' addresses as code, which are well known by the HEWs in the kebele. Subsequently, the HEWs in each selected kebele carried out a house-to-house enumeration to identify all households with under one-year children and pregnant women. Eventually, 1408 households with under one-year children were potentially recruited. (Figure 6)

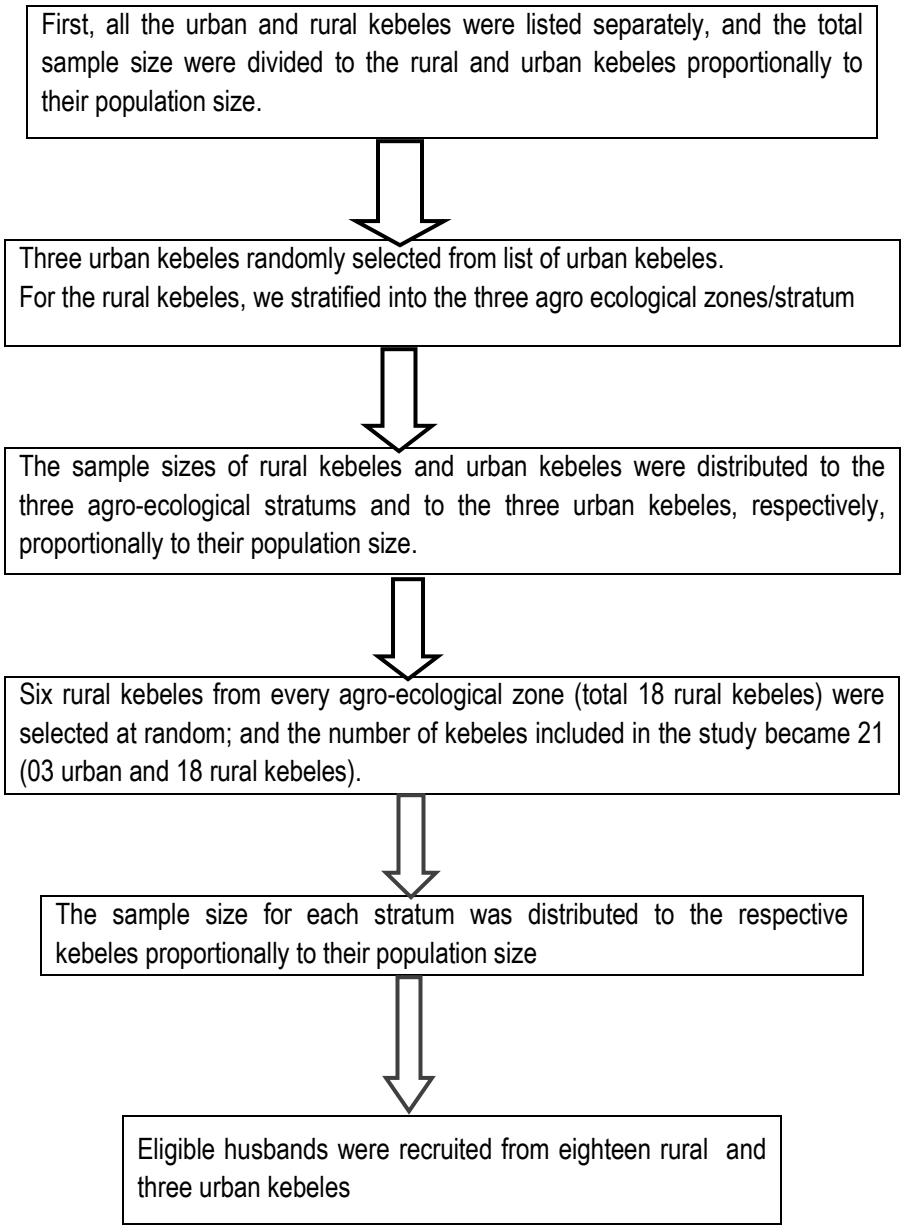


Figure 6: Schematic presentation of the sampling method of the study.

For qualitative study (paper-II), the participants for FGDs, IDIs, and KIIs were identified through purposive sampling. Different categories of participants were made by age, sex, and education levels in order to triangulate the findings by data source. First, we selected the five weredas. The number of weredas was pre-determined based on their accessibility due to time and financial constraints. The recruitment of participants was done procedurally: first, permission was sought from each selected wereda health office and kebeles. Then, in-charges of the health centers and kebele leaders were consulted as entry points into the community. The approval and cooperation of the kebele leaders allowed greater trust in the communities. Once this general approval was secured, the HEWs helped the principal investigator (PI) and interviewers to identify and mobilize those who qualified to be participants. Once the potential participants were identified, FGDs, IDIs, and KIIs were scheduled.

For the follow-up study (paper III and IV), we applied a random sampling technique to select the study sample. First, we randomly selected eight out of twenty-one weredas in Sidama zone using a lottery method. The reasons that we predetermined the eight weredas were due to lack of budgets, and assuming a shared culture and similarities in the utilization rate of maternity care services between the selected weredas and their neighboring weredas [75]. All eligible antenatal mothers were listed from the health institutions' ANC logbook and from the household survey. During a house-to-house enumeration, presumptive symptoms of pregnancy (date of last normal menstrual period "LNMP" and increased uterine size) and fundal height examination were used to diagnose and determine the gestational weeks. Then, we prepared a sampling frame, which comprised list of 712 eligible mothers by using registration books (or family folders) from the HEWs. Finally, 709 eligible women were included in this study based on their exposure status from the baseline information.

3.6. **Data collection instruments and techniques**

3.6.1. **Data collection instruments**

For population-based survey (paper-I), structured interview questionnaire was used to collect data on socio-demographic, economic, women's obstetric history, women's use of maternal health care, husband's experiences of involvement in their wives' maternity care, and about social and environmental related factors of husband involvement in maternal health care. The section of the questionnaire, which deals with socio-demographic and economic information, was taken from standard EDHS-2011 questionnaire with slight modification [44]. The parts of the questionnaire used to assess women's obstetric history, use of maternal health care services, and husband's experiences in their wives' maternity care were adopted from other studies in Africa and Gender Analysis Toolkit for Health System [22, 119]. The Principal Investigator (PI) in accordance with the conceptual framework of the study developed other sections of the questionnaire such as social and environmental related factors of husbands' involvement in maternal health care. The tool was developed in English language and later translated to Amharic language.

Data for qualitative study (paper II) were collected using interview guide. The interview guide questions for FGD, IDI, and KIIs were prepared, independently, by sex category. The KII help to get general opinion from individual source; whereas, the FGDs as group dynamics and interaction help to create better anonymity and spontaneity for issues that create ambiguity for individuals. The IDIs also help to discuss on issues that may be sensitive and privacy. The combined effect of the groups produced a wider range of information, insight, and idea [120]. The questions in the guide were developed in English and translated to Amharic language. The interviewer guide included four parts: part one and two were 'FGD' guide questions for men and women, respectively; and part three was IDIs guide questions, and part four was the key-informant's interview guide questions. The interview guide involved multifaceted open-ended questions that covered a range of issues related to experiences, perceptions, and barriers related to husbands' involvement during ANC, delivery and PNC.

The questionnaire for the follow-up study (paper III and IV) was adapted from a study in Uganda, EDHS 2011, and from Gender Analysis Toolkit for Health System [22, 44, 119].Important variables were also added in the questionnaire based on the study objectives and conceptual framework. Then, standardized structured follow-up questionnaire for a progressive evaluation of maternal conditions were prepared and used. The questionnaire included four major components: to assess background information at the first contact, and three evaluation tools corresponding to the three time-points, during pregnancy (at 9th month), on date of delivery or within a week after delivery, and on the 42 day of postpartum. The questions to confirm eligibility included month of pregnancy, marital status, women living with their husbands or not, and initiation of ANC visit.

3.6.2. **Pretesting, validity and reliability assessment of the questionnaire**

Before applied all the questionnaires (of paper I-IV), the content validity of the tool was assessed against the conceptual framework of the study by three relevant professionals. To customize and adopt the tool to the local setting, pretesting was conducted with thirty-eight husbands in the nearby kebele of Sidama zone. According to the pretest findings, minor modifications were made to the questionnaire. The reliability of the tool was assessed using test-retest method. In this case, the tool was re-administered to same group of respondents included in the pilot survey by similar data collectors after three days of the initial survey. Then the levels of agreement between the responses for various key questions in the first and second tests were statistically compared. A kappa was used to compare categorical variables. Items scoring (a kappa) below 0.75 represented a poor agreement, so such items were revised or removed [121]. The individuals used for the pretest and reliability assessment was not included in the main study to avoid potential community fatigue.

3.6.3. **Recruitment and training of data collectors**

Twenty-eight data collectors (nurses/health officers) and five supervisors were recruited to collect data for each study at different time. The recruitments of the data collectors and supervisors were made based on their academic qualification, work-experience, and language fluent for both Sidamu-Affoo and Amharic languages.

During the population-based survey, twelve male nurses/health officers who had first degree, and five supervisors who had a master degree in public health collected the data.

For qualitative study, two male and two female moderators with four reporters conducted the FGDs and IDIs. All the moderators had a master degree in public health/social science. In parallel, the KIs' interviews were conducted by the PI and reporter.

The follow-up data were collected by 16 female nurses and five supervisors who had a first degree and a master degree, respectively. The HEWs assisted the data collection process.

Before the data collection, a five days training using a training manual was offered to all data collectors and supervisors by the PI and a trainer from anthropology department. The training included orientation on principles of data collection, ethics of data collection, line by line discussion on the tool, standardized presentation of the questionnaire in Sidamu-Affoo, in-class mock interviews, and one-day field practice. Particularly for follow-up study, participants were trained the procedures of fundal-height measurement (abdominal palpation) with video based demonstration.

3.6.4. **Baseline data collection**

The population-based survey was conducted in private setting within the compound of the houses and in the nearby health posts. The questionnaires were administered using both Amharic and Sidamu-Affoo language, and the data in Sidamu-Affoo were translated to Amharic. Data collectors and supervisors translated all responses to English language. On average, an interview took about 35-40 minutes and every data collector conducted 08 interviews per day.

3.6.5. **Qualitative data collection**

The women and men's FGDs were conducted separately by female and male moderators and reporters, respectively. The locations and time of each FGD were arranged by the kebele leaders and HEWs. For individual interviews, individual participants selected location and time. Interviews were conducted in a quiet room, and privacy was ensured to enable discussants to feel free and express their opinions. The interviews and FGDs were scheduled two to three days ahead in consultation with the participants. This was done to allow people plan for their activities.

Besides taking field notes on a face-to-face discussion, the FGD sessions were audio taped for those who provided consent. On average, 45 minutes for an IDI and key-informant interview, and about one hour for one FGD session were given. Interviews were conducted until a saturation point was reached. Overall, 10 FGDs (5 with men and 5 with females) comprised of 8 to 12 members, 12 IDIs, and 10 key-informants interviews were conducted. Every night, the data collectors and supervisors transcribed and translated the recorded data into English language; then, they submitted to the PI by the next day.

3.6.6. **Follow up data collection process**

For follow-up study, the baseline data were collected from pregnant women on socio-demographic characteristics, husbands' experiences of maternity care services, and on basic maternal factors or obstetric history. The questions to assess eligibility included information on maternal characteristics such as month of pregnancy, the pregnancy was planned or not, initiation of ANC visit, marital status, number of under five children currently alive, 'are you living with their husbands or not?', and 'did your husband accompany you for at least one ANC visit in this recent pregnancy or not?' and information on women's background characteristics.

After the baseline assessment, all mothers who met the study criteria were asked to participate and to give informed consent. Study aids, focused for study information and supports, were given to the data collectors included a client information booklet, writing pad with pen and pencil to calculate expected date of delivery (E.D.D), 'fundal height' measurement guide for abdominal palpation, and we gave telephone numbers of the study team to all HEWs for advice in case of complications or questions regarding follow up visits. Based on the baseline data, each woman's date of last ANC check-up (at 9 month of pregnancy) was estimated for next contact by data collectors and supervisors.

The *first interviews* with women were conducted at their last ANC check-up to ascertain information on women's utilization of ANC services. Women were asked about the number of ANC visits and whether their husbands involved or not in at least one ANC visit if they respond "yes" for the question "have you initiated ANC visit?" The women whose husbands accompanied at least for one ANC visit were grouped as exposed, whereas women whose

husbands never involved during ANC visit grouped as unexposed. The first interviews included a baseline evaluation and planned visits according to the scheduled given for every woman. During the interview, women's utilization of ANC services (i.e. initiation and number of visits) in their last pregnancy was confirmed by checking the women's ANC cards.

The *second interviews* were conducted on date of birth (or within a week after birth) to ascertained women's place of deliveries or the use of SBAs' services during birth. This was main outcome variable of paper-III (women's use of SBAs). The data were collected by asking the women about their place of birth (at health facility or home); then, if place of birth was at health facility, the data collectors checked the information available on the delivery care logbook'. Moreover, information was collected on whether her husband's presence at the health facility during her birth or not and whether she received or not the first PNC services within 24 or 48 hours of birth.

The third interviews (for paper-IV) were conducted with postnatal mothers after their last date of PNC period (i.e. last date of the 6^{th} weeks after birth). During the interview time, data on the main outcome of the study (women's use of PNC services) were collected. Each woman was asked whether she initiated or not PNC visit; if she initiated, time of initiation and frequency of PNC visits, and whether her husband accompanied to health facility at least for one PNC or not. These were ascertained, first, by asked the woman whether she received PNC services or not; if she said 'yes', she was asked the time when she initiated the PNC service (in days). Finally, the data collectors checked her PNC or immunization card and recorded information on time of her first PNC check-up and number of PNC visits. Specific interview date for every woman was calculated and estimated beforehand according to their gestational ages. In addition, the HEWs at each kebele were assigned to assist the data collectors during home-visits according to the given schedule, and they used the telephone reminders for upcoming study visits, which was as frequently as once every month or when there was unscheduled or unexpected childbirth.

3.6.7. **Gestational age (month of pregnancy) determination for follow-up study**

Gestational age was determined based on women's Last Normal Menstrual Period (LNMP). At times when the respondents unable to remember their LNMP, estimation were made based on fundal height by data collectors.

3.6.8. **Ways to identify women's place of delivery for follow-up study**

Birth identification was carried out by involving Health Extension Workers (HEWs).

Prior to the baseline survey, the PI offered a two days training to HEWs at their respective kebeles about the purpose of the study, demonstration on how to identify births, and how to network with data collectors, and supervisors. Depending on the study kebeles population size, two HEWs were deployed for two or three kebeles to identify and report the occurrence of births of the studied women to the respective data collectors.

On average, one HEW reported the birth of 36 studied women. All pregnant women were assigned to the data collectors and HEWs in the respective kebele, according to their geographical proximity. To enhance the motivation and adherence of the HEWs, an incentive based system (as compensation and transportation cost) was applied. Information pertaining to birthplace and postpartum services were registered using a checklist. The supervisors made a random visit for two-fifth of the mothers reported to have birth whether at health facility or home (average 50 visits per supervisor) to verify the information that had been recorded in the specified time.

3.7. **Study variables**

3.7.1. **Dependent variables**

For paper I, in the assessment of the magnitude and associated factors of husbands' involvement in maternal health care, the dependent variables were three: a husband accompanied his wife for at least one: (1) ANC visit, (2) skilled delivery care and (3) PNC visit.

For paper-II (qualitative study), the dependent variable was low or absence of husbands' involvement in maternal health care (i.e. during ANC, skilled delivery care and PNC).

*For paper III, i*n the evaluation of the relationship between husbands' involvement during ANC visit and women's utilization of SBAs, the dependent variables were women's use of SBAs during birth. The main exposure variable of this follow-up study was husbands' involvement during ANC visit. Other co-variates (independent variables of interest) include women's socio-demographic characteristics, maternal factors, and health facilities' related factors.

For paper IV, in the evaluation of the relationship between husbands' involvement during ANC visit and women's utilization of PNC services, the dependent variables were women's use of PNC services within 42 days after birth. the women were asked whether they initiated PNC services immediately after birth or within 24 hours, or 48 hours, or within 6 weeks after birth; Yes/No).The main exposure variable of this follow-up study was husbands' involvement during ANC visit. Other co-variates (independent variables) include women's socio-demographic characteristics, maternal factors, and health facilities' related factors.

3.7.2. **Independent variables**

For paper-I, the independent variables were husbands' socio-demographic characteristics, economic, cultural, and health system factors, and maternal factors such as past obstetrics history of women, and number of under five year children during the study time.

For paper II, the contextual factors that the study participants perceived as the main reasons for low or absence of husbands' involvement in maternal health care in the study areas were considered as the potential independent variables.

For paper III and IV, the independent variables were the main exposure variable was husbands' involvement during ANC visit; and others factors related to women's background and maternal factors were used as covariates.

3.8. **Inclusion and exclusion Criteria**

For paper I, all husbands who were residence of the study areas for at least two years, living with his wife, and whose wife had birth one-year preceding the study period were included in the study. Husbands unable to respond to the interview due to any medical reasons were excluded from the study.

For paper II, an individual who was residence of the study area at least for two years and a woman who had a birth experience or a man whose wife had a birth experience at least in the past five to ten years preceding the study. Individuals who were working on maternal and child health or women's and youth's affairs were included. Elderly people who had been working as leader in the community were included. Individuals unable to respond for the interviews or those who were out of the areas and unable to access them by different means during the data collection period were excluded.

For paper III and IV, women with a Gestational Age (GA) between 24th weeks to 36th weeks, living with their husbands for at least a year in the study area and those who initiated ANC service in the selected health institutions before or during the study period were eligible to participate. Whereas, women were excluded if they had complications of pregnancy (high-risk pregnancy confirmed during ANC check-up), and those who were sick and unable to undergo an interview during the study period.

3.9. **Operational definitions**

Husbands' involvement in maternal health care refer to a husband (male partner) accompanied his wife to health institutions for at least one ANC visit or PNC visit, or for delivery care service during his wife's last pregnancy and recent childbirth but not for his any medical case".

Husbands' involvement in antenatal care - the exposure variable- defined as- women whose husbands accompanied to health facility at least for one ANC visit (exposed), and women whose husbands did not accompanied or who attended ANC visits without their husbands or alone were considered as 'non-exposed'.

Skilled Birth Attendants (SBAs) are doctors, nurses, and midwives who have special skill training on childbirth practices.

Women's use of SBAs was an outcome indicator to evaluate the effect of husbands' involvement during ANC visits, which means women were assisted by SBAs during births in health institutions or at home.

Women's utilization of postnatal care (PNC) services was "an outcome indicator"- to evaluate the contribution of husbands' involvement during ANC visit- measured by the receiving of PNC services by mothers or couples (within 24 or 48 hours or after 42 days following birth for both

mothers who gave birth at health institution or home). Women who reported the health worker visited them within 6 weeks after delivery are considered receiving postpartum care.

PNC services are five components of postpartum care (such as counseling on danger sign, family planning, nutrition, and checking bleeding and checking breast) and newborn care during the first month of life.

3.10. **Data management and analyses**

3.10.1. **Data entry, screening and management**

For a population-based survey data entry, screening, and analysis were carried out using SPSS ver.20 for windows. Double data entry was done by experienced data entry-clerks and investigator. Doubled entry of data helped us to check the reliability and consistency of the data. After the data entry was completed, its correctness was rechecked by going randomly through some of the questionnaire again. Prior to analysis, the data were screened for missing, out of range, and outlier values. Missing and out of range values were tracked by examining the frequency distribution of the variables. Such entries were validated against the raw data, and in case of entry errors, corrections were made accordingly. In all of the variables, actual missing values were very few and random hence they were left as they were. The presence of outliers in the continuous variables was diagnosed using scatter graph/diagram, Box and Whiskers plot. Extreme values were trimmed to the nearest acceptable value. The normality of the distribution of key variables was assessed using visual evaluation of histogram and probability plots for categorical variables. In this dissertation, most of our variables were categorical and showed a normal distribution graphs.

For qualitative data (paper-II), before data entry, all tape-recorded notes and written field notes were transcribed and translated into English language. Then, the data entry clerks and PI typed the text data into a computer using a Microsoft word format, one daily base. After the data entry process was completed, the text data were prepared for analysis.

With regard to the follow-up studies, every step of the data entry, screening, and management in the above-mentioned population-based survey were applied in the follow-up studies. The data entry, screening, and analysis were also carried out using SPSS version 20.0 for windows.

3.10.2. **Basic data analysis**

For the quantitative studies (population-based and follow-up studies), descriptive statistics like mean, Standard Deviation (SD), frequency, percentage, and graphs were made to the given data. Estimates of population parameters were presented with 95% Confidence level (Cl). In every application of inferential statistics, *P*-value of <0.05 was taken as significance level. A chi-squared analysis was applied to examine the presence of association between the categorical variables in the study. Prior to the application, the data were checked for non-violation of the major assumptions of chi-square test.

3.10.3. **Logistic regression analysis**

In the population-based survey and follow-up studies, binary logistic regression analysis was applied to control potential confounders and to examine the association between the outcome variables and independent variables. For paper-I, to examine the association between the three study outcomes (husbands' involvement in ANC, skilled delivery care, and PNC visits) and the independent factors, the dependent variables were dichotomized into two groups. The first group was "husband involved at least for one ANC visit (score 1)" and the second group was "husband did not involve at all (score 0)".

For paper-III, a follow-up study, to examine the association between women's' use of SBAs' services and husbands' involvement in at least one ANC visit, moreover, with other co-variates, we applied a binary logistic regression analysis. Similarly, for paper-IV, a follow-up study, the association between women's use of PNC services and husbands' involvement in at least one ANC visit, as well as the associations with other co-variates were examined using binary logistic regression. Before the binary logistic regression analysis, the assumptions of logistic regression (normally distribution, absence of multicollinearity and interaction among independent variables) were checked and no evidences were obtained on violation of the assumptions. The assumption of normality of error terms was checked via statistical normality tests, and visually using

histogram and probability plots. For a given covariate, multicollinearity was considered to be absent when its Variance Inflation Factor (VIF) is below ten [122]. The interaction effects were also checked using stratified analysis.

During binary logistic regression analysis, first, every variable was independently entered into the models. Then, variables at a significant level of <0.25 in the bivariate analysis were considered for a multivariate analysis. In multivariate analysis, variables were entered using the "enter" method. The fitness of the models was assessed using Hosmer-Lemeshow statistic. Finally, the outputs of bivariate and multivariate logistic models were presented in Crude Odds Ratio and Adjusted Odds Ratio, with their respective 95% CI.

3.10.4. **Interaction assessment for quantitative studies**

To this point, the presence of a contribution of a single factor in causing an outcome of interest (the individual effect) was assumed. Thus, examining which multiple factors interacts and how do they interact in causing the outcome is a very important issue of analytical study. Based on reviewed literatures and the conceptual framework, the co-variates that may have potential interaction with the main exposure variable or one-another, in their association with women's use of SBAs or PNC services were identified. Then, the interaction effects were assessed using additive model and multiplicative model. The decision as to whether an additive model or a multiplicative model is most relevant in a given situation should depends on the biology of the diseases (the mechanism of the interaction in our cases) [123]. The interaction between husbands' involvement during ANC visit and women's socio-demographic factors and maternal factors in their association with women's use of SBAs and PNC services were examined using both additive model and multiplicative model. Then the appropriate model was decided according to the Synergy Index (SI) result that was calculated based on the original Rothman's formula [124]. The 95% Confidence Interval (CI) for SI was computed manually following the recommendations of Hosmer and Leme-show [125].

3.10.5. **Thematic analysis**

The analysis of qualitative data was governed by thematic analysis method using 'Atlas.ti.' computer software. The method focused on emerging main categories (main theme) by

combining of sub-categories (sub-themes). The data were uploaded into the software. After reading the text line by line, conceptual codes that evolved from the text were applied throughout the texts. Then, similar cods created categories. Finally, emerging themes and sub-themes from categories were identified, and presented with respondents' direct verbatim as results.

3.11. **Data quality assurance mechanisms**

The study applied different mechanisms to assure the quality of the data in each study (paper I-IV). Starting from data collection instrument designing to data analysis, various actions were taken to assure the quality of the research. The questionnaire was prepared using simple and easily understandable Amharic language and administered using the local language (Sidamu-Afoo) via data collectors fluent in both languages. The instruments were pretested in the locality and appropriate customization and modifications had been made. The reliability and content validity of the tool have also been evaluated. Accordingly, items with lower reliability coefficients were amended or removed.

Data were gathered using qualified and experienced data collectors. Before the baseline survey, an intensive five days training including orientation, demonstration, and field practice has been offered. Strict supervisions of data collection were instated by the supervisors and PI on daily basis, the PI reviewed every filled questionnaire and provided proper feedback to the data collectors. Regular evening sessions were arranged for the sake of experience sharing purpose. Exposure ascertainment for every woman was done two times with supervision. Similarly, the outcome ascertainments for follow-up study were also crosschecked by observations as well as document reviewed. Random visits were made for two-fifth of the mothers reported to have birth so as to verifying that the measurement had been carried out in the specified time.

The PI did double data entry and screening of data. In order to avoid potential errors, every entry has been counterchecked. After the completion of the entry, the data have been screened for missing, out of range and outlier values following standard procedures. The assumptions and fitness of statistical models have been checked following standard procedures.

3.12. **Ethical Considerations**

Each study in this dissertation was conducted following the national ethical guidelines for observational research involving human subjects. Ethical clearance was granted by the Institutional Review Board (IRB) of College of Health Science, Addis Ababa University (AAU). Prior to the study, its purpose was communicated and permission was taken from SNNPR health bureau, Sidama zone health department, respective wereda health offices, and kebele administrations. Participation of the study subjects was entirely on voluntary basis. Informed written consent was taken from the study subjects using the consent and information forms. The consent was secured after the purposes of the study, the rights of participants, potential benefits and harms of the study etc.., were thoroughly and privately communicated. The study did not involve any undue financial or non-financial inducement. The subjects were not persuaded or influenced in anyway by local officials or health service providers to take part in the study. All the necessary measures were taken to eliminate potential risks associated with study. All the information provided by the study subjects were kept confidential. Utmost effort was made to maximize the beneficence aspect of the study. After the final contact with women and men, they were advised and encouraged to initiate ANC as early as possible and to give birth in health institutions, and to attend PNC services. In order to maximize the benefit of the study to the community, the findings of study have been selectively disclosed to the local authorities so that suitable interventions can be instated.

3.13. **Methods Applied in the study**

The studies in this dissertation applied across-sectional, a prospective cohort, and a qualitative study designs to assess the magnitude of husband' involvement in maternal health care, to determine the association between husbands' involvement during ANC visit and women's use of SBAs and PNC services, and to explore contextual factors related to husbands' non-involvement in maternal health care services, respectively. (Table 4)

Table 4: Summary study objectives and methods

No.	Objectives	Study design	Study subjects	Sample -Size	Data collection methods	Data analyses
1	To assess magnitude and determinants of husbands' involvement in ANC, delivery and PNC	Community based Cross-sectional study	Married men age ≥ 18 years and their wives had birth one-year preceding the study	1382	Structured interview questionnaire	-Univariate, bivariate& multivariate analysis; -Chi-square test & logistic regression with 95% CI, P-values, COR & aOR
2	To explore the main barriers for husbands' involvement in maternal health care	Qualitative study	Married women &men, community leaders, religious leaders, health professionals, HEWs, TBAs, leaders from women's & youth's affairs Offices	10 FGDs 15 IDIs 10 KIIs	Interview guide questions for FGDs, IDIs & KIIs	Thematic analysis using ATLAS.ti software
3	To examine the association between husbands' involvement in ANC visits and women's use of SBAs	Prospective cohort study	pregnant women between 24th to 36th weeks of gestation who were living with their husbands	712	Semi-structured interview questionnaire	-Univariate, bivariate & multivariate analysis -Chi-square test& logistic regression with 95% CI, P-values, COR & aOR
4	To examine the association between husbands' involvement in ANC visits and women's use of PNC services	Prospective cohort study	pregnant women between 24th to 36th weeks of gestation, followed until PNC period	712	Semi-structured interview questionnaire	-Univariate, bivariate & multivariate analysis -Chi-square test& logistic regression with 95% CI, P-values, COR & aOR

4. MAIN FINDINGS IN MANUSCRIPTS I–IV

The main findings of the studies in this dissertation presented with their objectives in Table 5 below.

Table 5. The main findings from the four manuscripts

MS	Objectives	Main findings
I	The magnitude and determinants of husbands' involvement in skilled ANC, delivery and PNC services	✓Husbands' involvement in the three routine maternity care, in this study, was low; 19.9%, 42.7% and 11.8% of the husbands accompanied their wives for skilled antenatal, delivery, and postnatal care, respectively. A higher proportion of husbands accompanied their wives for skilled delivery care services compared to ANC and PNC. ✓Factors such as offering invitation letter, number of U5 year children alive during the recent pregnancy, early initiation of ANC visit, place of residence, couple's communication, and distance to health facility was significantly associated with husbands' involvement in their wives antenatal care visits. ✓Place of residence, husbands accompanying their wives at the preceded ANC visit, early initiation of ANC visits, and number of U5 year children alive during recent pregnancy were significantly associated with husbands' involvement during skilled delivery care. ✓The number of U5 year children alive during the recent pregnancy, offering an invitation letter to husbands, husbands accompanied their wives in the preceded ANC visits and couples' communication on postnatal care issues were significantly associated with husbands involvement in their wives' postnatal care visits.
II	Explore barriers to husbands' involvement in their wives' maternal health care	✓The six major factors related to clients and health care systems, which hindered husbands' involvement in maternal health care, were identified in the study. ✓The perceived social norm, women's unwillingness, husband's attitude towards facility health care and lack of awareness about husband's involvement in maternal health care were identified under clients' related factors. ✓Health providers' attitude and absence of guideline for husbands' involvement were also the two main factors related to the health care systems that hinder husbands' involvement in maternal health care.
III	The association between husbands' involvement in ANC visits and women's utilization of SBAs	✓The finding in this study showed a strong significant association between husbands' involvement in antenatal care visits and women's use of skilled birth attendants during birth. ✓After adjustment for background characteristics, the women who attended antenatal visits with their husbands were about six times more likely to use skilled attendants during birth [aOR=6.27; 95% C.I : 4.2 to 9.3]. This implies that husbands' involvement in antenatal care visit was a strong and significant predictor of woman's utilization of skilled birth attendants during childbirth.
IV	The association between husbands' involvement in ANC visits and women's utilization of PNC services	✓Husbands presence during antenatal care visit was strongly and significantly associated with women's utilization of postnatal care (aOR=7.45; 95% CI, 4.18, 13.3). ✓Women's education level, women's age, and the number of U5 year children alive during the recent birth were significantly associated with their use of PNC service. Women being above secondary education (aOR=4.94, 95% C.I.: 2.01, 12.2), women's age between 15-24 years (aOR= 3.35, 95% CI: 1.4, 7.8) and women with one or no U5 year child were more likely to use PNC services than their counter part women.

4.1. **Socio-demographic characteristics of husbands involved in the population-based survey** (paper-I)

Of 1382 husbands, 1318 were involved in the analysis. Consequently, the response rate of the survey was 95.4%. The study participants were selected across 21 kebeles. Comparable to the natural composition of the population, about half, 357 (51.0%), of the subjects were recruited from the midlands; whereas, 187 (26.7%) and 156 (22.3%) were from the highlands and lowlands, respectively. Among the study subjects, 158 (12%) were from urban residence while the predominating 1160 (88%) were from rural residence. (Table 6)

The mean age (with ± standard deviation) of the respondents was 34.3 (±6.18) years, and more than half, 692 (52.5%), were below 35 years of age. The vast majority, 1076 (81.6%) and 1140 (86.5%), of respondents were Sidama in ethnicity and Protestant Christians in religion. (Table 6)

Regarding to educational status, 370 (28.1%) of the subjects were illiterates (without formal education) and 513 (38.9%) had a primary level education. As to occupation is concerned, 660 (50.1%) of the respondents identified themselves as a farmer, and merely 337 (25.6%) were a government employee.(Table 3) More than a third, 474 (36%), of the respondents had one or two U5 year children during the study time.(Table 6)

Table 6. Socio-demographic characteristics of men in a population-based survey, in Sidama Zone, Southern Ethiopia, 2015

Characteristics	n (%)
Place of residence	
Urban	158 (12)
Rural	1160 (88)
Age in years	
< 30	275 (20.9)
30-34	413 (31.3)
35 and above	630 (47.8)
Ethnicity	
Sidama ethnic	1140 (86.5)
*Others ethnic group	178 (13.5)
Occupations	
Farmer	660 (50.1)
Businessman & others	321 (24.4)
Government employee	337 (25.6)
Education level	
No formal education	370 (28.1)
Primary education	513 (38.9)
Secondary & above	435 (33.0)
Religion	
Protestant Christians	1076 (81.6)
**Others religion	242 (18.4)
Total	**1318 (100%)**

**others ethnic group: included Amhara, Guragia, and Oromo& Wolita.*
***others religion: included Orthodox, Catholic and Muslim religions.*

4.2. **Socio-demographic characteristics of participants in the qualitative study** (paper-II)

The qualitative study was conducted with 102 participants (52.9% female and 47.1% male). They were involved in 12 individual interviews (IDIs), 10 key-informant interviews (KIIs) and 10 focus group discussions. In the FGDs, participants were categorized by sex and age. (Table 7) The *key-informants* were selected from kebele leaders, TBAs, HEWs, elderly women and men, religious leader, chairperson of youth and women's affairs at local council of the weredas, head of health centers, in charges of maternity units and zonal health officers. They were chosen because of their dominant social-roles in their communities as well as their work experiences related to the study issues.

Table 7: Background characteristics of participants for focus group discussions, in-depth interviews, and key informants' interviews, in Sidama zone, southern Ethiopia, 2015

Characteristics		10 FGD		12 IDI		10KIIs	
		Female (n, %)	Male (n, %)	Female (n, %)	Male (n, %)	Female (n, %)	Male (n, %)
Age (year)	≤ 30	19	16	2	3	1	0
	> 30	23	22	3	4	3	6
Education status	≤Primary	35	22	4	2	0	2
	≥Secondary	7	16	1	5	4	4
Occupation type	Government employee	8	24	2	5	3	3
	NGO	3	1	0	1	1	1
	Private	3	9	0	1	0	2
	Housewife	31	-	3	-	0	-
	Unemployed	-	1	-	0	0	0
Total = 102		45	35	5	7	4	6

FGD: Focus group Discussion, IDI: In-depth Interview, KII: Key-Informant Interview; NGO: Non-govermental organization

4.3. **Socio-demographic characteristics of women involved in the follow-up study**(paper III and IV)

Of 709 pregnant women we registered and followed, 664 were completed the study. Consequently, the response rate became 93.6%. The mean age (± standard deviation) of the respondent women was 28.19 (±5.43) year, and the vast majority, 554 (83.4%) were between 15 to 34 year of age. More than half of the women, 389 (58.6%), were below secondary education level during the study period; and more than two-third, 459 (69.1%), of the study subjects reported that they had two or more U5 year children during the recent pregnancy. And, the majority, 436 (65.7%), of the women reported that their pregnancy was planned. (Table 8)

Table 8: Baseline characteristics of the two groups of women in the study, in Sidama Zone, Southern Ethiopia, 2015

	Did your husband involve at least in one ANC visit?			
Characteristics	Yes, (%) (n=385)	No, (%) (n=279)	Total (N=664)	X^2, (p-value)
Residence				
Urban	194 (60.1)	129 (39.9)	323	1.117 (=0.291)
Rural	191 (56.0)	150 (44.0)	341	
Age in year				
15-24	103 (58.9)	72 (41.1)	175	0.090 (=0.956)
25-34	218 (57.5)	161 (42.5)	379	
35-49	64 (58.2)	46 (41.8)	110	
Education level				
Tertiary	62 (62.6)	37 (37.4)	99	3.010 (=0.390)
Secondary	103 (58.5)	73 (41.5)	176	
Primary	134 (54.0)	114 (46.0)	248	
None	86 (61.0)	55 (39.0)	141	
Occupation type				
Government employee	64 (69.6)	28 (30.4)	92	6.159 (=0.046)*
Businesswomen	35 (59.3)	24 (40.7)	59	
Housewife	286 (55.8)	227 (44.2)	513	
Religion				
Protestant	251 (55.9)	198 (44.1)	449	8.908 (=0.031)*
Orthodox	45 (63.4)	26 (36.6)	71	
Catholic	47 (73.4)	17 (26.6)	64	
Muslim	42 (52.5)	38 (47.5)	80	
Initiation of ANC visit				
1st trimester	41 (71.9)	16 (28.1)	57	9.764 (=0.008)**
2nd trimester	231 (60.0)	154 (40.0)	385	
3rd trimester	113 (50.9)	109 (49.1)	222	
Number of ANC visits				
4+	64 (76.2)	20 (23.8)	84	13.087 (<0.001)***
1 to 3	321 (55.3)	259 (44.6)	580	
Number of under 5 children				
< 1	127 (62.0)	78 (38.0)	205	1.918 (=0.166)
>1	258 (56.2)	201 (43.8)	459	
Is the pregnancy planned?				
Yes	280 (64.2)	156 (35.8)	436	20.282 (<0.001)***
No	105 (46.1)	123 (53.9)	228	

****P-value < 0.001, **p-value< 0.01, and *P-value < 0.05, indicate the significance differences of the two groups (women with husbands' involvement and without involvement by indicated variables)*

4.4. **Husbands' involvement status in maternal health care** (paper I)

Of 1318 participant husbands, 874 (66.3%) reported their spouses had gone to the health facilities for ANC check-up, a year preceding the survey; whereas those reported their spouses had obtained skilled delivery care and PNC services were 626 (47.5%) and 562 (42.6%), respectively.(The figures included those attended two or three of the routine care). (Figure 7)

Husbands who accompanied their spouses at least for one ANC visit, skilled delivery care and PNC visit were 174 (19.9%), 267 (42.7%) and 66 (11.8%), respectively. In this study, a highest proportion of husbands involved in their wives' skilled delivery care services compared to ANC and PNC services. (Figure 7)

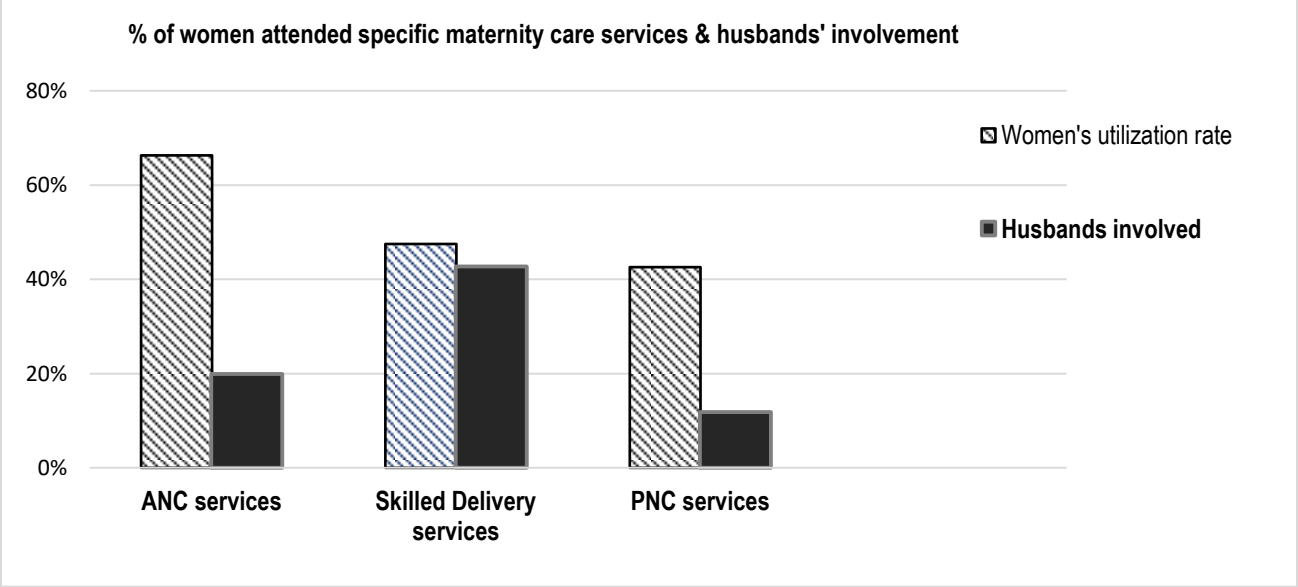


Figure 7: *The proportion of women attended and husbands involved during antenatal care (ANC), skilled delivery care and postnatal care (PNC) services, and in Sidama zone southern Ethiopia, 2015.*

4.5. **Determinants of husbands' involvement in maternal health care**(paper I)

Bivariate and multivariate analysis

Socio-demographic factors

Among socio-demographic factors, place of residences have shown a significant association with husbands' involvement during ANC and skilled delivery care services. Its association with husbands' involvement during PNC visit was not significance. A higher proportion of husbands from urban areas involved in their spouses' ANC and skilled deliver care services compared to the proportion of husbands from rural areas. According to the logistic model, compared to husbands of rural residence, husbands from urban residence were 2.9 (95% CI: 1.6-5.4) and 4.8 (95% CI: 2.4-9.4) times more likely to accompany their spouses for ANC visit and skilled delivery care services, respectively. Whereas, husbands' age, education level, and occupation types did not show significant association with their involvement during both ANC, skilled delivery care, and PNC services. (Table 9)

Maternal factors

Three of the maternal factors, which are the number of under five year children alive during the recent pregnancy, women's initiation of ANC visit, and couple's communication have shown a significant association with husbands' involvement at least in one of the three routine care (ANC, skilled deliver care and PNC services). Particularly, the number of under-five year children alive during the recent pregnancy was the only factor that has shown significant association with husbands' involvement in the three routine care. A significant inversely association was observed between the number of U5 year children and husbands' involvement status during ANC visit, skilled delivery care and PNC visit. Compared to husbands with three or more U5 year children during their wives' recent pregnancy, husbands who had less than three U5 year children were 3.3 (95% CI: 2.1-5.1), 1.9 (95% CI: 1.2, 2.9) and 3.8 (95% CI: 1.5-9.5) times more likely to accompany their spouses for ANC visits, skilled delivery care and PNC visit, respectively. (Table 9)

The observed associations between women's initiation of ANC visit and husbands' involvement during ANC visit and skilled delivery care services were significant. Compared to husbands whose spouses initiated ANC visit during the third trimester, husbands whose spouses initiated as early as possible during the first and second trimesters were 3.0 (95% CI: 1.3, 7.0) and 2.0 (95% CI: 1.2, 3.2) times, respectively, more likely to accompany their spouses for ANC visits. Similarly, husbands whose spouses initiated ANC visit as early as possible in the first trimester and second trimester were 3.0 (95% CI: 1.3, 7.0) times and 2.0 (95% CI: 1.2, 3.2) times, respectively, more likely to accompany their spouses for skilled delivery care services than husbands whose spouses initiated ANC visit during the third trimester. (Table 9) However, the association between initiation of ANC visit and husbands' involvement status during PNC services was not significant.

Couple's communication on maternal care issues has also shown a significant association with husbands' involvement during ANC and PNC visits. Husbands communicated with their spouses about ANC issues and PNC issues were 1.5 (95% CI: 1.03, 2.3) and 2.7 (95% CI: 1.2 - 6.0) times, respectively, more likely to accompany their spouses for ANC and PNC visits compared to their counterparts. However, their association during skilled delivery care services was not significance. (Table 9)

Health services related factors

Among the health services' related factors, offering invitation letter to husbands for ANC and PNC visits has shown a strong significant association with husbands' involvement during ANC and PNC visits. Husbands obtained invitation letter for ANC and PNC visits from health providers were 6.1 (95% CI: 4.0, 9.1) and 3.3 (95% CI: 1.3 - 8.0) times, respectively, more likely to accompany their spouses for ANC and PNC visits, compared to their counterparts. (Table 9) A walking distance between homes to health facility was also an important factor, which shows a significant inversely association with husbands' involvement during ANC visits. However, its association with husbands' involvement during skilled delivery care and PNC services was not significant. Compared to husbands who had to walk over 30 minutes to access the nearby health facility, those who walk less than 30 minute were 1.6 (95% CI: 1.03, 2.5) times more likely to accompany their spouses for ANC visits. (Table 9)

Husband's involvement in the preceding maternal health care

A significant association was observed between husbands' involvement during ANC visit and their involvement in the proceeding skilled delivery care and PNC visits. Husbands who accompanied their spouses during ANC visit were 2.1 (95% CI: 1.3 - 3.4) and 2.7 (95% CI: 1.2 - 5.9) times more likely to accompany their spouses during skilled delivery care and PNC visits, respectively. (Table 9)

Table 9. Multivariate analysis of the association between selected factors and husbands' involvement in skilled maternity care, Sidama zone, South Ethiopia, 2015.

		Husbands' involvement during:		
Predictors		ANC (n=874)	Delivery care (n=626)	PNC (n=561)
		aOR (95%CI)	aOR (95%CI)	aOR (95%CI)
Number of U5 children	< 3 children	3.3 (2.1 - 5.1)*	1.9 (1.2-2.9)*	3.8 (1.5 - 9.5)*
	≥ 3 children	1.00	1.00	1.00
Place of residence	Urban	2.9 (1.6-5.4)*	4.8 (2.4-9.4)*	1.3 (0.4 - 3.8)
	Rural	1.00	1.00	1.00
Husband received invitation	Yes	6.1 (4.0 – 9.1)*	---	3.3 (1.3 -8.0)*
	No	1.00	---	1.00
Accompanied wife for ANC	Yes	---	2 .1 (1.3 - 3.4)*	2.7 (1.2 - 5.9)*
	No	---	1.00	1.00
Couples' communication	Yes	1.5 (1.03 - 2.3)*	1.01 (0.6-1.6)	2.7 (1.2 – 6.0)*
	No	1.00	1.00	1.00
Initiation of ANC visit	1st trimester	3 (1.3 – 7.0)*	1.8 (0.7-4.7)	2.5 (0.5 - 12.5)
	2nd trimester	2 (1.2 - 3.2)*	1.9 (1.2 - 2.9)*	2.0 (0.7 - 6.2)
	3rd trimester	1.00	1.00	1.00
Distance to health facility (Walking)	≤ 5 Km	1.6 (1.03 - 2.5)*	---	---
	> 5 Km	1.00	---	---
Husbands' Age (year)	≤ 29 years	1.4 (0.9-2.4)	1.1 (0.6-1.9)	1.8 (0.7 - 4.7)
	30-34 years	0.8 (0.5-1.3)	1.2 (0.8-1.9)	1.2 (0.4 - 3.5)
	35 years & above	1.00	1.00	1.00
Husbands' Educational	Primary	1.2 (0.7- 2.2)	0.7 (0.4-1.3)	1.1 (0.2 – 4.8)
	Secondary & above	0.9 (0.5- 2.0)	0.9 (0.6-1.6)	2.9 (0.6 – 12.8)
	No education	1.00	1.00	1.00
Occupation type	Farmer	0.6 (0.3 -1.1)	0.9 (0.6-1.6)	---
	Businessman& others	1.2 (0.7- 2.0)	0.6 (0.3-1.0)	---
	Government employee	1.00	1.00	---
Number of ANC visits	> 3	1.1 (0.7-1.7)	---	1.01 (0.4 – 2.4)
	≤ 3	1.00	---	1.00

** indicates the presence of significant association between factor and outcome*

4.6. **Reasons for low husbands' involvement in maternal health care** (paper II)

The two main themes emerged from participants' responses, as reasons for low husbands' involvement in skilled maternal health care were *clients' related factors* and *health care systems' related factors*. Under clients' related factors, the perceived social norms, women's unwillingness to husbands' involvement, husbands' negative attitudes towards facility-based care and their lack of awareness about male involvement were emerged. Participants reported that there is a social norm in every community; and according to this norm men and women have their own roles in their homes and communities. Thus, this norm can prevent husbands' participation in their wives' pregnancy and delivery care. Majority of the participants accepted the idea that women but not men should give care to a woman during pregnancy, labor, and birth time. As a result, many women are not willing to be accompanied by their husbands to health facilities. They believed that man's role is to give money, prepare transport services, and inform to other families or neighbor for support.

Despite that fact, many husbands have a negative attitude towards health facility care; and they preferred home for their wives 'labor and delivery care. Respondents reported that among the reasons for this negative attitude of men are unattractive reception and communication of health professionals in the health facilities. Moreover, majority of the respondents mentioned that the idea of husbands' involvement in maternal health care is new for both men and women in their community.

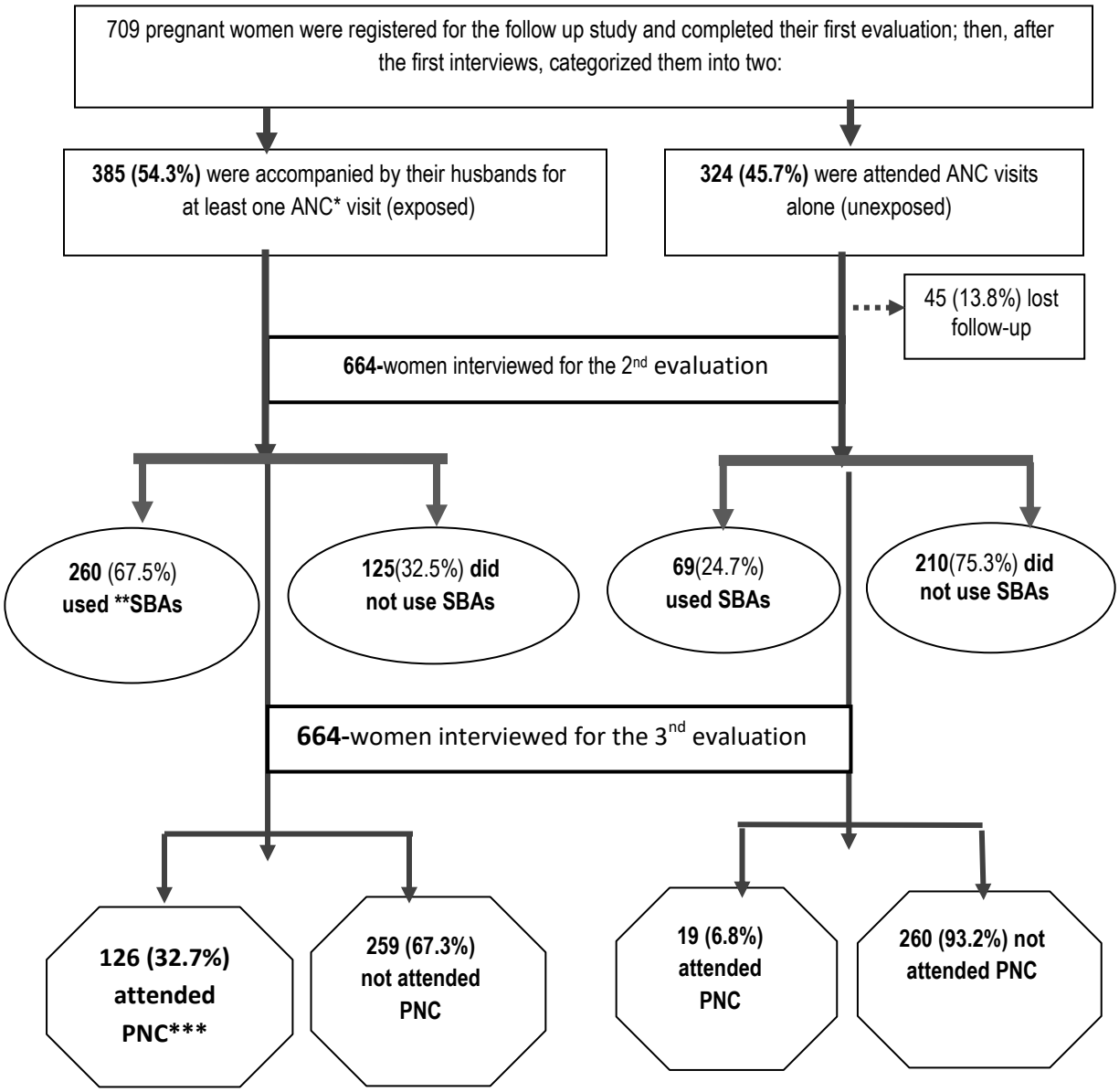
With regard to health care systems' factors, absence of guidelines for husband's involvement, and health workers' negative attitudes towards men's involvement were mentioned as barriers for husbands' involvement in their wives' maternity care. Particularly the health care professionals reported that they do not know about husbands' roles and responsibilities in ANC, delivery care, and PNC units unless crowding the room. Since, there is no standard guideline to do so. Due to this reason, many health professionals do not allow men to be involved in maternity care services.

4.7. **Summary of the cohort study from exposure assessment to outcome ascertainment** (paper III and IV)

During baseline assessment, eligible mothers were asked to participate and give informed consent. Then, date of their last ANC check-up was estimated for next contact by data collectors and supervisors. As indicted in figure 8, the data were collected from antenatal mothers at three time points: during pregnancy (at last ANC checkup or at 9th month of pregnancy), during birth or within one week after delivery, and during postpartum period (on the 42nd day after birth).

The first interviews with women were conducted at their last ANC check up date (or at nine month of pregnancy). For women who missed their appointments date (last ANC check up date), the data collectors interviewed at their home within two days. During the *first interviews*, 709 antenatal women were asked again whether their husbands' involved or not at least for one ANC visit (yes/no). Then, only agreed responses, both 'yes' responses, were considered as a true 'yes' response. Whereas, both 'no' responses and two disagreed responses, 'yes' and 'no' for the first and second interviews, or vies-versa, were considered as a 'no' response. Women whose husbands accompanied at least for one ANC visit were assigned as exposed group. On the other hand, women whose husbands never accompanied for ANC visit were allocated to unexposed group. (Figure 8)

During the second assessment period, 45 women from unexposed group lost from the follow up; and the interviews were conducted with 664 women (385 exposed and 279 unexposed women). The purpose of the second interview was to ascertain the main outcome of the study, i.e. women's use of SBAs during birth. Of 664 women, 329 (49.6%) were obtained SBAs' services at health care facilities. Among women obtained SBAs services, 260 (39.2%) were from women whose husbands had involved during ANC visit whereas, 69 (10.4%) women were from unexposed group. (Figure 8) Finally, for the third time, the women were interviewed at the end of their 6th weeks after birth. The purpose of the third interviews was to ascertain women's use of PNC services. The interview time of every woman was scheduled during the second interview time or at her delivery period. Of 664 interviewees, 126 (19%) exposed and 19 (2.9%) unexposed women obtained PNC services within 42 days after birth. (Figure 8)



**ANC: Antenatal care, **SBAs: Skilled Birth Attendants; ***PNC: Postnatal Care*

Figure 8: Flowchart of the cohort study from exposure assessment to outcome ascertainment

4.8. **The association between husbands' involvement during ANC visit and women's use of skilled birth attendants during birth** (paper III)

Bivariate and multivariate analysis

In this study, the utilization of SBAs' service among women whose husbands involved during ANC visit was higher than the utilization among women whose husbands did not involve during ANC visit. The observed association between husbands' involvement during ANC visit and women's utilization of SBAs was strong and significant [aOR=6.27, 95% CI: 4.2, 9.3]. Women whose husbands involved at least for one ANC visit were 6.27 times more likely to use SBAs during birth compared to women whose husbands never involved during ANC visit. (Table 10)

Among background factors, place of residence and religion have shown a significant association with women's use of SBAs during birth. Women in urban residence were 1.7 (95% CI: 1.14, 2.5) times more likely to use SBAs during birth compared to women from rural residence. Women's belong to orthodox and catholic religions were 3.8 (1.7, 8.6) times and 3.4 (1.5, 7.8) times, respectively, more likely to use SBAs' services during birth compared to Muslim women. With regarding to age and occupation type, because of their interaction effect on the association between the main exposure and outcome variable they excluded from the final logistic regression model. (Table 10)

Among the maternal factors, the number of ANC visits [aOR=3.3, 95% CI: 1.7, 6.5], the number of U5 year children alive during the recent pregnancy [aOR=2.5, 95% CI: 1.6, 3.8], and pregnancy intention [aOR=2.5, 95% CI: 1.7, 3.7] showed significant association with women's use of SBAs during birth. Women's initiation of ANC visit, among the maternal factors, was also excluded from the final model because of its interaction effect with the frequency of ANC visits. (Table 10)

Table 10: Logistic regression analysis of women's use of skilled birth attendants by selected characteristics, Sidama Zone, Ethiopia, 2015

Characteristics		Have you received SBAs' service?			
		Yes, n (%)	No, n (%)	COR (95%C.I.)	AOR (95%C.I.)
Husband involved in ANC	Yes	260 (67.5)	125 (32.5)	6.33 (4.5, 8.9)*	6.27 (4.2, 9.3)*
	No	69 (24.7)	210 (75.3)	1.00	1.00
Place of residence	Urban	193 (59.8)	130 (40.2)	2.2 (1.6, 3.0)*	1.7 (1.14, 2.5)*
	Rural	136 (39.9)	205 (60.1)	1.00	1.00
Age in year	15-24	100 (57.1)	75 (42.9)	1.9 (1.2, 3.1)*	----
	25-34	184 (48.5)	195 (51.5)	1.4 (0.9, 2.1)	----
	35-49	45 (40.9)	65 (59.1)	1.00	----
Education level	Tertiary	61 (61.6)	38 (38.4)	1.9 (1.14, 3.3)*	1.6 (0.8, 2.9)
	Secondary	102 (58.0)	74 (42.0)	1.7 (1.06, 2.6)*	1.3 (0.7, 2.2)
	Primary	102 (41.1)	146 (58.9)	0.8 (0.5, 1.3)	0.6 (0.4, 1.1)
	None	64 (45.4)	77 (54.6)	1.00	1.00
Occupation type	Government employee	56 (60.9)	36 (39.1)	1.8 (1.2, 2.8)*	-----
	Businesswomen	36 (61.0)	23 (39.0)	1.8 (1.05, 3.2)*	-----
	Housewife	237 (46.2)	276 (53.8)	1.00	-----
Religions	Protestant	207 (46.1)	242 (53.9)	1.5 (0.9-2.5)	1.7 (0.9, 3.1)
	Orthodox	49 (69.0)	22 (31.0)	3.9 (1.9-7.8)*	3.8 (1.7, 8.6)*
	Catholic	44 (68.8)	20 (31.2)	3.8 (1.9-7.8)*	3.4 (1.5, 7.8)*
	Muslim	29 (36.2)	51 (63.8)	1.00	1.00
Pregnancy intention	Yes	262 (60.1)	174 (39.9)	3.6 (2.6-5.1)*	2.5 (1.7, 3.7)*
	No	67 (29.4)	161 (70.6)	1.00	1.00
Number of U5 year children	$\leq$ 1	135 (65.9)	70 (34.1)	2.6 (1.9-3.7)*	2.5 (1.6, 3.8)*
	>1	194 (42.3)	265 (57.7)	1.00	1.00
Initiation of ANC visit	1st trimester	37 (64.9)	20 (35.1)	3.2 (1.7, 5.8)*	-----
	2nd trimester	210 (54.5)	175 (45.5)	2.0 (1.5, 2.9)*	-----
	3rd trimester	82 (36.9)	140 (63.1)	1.00	-----
Number of ANC visits	4+	66 (78.6)	18 (21.4)	4.4 (2.6-7.6)*	3.3 (1.7, 6.5)*
	1 to 3	263 (45.3)	317 (54.7)	1.00	1.00

COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio

**Where 95% C.I. does not include 'one', it shows a significant association between the outcome and the factor*

The sign"------"indicates the variable was not included in the multivariate analysis

4.9. **The association between husbands' involvement during ANC visit and women's use of postnatal care services** (paper IV)

Bivariate and multivariate analysis

The observed association between husbands' involvement during ANC visit and women's utilization of PNC services in this study was strong and significant [aOR=7.45, 95% CI: 4.18, 13.3]. Women whose husbands involved at least for one ANC visit were 7.4 times more likely to use PNC services compared to women whose husbands did not involve during ANC visit. (Table 11)

Regarding to the socio-demographic characteristics, women's age (being young, 15-24 years [aOR=3.35, 95% CI: 1.4, 7.8]), education level (being at higher education level [aOR= 4.9, 95% CI, 2.01, 12.2]) and occupation type during the recent pregnancy (being a housewife [aOR= 3.9, 95% CI: 1.7, 8.5]) have shown significant associations with women's utilization of PNC services. Regarding to place of residence, it was excluded from the logistic regression model because of its interaction effect on the association between women's use of PNC services and others socio-demographic factors. (Table 11) Despite the multivariate analysis that showed the above findings, the model was not stable because of the socio-demographic variables that have interaction effects. So that, a stratified multivariate analysis was computed using husbands' involvement status during ANC visit as a stratum.

Table 11: Binary logistic regression analyses of postnatal care utilization by selected characteristics in Sideman Zone, Southern Ethiopia, 2015

	Did the women use PNC service?			
Characteristics	**Yes, (%)** (n=145)	**No, (%)** (n=519)	**COR (95%C.I.)**	**aOR (95%C.I.)**
Husband presented in ANC visit				
Yes	126 (32.7)	259 (67.3)	6.66 (3.99, 11.1)*	7.45 (4.18, 13.3)**
No	19 (6.8)	260 (93.2)	1.00	1.00
Women's Education level				
Above secondary	26 (26.3)	73 (73.7)	2.16 (1.12, 4.13)*	4.94 (2.01, 12.2)**
Secondary	43 (24.4)	133 (75.6)	1.96 (1.09, 3.51)*	1.38 (0.65, 2.90)
Primary	56 (22.6)	192 (77.4)	1.77 (1.01, 3.09)	1.35 (0.68, 2.67)
No formal education	20 (14.2)	121 (85.8)	1.00	1.00
Women's age (in years)				
15-24	69 (39.4)	106 (60.6)	4.46 (2.36, 8.44)*	3.35 (1.43, 7.82)*
25-34	62 (16.4)	317 (83.6)	1.34 (0.72, 2.50)	1.06 (0.49, 2.26)
35 -49	14 (12.7)	96 (87.3)	1.00	1.00
Women's occupation type				
Housewife	123 (24.0)	390 (76.0)	1.62 (0.9, 2.92)	3.87 (1.75, 8.53)**
Businesswoman & others	7 (11.9)	52 (88.1)	0.69 (0.26, 1.81)	1.32 (0.43, 4.06)
Government	15 (16.3)	77 (83.7)	1.00	1.00
Place of residence				
Urban	79 (24.5)	244 (75.5)	1.35 (0.93, 1..95)	------
Rural	66 (19.4)	275 (80.6)	1.00	------
Planned pregnancy				
Yes	107 (24.5)	329 (75.5)	1.63 (1.08, 2.45)*	------
No	38 (16.7)	190 (83.3)	1.00	------
Number of ANC visits				
4+	32 (38.1)	52 (61.9)	2.54 (1.56, 4.14)*	1.33 (0.73, 2.43)
1 to 3	113 (19.5)	467 (80.5)	1.00	1.00
Number of under 5 children				
$\leq$ 1	73 (35.6)	132 (64.4)	2.97 (2.03, 4.35)*	1.47 (0.84, 2.58)
>1	72 (15.7)	387 (84.3)	1.00	1.00
Time of first ANC visit				
1st Trimester	22 (38.6)	35 (61.4)	4.18 (2.16, 8.10)*	2.11 (0.97, 4.63)
2nd Trimester	94(24.4)	291 (75.6)	2.15 (1.37, 3.39)*	1.33 (0.77, 2.30)
3rd Trimester	29 (13.1)	193 (86.9)	1.00	1.00
Used Skilled Birth Attendants				
Yes	98 (29.8)	231 (70.2)	2.60 (1.76, 3.83)*	1.21 (0.75, 1.97)
No	47 (14.0)	288 (86.0)	1.00	1.00

***P-value $\leq$ 0.001 and *p-value $\leq$ 0.05, indicate the presence of significance differences of the two groups (women with husbands' involvement and without involvement by indicated variables)*

Stratified logistic regression analysis by husbands' involvement status (for paper-IV)

The findings of a stratified logistic regression analysis showed that among women whose husbands did not involve during ANC visits, women at young age groups compared with old age groups were less likely to use PNC services. (Table 12) Women whose husbands did not involve during ANC visits, women at higher education level and those who had one or no U5 year child during the recent pregnancy were more likely to use PNC services compared to their counterparts. (Table 12)

Among women whose husbands involved in ANC visits, women's age (young women), women's occupation type (being a housewife), and women with one or no U5 year child during the recent pregnancy were significantly associated with utilization of PNC services. Compared to women in the old age group (35-49 years), young women (between 15-24 year of age) were more likely to attend PNC services [aOR=10.4, 95% CI: 3.69, 29.4]. Whereas, among women whose husbands did not involve in ANC visits, women at young age group (15-24) and in the middle age (25-34 years) group were less likely to attend PNC services compared with women in the old age (35-49 years) group. (Table 12)

Table 12: Stratified logistic regression analysis by husbands' involvement status during antenatal care, for women's utilization of postnatal care with selected women's background characteristics, in Sideman Zone, Southern Ethiopia, 2015

Selected socio-demographic Characteristics of women	**Among women whose husbands involved in ANC (n=385)**		**Among Women whose husbands did not involve in ANC (n=279)**	
	Women's utilization of PNC services		**Women's utilization of PNC services**	
	COR (95%CI)	**aOR (95%CI)**	**COR (95%CI)**	**aOR (95%CI)**
Place of residence	P=0.586	P=0.838	P=0.052	P=0.288
Urban	1.13 (0.74, 1.72)	0.94 (0.54, 1.66)	2.69 (0.99, 7.30)	1.9 (0.59, 6.07)
Rural	1.00	1.00	1.00	1.00
Women's age (in years)	P=0.000	P=0.000	P=0.178	P=0.009
15-24	11.5 (4.95, 26.6)**	10.4 (3.69, 29.4)**	0.45 (0.14, 1.74)	0.04 (0.005, 0.4)*
25-34	2.31 (1.03, 5.14)*	2.47 (0.99, 6.14)	0.35 (0.11, 1.06)	0.17 (0.04, 0.80)*
35 -49	1.00	1.00	1.00	1.00
Women's Education level	P=0.053	P=0.085	P=0.052	P=0.022
Above secondary	1.80 (0.86, 3.79)	2.8 (0.98, 8.04)	5.13 (0.98, 26.9)	25.9 (2.0, 336)*
Secondary	2.03 (1.05, 3.92)*	0.78 (0.33, 1.80)	2.81 (0.56, 14.1)	9.02 (0.86, 94.9)
Primary	2.40 (1.28, 4.48)*	1.0 (0.46, 2.16	0.96 (0.17, 5.43)	2.27 (0.21, 24.9)
No formal education	1.00	1.00	1.00	1.00
Women's occupation type	P=0.002	P=0.003	P=0.446	P=0.435
Housewife	2.17 (1.14, 4.11)*	2.98 (1.25, 7.08)*	1.91 (0.24, 15.0)	4.18 (0.44, 39.7)
Businesswoman & others	0.46 (0.14, 1.53)	0.66 (0.16, 2.66)	3.86 (0.37, 39.8)	4.58 (0.38, 55.4)
Government	1.00	1.00	1.00	1.00
Religion	P=0.118	P=0.590	P=0.872	P=0.941
Protestant	0.68 (0.35, 1.33)	0.90 (0.42, 1.93)	1.48 (0.32, 6.73)	1.29 (024, 7.03)
Orthodox	0.60 (0.25, 1.45)	0.81 (0.30, 2.24)	--	--
Catholic	0.32 (0.12, 0.82)*	0.49 (0.17, 1.48)	2.4 (0.31, 18.7)	1.98 (0.23, 17.3)
Muslim	1.00	1.00	1.00	1.00
Number of U5 children	P=0.000	P=0.02	P=0.161	P=0.031
≤ 1	3.39 (2.16, 5.32)**	1.95 (1.11, 3.42)*	1.97 (0.76, 5.11)	8.6 (1.22, 60.9)*
>1	1.00	1.00	1.00	1.00

***P-value ≤ 0.001 and *p-value ≤ 0.05, indicate a statistical significance differences between of the two sub-categories of an indicated variable.*

5. DISCUSSION

5.1. **The magnitude and determinants of husbands' involvement in maternal health care**

In this study, a high proportion, 267 (47.7%), of husbands accompanied their wives to health facilities for skilled delivery care compared to the proportion, 174 (19.9%) and 66 (11.8%), of husbands accompanied their wives for at least one ANC visit and PNC visit, respectively. Despite no international target against which to benchmark [126], the observed proportion of husbands' involvement in this study was lower than the findings reported by other studies in Ethiopia (using EDHS-2011 data) [127], Nepal [115], El-Salvador [26], and studies in other Africa countries [5, 29, 104, 128]. The differences might be due to the variation in their definitions that used for husbands' involvement and the methodological differences, for instance, some of the studies were conducted in the context of HIV prevention activities during ANC visits [104, 128], while others in the routine care services.

Studies reported a huge disparity of husbands' involvement in maternal health care (i.e. by magnitude and levels) between low and high-income countries [115, 128]. For example, studies in western reported more than 90% of husbands' involvement in maternal health care [103]; whereas, studies in Africa reported 18% to 40% of husbands' involvement in maternal health care [102, 103].This could be explained by the socio-economic differences among countries.

The study also examined the relationship between husbands' involvement in maternal health care and the socio-demographic, maternal, and health systems' related factors using multivariate analysis. Among factors included in the multivariate analysis, seven factors such as place of residence, number of U5 year children alive, couples' communication, initiation of ANC visit, offering invitation letter to husbands, husbands' involvement in the previous ANC visit, and the walking distance from home to health facility were found to be significantly associated with husbands' involvement in at least two of the three routine care (ANC, delivery and PNC services).

The number of U5 year children alive during the recent pregnancy was the only factor that found to be a common predictor for husbands' involvement in the three routine cares (ANC, skilled delivery care, and PNC services). Husbands who had two or less U5 year children during the recent pregnancy were about three, two, and four times more likely to accompany their wives at least for one ANC visit, delivery care and PNC visit, respectively, compared to husbands with more than two U5 year children. This finding is consistent with studies on determinants of maternal health care utilization in Ethiopia [127, 129, 130]. The explanation for this finding is similar with the explanation given for the association between limited number of children in the family and women's utilization of maternal health services. This implies that couples with few numbers of children are more likely to discuss and jointly decide on issues related with maternal health care needs. It can also be easily understood that parents with fewer children lack experiences and, thus, seek more easily professional care [127]. Particularly, women's first deliveries tend to be more difficult than the later ones and that might motivate couples (and the ones to decide) for skilled maternity care. Moreover, it might be explained by the relationship between optimal birth spacing and utilization of maternal health care even though it needs further study.

Offering an invitation letter has also a strong significant contribution for husbands' involvement during ANC and PNC visits. Husbands who received invitation letters from the health providers were six times and three times more likely accompanying their wives at least for one ANC visit and PNC visit, respectively, as compared to their counterparts. It is consistent with the findings of studies in South Africa [29] and Uganda [33]. This could be due to the invitation that creates a good opportunity for couples' communication on maternity issues, as it has been reported to be positively associated with male involvement [131]. However, in many African countries, including Ethiopia, the health service organization for reproductive health, particularly for maternal health care, is still female-oriented and there are calls for creating men-friendly services [132]. In such context, if husbands were invited and easy gateways to health facilities, many husbands would participate in their wives' maternity care. Since studies point out that factors such as health providers' negative attitudes and lack of space to accommodate male partners are likely to contribute to men´s low participation in maternal health care [103]. Our finding suggests that the invitation letter for the husband to attend ANC and PNC services with the wives

should be made part of the package that a pregnant woman must receive (on her choice) after the first contact with maternal health care services.

Among the socio-demographic factors, place of residence was found to be a common predictor for husbands' involvement during ANC and skilled delivery care. Urban husbands were about three times and five times more likely to accompanies their wives during ANC visit and delivery care services, respectively, compared to their rural counter parts. However, the difference of their involvement during PNC visit was not statistically significant. This finding is consistent with other study in Ethiopia and other Africa country [50, 71]. This could be because urban men in Ethiopia tend to benefit from increased knowledge and access to maternal services. Since, many health facilities are more accessible and the health promotion programs that use urban-focused mass media work to the advantage of urban residents. On the other hand, rural husbands are more readily influenced by traditional practices that are contrary to modern health care [79, 82].

With regard to distance, the walking distance from home to health facility was found to be a significant predictor for husbands' involvement during ANC visits. This finding is consistent with other studies in Africa [11-104]. Husbands resided in areas less than five kilometer a walking distance (or $\leq$ 30 minute walking distance) from the nearest health facilities were 1.6 times more likely to accompany their wives for skilled ANC services compared to their counterpart husbands. (Table 4) This could be explained by the fact that husbands who reside far away from the health facilities might have a transportation problem and less likely to travel by walking on foot as alternative than husbands at a less distance to the nearest health facilities. This could also be explained in a similar way like that of the difference of husbands' involvement between urban and rural areas.

The observed relationship between husbands' involvement in the preceding ANC visits and their involvement in the later skilled delivery care and PNC visit was significant. Husbands involved during ANC visit were about two times and three times more likely to accompany their wives during skilled delivery care and PNC visit compared to their counterparts. This finding is compatible with the finding of a study in Nigeria [133]. This relationship could be explained by the fact that their ANC attendance helps in raising awareness on safe delivery care and gives men

a familiarity with the types of services and services' hours of postpartum care [50]. This imply that ANC visit is a good opportunity to invite husbands and provide messages in simple terms; for example, couples' counseling ANC session may help to avoid confusion when the couples come during the subsequent delivery and postnatal care visits [133].

A significant association between couples' communications and husbands' involvement during ANC and PNC services was observed in this study. Compared to husbands who had not been communicated on maternity issues, husbands who discussed with their wives on ANC and PNC issues were about two times and three times more likely to accompany their wives for ANC visit and PNC visit, respectively. This finding is consistent with studies in Nepal and Tanzania [115, 134]. It is a fact that positive couple's communications leads to a common understanding for joint decisions on health care issues [115]. This is supported by studies in Nepal that suggest couple's communication about RH services has a positive influence on couples' decisions about accessing maternal health services [115, 135]. According to a Nepalese study, women who discussed on their family planning options with their partners were more likely to receive antenatal and delivery care services [135].

The observed significant association between women's initiation of ANC visit and husbands' involvement during ANC visit was consistent with studies in El Salvador and Nigeria [26, 71]. Husbands whose wives initiated ANC visit in the first or second trimester of pregnancy were three times and two times, respectively, more likely to accompany their wives at least for one ANC visit as compared to husbands whose wives initiated ANC visit lately in the third trimester. This could be because women who initiated ANC visit as early as possible in the first or second trimester may have more number of (repeated) ANC visits (at least 4 visits as recommended). As a result, their husbands would have more chance to involve at least for one ANC visit. Furthermore, a woman with more exposure to ANC information could have more confidence to communicate and invite her husband to the services [134] even though it depends on the quality of ANC services.

5.2. **Barriers for husbands' involvement in maternal health care services**

Perceived social norm – a theme emerged from participants' responses–have an effect on husbands' involvement in maternal health care. Social norms are "... expectations held by social groups that dictate appropriate behavior and are thought of as rules or standards that guide behavior" [136]. The concept of men accompanying wives to ANC and PNC services is not yet accepted in the study communities. This is due to a socially constructed norm, particularly gender role norms and traditional view of childbirth that guide individuals and communities. For example, the gender roles norm in the studied communities influenced on the type of supports a husband provides to his wife during pregnancy, birth, and after birth. This is supported by other studies that mentioned husbands' perceived social-norm is an important factor that influence on his wife health care utilization as well as on his involvement in the services because of his close social relationships and decision-making power within the household [27, 137]. In the patriarchal system, men's role is predominantly in the public sphere of production and politics, while women's is in the domestic, household, and child rearing [137]. Moreover, the view woman in labor should be cared by women, which is entirely deep-rooted in the study community. Consequently, such social perceived norms hinder men's involvement in their wives' maternity care. [27, 115, 137- 140].

The influence of social norm on husbands' involvement in maternal health care is similar with the explanation to why a man is often responsible for making decisions about health care. For instance, husbands make decision for place of their wives' place birth with a support from his family or community pressures [10]. It is supported by a literature that explained how communication between partners is influenced by perceived social norms and how the motives, preferences, behaviors, and health outcomes can be affected [136]. For instance, in African context, women are likely to be responsive to their husbands' beliefs and opinions about pregnancy and delivery care than the reverse [10]. Thus, husbands' perceived social norms about maternal care and their good spousal communication have a strong relationship with their involvement in, and women's utilization of maternal healthcare [10, 105, 135, 141].

Women's unwillingness towards men's involvement during maternity care services was also an important factor that affects their husbands' involvement in maternal health care. In this study, women themselves were mentioned as a barrier to husbands' involvement in maternal health care. Participants, in this study, expressed that many women are reluctant to be with their husbands at health facility for ANC and PNC visits. Similar results have also been documented by studies done in Malawi and Ghana [27, 138]. A study in Africa reported that often women are embarrassed to be with their husbands in maternal health care services. Since, ANC services and other maternity care services are seen as "female" places. Some of the women reported that they do not like to be seen with their male partner attending ANC [138], and others mentioned the presence of their husbands at health care units makes difficult to express their feeling or opinion freely and honestly. As a result, many women are not willing to communicate their husbands when the health care providers invite them to come with their husbands during the subsequent antenatal care visit [27].

Husbands' attitude towards health facility-based care or health care professionals' services were mentioned as a major barrier for their involvement in maternal health care. Many husbands do not prefer health facilities for their wives' pregnancy care and birth. This is due to fear of unkind treatment from health care staffs that put off husbands from the health facilities. On the other hand, majority of the participants mentioned a positive or kindness manner of traditional birth attendants while providing the care. This preference to traditional birth attendants' care over the care provided by health staffs at health facilities could be a factor that hinders husbands' involvement in skilled maternal health care. Studies in developing countries also reported similar findings [68, 115, 142, 143].

An important reason for most husbands not involved in their wives' ANC, delivery care, and PNC visit *was men's lack of awareness*. In this study, almost all respondents mentioned that men do not know about how and when they involve in their wives' ANC and PNC services. Similar findings in Africa and Asia have shown that some men expressed ignorance and others did not understand why they had to be involved [27, 31, 105, 144]. A study in Cambodia reported that many men are not aware of why they need to be involved in SRH, how they can be involved, and what services are available for them and their partner [144]. Reproductive health literatures also

indicated the negative health beliefs men's retained is due to the overall lack of knowledge about maternal health care, which may attributed to husbands' lack of involvement in maternal health care. One possible reason is due to the absence of couple's oriented reproductive health campaigns [6, 145]. This implies that educating men about male's involvement in maternal health care is a crucial for their participation in their wives' pregnancy care.

Lack of practical guidelines on men's involvement for professionals was among the reasons reported for husbands' un-involvement in maternal health care. It was a major concern of health professionals in the study area. It is also consistently reported by other studies in Nepal and Kenya [115, 146].This implies that due to the absence of locally adopted national guideline for men involvement, the health providers may not confident to accept and implement in their facilities. For example, in Cambodia, men involvement program fail to implement due to absence of policies specifically refer to male involvement in RH services [144].

Further, it was common to hear about *the negative attitude of health professionals* among the main factors for low utilization of maternal health care services by both women and their husbands. On the other hand, the health workers mentioned that it is not their behavior but the way in which maternity care was provided to mothers was an important factor that prevents husbands' involvement in their wives' maternity care. 'The idea that maternal health care is for women' has been deep-rooted in many of health care providers. As a result, they do not allow husbands to participate during ANC, delivery care, and PNC counseling, which enhance men's banishment from the services. In contrast, the participants further mentioned the inhospitable and unreceptive words directed at women and their husbands from health professionals discourage men from accompanying their wives to health facilities. This is supported by the findings of studies in Asia and African countries [27, 115, 146]. A systematic review in developing countries reported a rude and unfriendly attitude of health care providers as a reason for low utilization of SBA services by birthing women [68, 143, 147]. Similarly, a fear of discrimination from health staffs is also reported as a reason for avoiding hospital birth [142].

5.3. **The association between husbands' involvement during antenatal care visit and women's use of skilled birth attendants during birth.**

The observed association between husbands' involvement during ANC visits and women's utilization of SBAs during birth was significant. Compared to women whose husbands' did not involve during ANC visit, women whose husbands involved at least for one ANC visit were about 6.3 times more likely to use SBAs' services during birth. This is consistent with the studies in Ethiopia [148], Kenya [149], Uganda [150] and Bangladesh [10, 141]. This could be because men who involved in their wives' ANC visits would have more information about skilled delivery care, and their knowledge on the benefits of using SBAs could be improved. As a result, they may have more tendency of a joint decision with their wives on delivery place. For example, a study in Ethiopia reveals that men respondents who decided jointly on attending ANC service were more likely to involve in decision on place of delivery [148, 150]. This implies that male partners' commitment and the presence of open discussion between partners may help them to decide on the use of SBAs.

Similarly, this finding reinforces the previous study' finding that show women were more likely to have better outcomes when their husbands directly involved in maternal health care by attending ANC visits and supporting during pregnancy. Since, husbands' concerns to pregnancy care and their knowledge about benefits of maternity care have positive influence on the utilization of maternal health services [10, 150]. Other studies also indicated that it is important to recognize the influences of others people (including partners) that are important determinants of women's delivery place [127, 141, 149].

Women's religion and number of U5 year children alive during the recent pregnancy were also found to be important predictors for women's utilization of SBAs during delivery. This finding agrees with the findings of studies in Africa and Asia [130, 141, 151-154]. Women who belong to orthodox or catholic religions were more likely to use SBAs during birth compared to Muslim women. This may be due to the influence of religious practices that influence the women to attend TBAs, at home. Usually, they freely practice religious ceremony (group praying) while a woman in labor at home. With regard to number of U5 year children, women's who had none or

single under five year children during the recent pregnancy were 2.5 times more likely received SBAs' services during birth compared to women's who had more than one under five year children. The possible explanation for this finding is similar with the explanation given above for its association with husbands' involvement in maternal health care.

The number of ANC visits attended by women and the pregnancy intention were also found to be the important predictors to women's utilization of SBAs during delivery. This is consistent with the findings of other studies in Africa including Ethiopia, and Asia [127, 130, 135, 143, 155-160]. Comes to the number of ANC visits, even though it shows a significant association with use of SBAs during birth, it is suggested that not only the quantity but also the quality of ANC services that may influence the care seeking during birth [161]. Although data on quality of ANC service were not included in this study, a study in Africa shows that women with the highest focused ANC index scores (i.e. a woman received more care in terms of both quantity and quality) were more likely to use SBAs during birth than women with lowest scores [161]. This implies that the quality and quantity of ANC have major impact on skilled care seeking, including in an area where women have a strong preference to use TBAs.

With regard to pregnancy intention, women whose pregnancy was planned were more likely to use SBAs during birth compared to women with unplanned pregnancy. This is consistent with studies in South and South-East Ethiopia [76-79] and Kenya [143, 147]. This is easily explained by the fact that those who had planned pregnancy will have a higher intention or expectation of getting a healthy birth outcome, so they are more likely to obtain skilled birth attendants services during birth.

5.4. **The association between husbands' involvement during antenatal care visit and women's utilization of postnatal care services**

The observed association between the presence of husbands during the preceded ANC visit and women's utilization of PNC services, in this study, was strong and significant. It is consistent with the findings of two studies in Nepal [115, 162]. Women whose husbands accompanied to the health facility at least for one ANC visit were seven times more likely to receive PNC

services compared to women attended ANC visits alone. This is explained by the fact that husbands who involved during ANC visit may get information about the available type of services, their benefits, and the working hours in a particular health facility. Moreover, husbands' perception, imagination, and understanding about the services could be improved through attending couple's ANC education sessions as partners or through communication with other clients. Subsequently, those husbands- as a decision maker, partner, and father –more likely to be responsible for their wives' pregnancy, and they may promote and support their wives to follow the continuum of pregnancy care (ANC, delivery care and PNC). When couples' communication and interaction regarding to health practices increase, there would be a greater understanding and retention of new information by individuals [115,162-164].

Similarly, studies in Nepal show that husbands' participation during ANC education sessions and the increasing awareness about attending the recommended four ANC visits can have a positive effect in increasing institutional deliveries and PNC services [162, 165]. A study in Sudan also shows that when husbands were encouraged to be involved in the RH care services, they support their wives to start using RH care service [164]. Another studies in African and Asia also show that the contribution of men by attending more ANC visits to reduce risk health behaviors and do more birth preparedness in case of pregnancy complications [22, 137, 163-165].

With regard to background characteristics, the findings of a stratified multivariate analysis showed a significant association between the three explanatory variables (women's age, education levels and occupation types during the recent birth) and women's utilization of PNC services. Young and higher-level educated women were more likely to attend PNC service compared to their respective reference categories (older women in the age 35-49 years and women without formal schooling, respectively). The observed association between women's education level and use of PNC services is consistent with the findings of other previous studies in Ethiopia [76], Nigeria [71], Nepal [162], and West-Bank [166].In contrast, recent studies in Ethiopia reveal insignificant association between PNC utilization and the three socio-demographic characteristics (age, education level and occupation type) of the women [167-172]. This variation could be due to the differences in methodology and study context, which a large-scale study may need to fill this gap.

One possible explanation for high utilization of PNC services by young women may be due to the improved awareness and positive attitudinal change of young women (the new generation) towards modern health practice compared to women in the old days. This may be because of the widening information network in the country that made many young women accessible to health care information through different media sources, such as radio, television, and mobile phone. Moreover, young women can easily adapt new technology than the older groups. Another possible explanation could be due to the confidence they developed through the experience and knowledge of the previous pregnancies and births, many older women become less motivated to go through the formalities in the health institutions. So, they may delivery at home, and consequently, they may not receive PNC services. This is also consistent with other studies in Ethiopia [76, 78]. However, it also needs a more analytical study to fill the gaps.

The observed relationship between women's education level and PNC utilization could be explained by the fact that education helps woman to develop her autonomy and greater confidence and to have a capability of making decisions about her own health. It is believed that educated women are more likely to look for quality services and have more capability of using health care inputs that offer better care [170]. Moreover, education could create more access to get information from different sources [76, 170, 171]. In contrast, the association between PNC utilization and women's educational status, in other studies in Ethiopia, is not significance [76, 167]. This could be due to the methodological and contextual differences among the studies, which may needs further large-scale study.

The observed association between women's occupation type and their utilization of PNC service, in this study, was significant. Compared to women who were a government employee, women who reported their work type as a housewife were more likely to use PNC services. In contrast, the findings of previous studies in Ethiopia show insignificant association between women's occupation types and use of PNC services [76, 167-172]. This variation could be due to the methodological and contextual differences between the studies, which may needs a large scale study to fill the existed gaps.

6. METHODOLOGICAL DISCUSSION

6.1. Validity and generalizability

6.1.1. Internal validity

Internal validity refers an absence of systematic error that causes the study findings to differ from the true values as defined in the study objectives. Systematic error can result from inaccurate measurements of study variables, non-uniform recruitment, or retention of study participants, or comparisons of groups that differ in unknown but important characteristics [123]. Most violations of internal validity can be classified into three general categories of bias, which are confounding, selection (sampling) bias, and information (misclassification) bias [173, 174]. They are the most problematic forms of bias in medicine [174].

A. Selection bias

Selection bias refer when study results become distorted by selection process. The major potential causes of selection bias in cross-sectional studies are bias due to non-response or unrepresentative sampling. Non-response bias is also a bias due to lost to follow up subjects that may affect the study findings, particularly the observed prevalence [123, 173].A common problem encountered in household health surveys, which is due to the non-compliance of people who have scheduled interviews at their homes. The most valid way to manage the problem of non-response is to try repeatedly to visit or call the non-responders at their homes. If this is unsuccessful, the most appropriate way to manage the nonresponsive subjects is to include them as unknown in the data analysis [174].

In the current studies (in both cross-sectional and follow-up studies), individuals were re-visited repeatedly for three times to their home during data collection period. However, it was not successful to trace all the lost subjects during data collection period. As a result, the non-response rates in the population survey and cohort study were 4.6% and 6.4%, respectively. The reason given for lost to follow up was that the respondents displaced from their place during follow-up time. Finally, they were considered as missing data for analysis.

An alternative way to manage selection bias due to non-responses requires avoidance of systematic differences in rates of missing data. In the current studies, the investigators applied the above alternative mechanisms to manage the problem of nonresponsive bias. Further, an analytic procedure, such as sensitivity analysis, was applied to reduce the bias from non-response (inability to enroll participants) and attrition (loss of participants following enrollment) [174]. In the analytical procedures, baseline difference (and systematic difference) between the noncompliance and compliance groups was computed. Interestingly, the observed difference was not statistically significance (P>0.05).

The internal validity of a cohort study primarily depends on selection of exposed and non-exposed (control) groups; and the major sources of bias, in cohort study, are selection bias and information bias [173]. The common potential causes of selection bias are loss-to-follow up and recall bias. The effect of loss to follow up is significant if loss is related to exposure, outcome or to both, or if the proportion is large in one than the other group. If losses to follow up are large, the study loss its power, as well as its usefulness is limited [173]. However, selection bias is regarded as a greater danger in case-control than in cohort studies. Because, in cohort studies the investigators generally knows how many and which participants were lost to follow-up, so that they can assess the potential extent of bias. The investigators can also often examine baseline characteristics of participants who are lost to follow-up for indications that attrition is uniformly distributed and therefore less likely to result in selection bias [174].

To manage the problems of selection bias in the follow up study, the selection of exposed and unexposed (control) groups were done using the same selection technique (random selection) and from the same source population. Moreover, they were categorized into exposed and unexposed groups based on follow up assessment using multiple approaches (observation, record review at ANC clinics, and by using repeated individual woman's interview for two times).Moreover, the baseline characteristics of the two groups (non-exposed and exposed population) were compared to identify and control the effects of variables that differed between the two groups. Although all the non-compliance subjects were from unexposed group though their baseline characteristics were not significantly different from the compliance groups (P >0.05).This was done using information of the non-compliance subjects that recorded during the initial assessment period.

Another option was also to get information on loss to follow up from other sources and examine previously collected data to determine whether there are systematic differences between the losses and follow up or indirectly calculate exposure-outcome association, assuring extreme outcomes [173].

Another type of selection bias is recall bias, which is the most common problem in cohort study. In order to manage this type of bias in the follow-up study, study subjects (pregnant women) were asked (interviewed) about their recent/current events (pregnancy, delivery, and PNC conditions). Therefore, it was not a problem in the current studies.

B. Information/measurement bias

Information bias refers a distortion that results from inaccuracies in the measurement of subject characteristics, and incorrect classification there from [174]. Some types and sources of information bias are bias in abstracting records, bias in interviewing, recall bias, and reporting bias. The sources of information bias, particularly because of a survey, are entirely dependent on the measurement applied in the study, which include observer or interviewer bias, recall bias, and unacceptability bias.

The observer or interviewer bias is bias due to the manner in which interviewers ask questions. [123, 173]. Bias due to differentials in the memory capabilities of sample subjects may cause risk-factor exposures to be under- or over-reported, which is called *recall bias*. Another type of information bias is *unacceptability bias*, which is when patients often replay to an interviewer's questions with "desirable" answers regarding dietary, drug, exercise, behavioral, and recreational habits, resulting in understated measurements of many risk factors [174].

The main principle to avoid information bias is to ensure that the same methods are used under the same circumstances by the same data collectors for all subjects involved in the study. Similarly, in the current studies, data were collected from the study subjects using similar data collectors with similar profession and data collection experience, and using the same method under the same circumstances and period [174].

Moreover, various actions, starting from questionnaire designing to data analysis, were applied to reduce the role of bias like information or measurement bias (See data quality assurance). For instance, to reduce the problem of interviewer and other measurement biases, the questionnaires were adapted from standard data collection instruments. Moreover, the data were collected by educated and experienced data collectors and supervisors who had got intensive training for three days. Husbands were interviewed about their wives' recent pregnancy and birth information in a year preceding the survey so as to reduce *recall bias* in the current study. Further, the data collectors clearly explained to participants about the purpose of the study and the procedures or ways of study subjects' selection for a particular study. This helped to reduce the problem of unacceptability bias in this study.

Besides the above measures we took, exposure and outcome measures were ascertained in the cohort studies using multiple methods (observation, record reviews in ANC clinic, and using repeated interview of women for two observations). Firstly, the exposure status of study subjects was ascertained at two points in time: during initial assessment and on their last ANC visit schedule. This was done by the same data collectors through interviews as well as follow-up observation at ANC clinics. Secondly, the outcome ascertainment was also done by the same data collectors through interviewing the women, using record review as well as follow-up observation of the event on the spot.

C. Confounding

Confounding variable is a third factor that alter the true association between the exposure and outcome, because it has a relationship with both the dependent and independent variables that either mask or potentiates the effect of the variable under study [175]. Confounding is one of the most important problems in observational epidemiological studies [175]. The issue of confounding can be addressed either in designing stage or in analysis of the data. During the design stage, confounding can be controlled by using randomization, matching, and restriction. Alternatively, in the data analysis stage we can handle the problem of confounding using stratification, adjustment, and multivariate analysis [173-175].

The common potential confounding variables in epidemiological studies are socio-demographic factors such as age, gender, education, occupation, etc [173]. In the follow up study, women's socio-demographic characteristics and maternal factors were considered as the potential confounding factors. The problems of these confounding factors in the current studies were managed during the analysis. Stratified analysis and multivariate analysis was done to examine and control the potential confounding variables. In addition, tests for effect modification (interaction among variables) were done for the suspected variables [173, 174].

The role of chance was also managed in this dissertation by using adequate and representative samples. Since, sample-size or power of the study could affect the validity of a study. Moreover, the effect of 'chance' was detected using a confidence interval or p-value, which are dependent on the size and the power it exerts. Thus, to reduce the role of chance, the study should use the minimum sample-size that could bring a statistical significance. However, some of the categories of independent variables in the multivariate analysis were observed with small sample size. In such circumstances, very small categories were re-categorized by merging or excluding from the analysis [174, 175].

6.1.2. **External validity (generalizability)**

External validity refers to the extent to which a study's findings apply to populations other than the one that was being investigate. Generalizability to populations beyond the target population for which the study was designed and/or beyond the circumstances implicit in the study is a matter of scientific inference, rather than a technical or statistical question [175]. An analogous term, which evaluates whether findings are transferable to another context or to the same location at a future time in qualitative study, is known as "transferability" [176, 177].

Among the factors that affect external validity of a study are the study setting (i.e. the differences in agro-ecological zones and place of residences- urban or rural), the characteristics of the source and study population, and the study conducted time or year or season. In addition, the factors that affect the internal validity also affect the external validity. With regard to the *study setting*, the study used a random sample of subjects from all (three) agro-ecological zones based on their natural composition including urban and rural residences. Similarly, all the study population was

selected from *the same source population* who have similar socio-cultural profiles in the zone. Likewise, the studies were conducted within similar seasons of a year. Therefore, the findings can reasonably be informative about the utilization of skilled maternal health care and determinant factors in other settings of the zone, and the findings could be transferable to others areas with similar contexts.

6.2. **Strengths and limitations of the study**

A. Strengths

One of the major strengths of this study was the use of mixed methods (both quantitative and qualitative methods), which helped us to understand the phenomenon in different dimensions. Since both the quantitative and qualitative approaches have their own limitations, mixing the two has a likelihood of producing a complementary effect. It could facilitate a comprehensive understanding from multiple perspectives, and it produces a composite picture of the reality. The study used both population-based and institutional-based data from adequate sample size of study participants. This increases the validity of the findings and the results of a large sample size represent the whole area of the zone. Moreover, the non-response rate, because of careful data collection, was also relatively low. Further, this study, as stated above, used different mechanisms to manage the problems that could be caused by selection bias, information bias, and confounding. To reduce recall bias, respondents were asked about their recent events. Moreover, 41% of the husbands with their wives were observed by the data collectors at the health facilities. This helped the study to ascertain the exposure status of subjects.

As to the investigators' knowledge, this study was the first in kind in the region to determine the relationship between husbands' involvement in ANC services and women's utilization of skilled maternal health care services. Furthermore, the phenomenon in question has been explored quite widely from both men and women perspectives; and a look has been taken at three dimensions of maternal health care utilization (ANC, delivery care and PNC) by including important variables.

B. Limitations

In spite of all measures to insure the quality of the data, this study cannot be free of limitations. There were a number of limitations throughout the process of the study. One limitation of this study is its cross-sectional nature, which made unable to conclude the cause and effect relationships. However, there are some arguments on a cross-sectional study that able to test causal relationships between variables using a two-stage least-square regression method [174].

Regarding to the study variables, the incompleteness of some important socio-demographic variables and type of family (modern or extended) may affect the findings of the analysis. For instance, data on household income and access to services such as a walking distance to the health facility were the estimated measures rather than direct measures from respondents' residence. Further, the reliability of men´s responses can be questioned to some extent as the study objects were asked about events they might not have participated themselves. Especially, the numbers of ANC visits may be difficult to remember if the man has not been present himself.

Another important weakness of the study regarding to stratified analysis was small number of representatives in some classes. This problem was pronounced with variables such as religion, ethnicity, and occupation that had appeared to be only small representatives. Consequently, the odds ratio could not be computed or the confidence interval resulted very wide. To solve this problem, we tried to re-categorize the groups by merging the small groups together.

The other limitation was that the study did not consider the effects of other family members who accompanied the women to ANC check-up in the analysis. This might be a potential selection bias, since the enhanced knowledge that seen in women by receiving education with their husbands in this study might be seen if another individual important to the woman is present. So, we suggested to other studies to fill this gap. Another possible problem in this study may be social desirability bias in favor of their husbands' involvement in ANC service. Further limitation of this study was the data on health service quality were not included. Therefore, we suggested further large-scale study on the same topic by including these important data.

7. CONCLUSIONS

- The proportion of husbands who accompanied their wives for delivery care services exceeded than the proportion who accompanied at least for one ANC or PNC visit. However, husbands' involvement status in maternal health care services, in general, in the study areas were lower than the findings of other studies in African countries.
- Among the variables included in this study, factors such as number of U5 year children alive during the recent pregnancy, offering invitation letter to husbands by health providers, experience of husbands' involvement in the first phase of care (during ANC visits), couples' communication on maternal health care issues, women's initiation of ANC visit, and place of residence have significant contribution to husbands' involvement in maternal health care services.
- The positive effect of husbands' involvement during ANC visits on women's use of SBAs during birth and PNC services, in this study, pointed up than the independent effect of women's socio-demographic characteristics had.
- Place of residence, religion, number of U5 year children alive, pregnancy intention, and number of ANC visits during the recent pregnancy were found to be significant predictors of women's utilization of SBAs during birth.
- Women's education level and frequency of ANC visits were found to be significant predictors of women's utilization of PNC service.
- Moreover, respondents in the qualitative study reported cultural norms, attitude of men and women, lack of awareness, absence of standard guideline of men's involvement, and health professionals' attitude were reported among the main reasons for un-involvement of husbands in maternal health care services.

8. RECOMMENDATIONS

A. Policy and program recommendations

- The Federal Ministry of Health together with Regional, Zonal, and Wereda Health Offices should take steps to make available "husbands' involvement in maternal health care" program at each level of health facilities, particularly for rural men and women, by:
  - Developing and executing a contextual based national guideline of men's (husbands) involvement in maternal health care program.
  - Planners of maternal health programs should develop contextual-based approaches that promote husbands' involvement in maternal health care at wereda, zone, and Regional levels.
  - The reproductive health policy need to mainstream male involvement in the routine maternal health care services; and such policies should address husbands' roles and constraints, as well as educational component to sensitize men to the benefits of their involvement in pregnancy care and outcomes.
  - Promote women's education at higher levels and their use of family planning services.

- The regional health bureau together with zonal and wereda health bureau should take steps to raise the magnitude of husbands' involvement in maternal health care services through:
  - Awareness creation activities on the importance and benefits of male involvement in maternal health care services.
  - The involvement of the village health teams and community leaders in reaching out to men and encouraging their involvement in maternal health care services
  - Ensure the availability of adequate services, skilled providers, spaces, and materials at the health facilities.
  - Improve the health workers attitude towards men who accompany their partners for maternal health care services.

B. Recommendations at health facility levels

- Issuing of invitation letters for men to attend maternal health care services with their partners; designing messages that specifically target men who accompany their spouses for maternal health care services; and encourage health professionals to invite husbands for maternity care services based on women's interest.
- Initiate or strengthen provisions of couples' counseling services during ANC, delivery care and PNC services; so as to strengthen postpartum family planning services, couples' communication and joint decision on use of maternity care services, as well as to provide a continuum of maternity care services for the couples.
- The health institutions should have a well-organized couple's ANC counseling sessions at least once after the first ANC visit of a pregnant woman, based on her consent.
- The couples' ANC counseling sessions should address benefits of skilled maternal health care services including the benefits of repeated ANC visits (four and above visits per pregnancy), postpartum family planning services and planned pregnancy.

C. Recommendations at community levels

- Raising awareness about husbands' involvement in maternal health care through mass media, religious leaders, and community elders should be done in the study areas.
- Promote husbands' involvement in their wives' ANC visits by targeting, particularly, a large proportion of rural women and young women.

D. Further researches

- A study to establish factors that motivate male involvement in maternal health care services would further strengthen strategies for improving male involvement in maternal health care services.
- Intervention studies targeting specific types of couples' education sessions are mandatory.
- Moreover, evaluating intervention strategies like home-based couple's counseling service by skilled providers could be future research directions.

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11. Appendices

Annex 1: Original Papers

Paper- I

Husbands' involvement in maternal health care and its determinants, in Sidama Zone, Southern Ethiopia: A Community-Based Cross-Sectional Study

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Abstract

Background: Husband involvement is an important intervention for improving maternal health. However, it is understudied in Ethiopia. The aim of this study was to assess magnitude and factors affects husbands' involvement in maternal health care, in Sidama Zone, Southern Ethiopia.

Methods: We used a community-based cross-sectional design, which included a sample of 1318 randomly selected husbands. Data were collected using interview questionnaires and analyzed by using SPSS version-20 Software. A bivaraite and multivariate analysis were used to calculate crude odds ratio, and adjusted odds ratios by controlling the effect of potential confounders. We used 95% confidence levels to determine the level of significance.

Results: Husbands who accompanied their wives for skilled antenatal, delivery, and postnatal care, in this study, were 19.9%, 42.7% and 11.8%, respectively. The results of multivariate analysis shows that offering an invitation letter (aOR 6.1, 95% CI: 4.0, 9.1); having less than three under five years children (aOR=3.3, 95% CI: 2.1, 5.1); and early initiation of ANC visit (aOR 3.0, 95% CI: 1.3, 7.0) were significantly associated with husbands accompanying wives during antenatal care visits. Place of residence (aOR 4.8, 95% CI.: 2.4, 9.4); husbands accompanied their wives at the preceded ANC visit (aOR 2.1, 95% CI: 1.3, 3.4); early initiation of ANC visits and having less than three children were significantly associated with husbands accompanying their wives for skilled delivery care. Having less than three children (aOR 3.8, 95% CI: 1.5, 9.5); offering an invitation letter to husbands (aOR 3.3, 95% CI: 1.3, 8.0); husbands accompanied their wives in the precede ANC visits and couples' communication on postnatal care were significantly associated with husbands accompanying wives for postnatal care visits.

Conclusion: The proportion of husbands involved in maternity cares service, in this study, was low. Among the factors, offering an invitation letter to husbands, number of under-five children during the last pregnancy, husbands' involvement experience in the preceding ANC visits, couple's communications, women's initiation of ANC visit, and place of residence were found to be significantly associated with husbands' involvement in maternity care services.

Keywords*: Husbands, Men, Partner, Maternity care, Involvement, Ethiopia*

1. Background

Globally, the interest of involving males in reproductive health had been growing among health professionals in the last few decades [1, 2]. In 1960s-1970s, health services in Western countries encouraged men to participate and taking a more active role for their partners' maternity care [2]. However, the concept of male involvement in reproductive health programs was first declared in the 1994 International Conference on Population Development (ICPD), in Cairo, Egypt [3, 4].

Male involvement is considered as an important intervention for improving maternal health [5]. In many developing countries, men are the key decision-makers and chief providers, often determining women's access to economic resources. This practice has implications for maternal health as it determines the nutritional status of women during pregnancy; women's access to maternal health services; and women's chances of receiving emergency obstetrics care, which is vital in averting maternal mortality [6].

The men's functioning as a partner, a father, and a support person is central to the lives of the mother and the baby. A father can contribute significantly to their well-being even under the most difficult circumstances; and if his support is not forthcoming, this represents a significant deficit for the family [7]. Many literatures have investigated the significance of fathers' early engaging on pregnancy, labor, and postpartum care [1, 4, 6-8]. Those studies found that father support during labor promotes mother well-being in the future, and enhances his attachment to the upcoming baby; as a result, the fathers who were given the chance to participate in the labor process reported more satisfaction in their experiences.

Many other studies have also reported positive benefits of male involvement in maternal health in developed and developing countries, which include increased maternal access to antenatal and postnatal services; discouragement of unhealthy maternal practices such as smoking [8]; improved maternal mental health; increased likelihood of contraception usage; and allayment of stress, pain, and anxiety during delivery [7]. Furthermore, there are multiple studies that explore men can encourage their wives to attend and accompany them to antenatal care, help prepare and

save money for delivery, and arrange transportation to the birthing center, among other responsibilities [9-12].

In spite of these facts, African fathers are not given the opportunity to attend ANC and PNC services; particularly they are not always encouraged to engage during labor. Since, some cultural norms and practices are stop father involvement during labor [2]. Throughout sub-Saharan Africa, the area of pregnancy and childbirth is still considered the responsibility of the woman. Therefore, it is rare to see men accompany women to ANC, PNC and be present for delivery [4, 13]. This exclusion of men from maternal health care services could lead to few women seeking maternal health services and as a result worsening the negative maternal health outcomes for women and children [2, 4].

Although the context in Ethiopia is similar to those of sub-Sahara African countries, to date there is no research-based data that shows the level of husbands' involvement in maternal health care in Ethiopia in general, and in Sidama zone of southern Ethiopia in particular. Bringing to light the existed status of husbands' involvement in their wives' maternal healthcare would be important for program planning and policy makers to deliver quality man-friendly (or couple's-friendly) maternal health care. Therefore, the aim of this study was to determine the proportion of and contributing factors to husbands' involvement in their wives' maternal health care in Sidama zone of southern Ethiopia.

2. Methods

2.1. Study area and population

The study was conducted in eighteen kebeles of Sidama zone, Southern Ethiopia, from December 2014 to January 2015. A kebele is the smallest administrative unit in Ethiopia, which comprise approximately 1000 households [14, 15]. Sidama zone is one of the 15 zones of Southern Nations Nationalities Peoples Region (SNNPR), which are divided in to twenty-one woredas (sub-districts) [14]. It is characterized by three geo-ecological zones: the lowlands, the midlands, and the highlands, which comprised 20%, 50%, and 30% of the population, respectively, [14, 15]. The total number of population in the zone was 2,966,652; of which, 6.7% are urban inhabitants [14-16]. The total households enumerated were 592,539 [14, 16].Women of the reproductive age group (15-49 years of age) and children under-one-year of age were estimated to be 23% and 3% of the total population, respectively [16]. In 2014/15 E.C., the zone had seven primary hospitals, one general hospital, 127 health centers, and 524 health posts. According to 2014 Mini-EDHS report, skilled ANC, delivery care and PNC (within two days after birth) coverage of the region (SNNPR) in the five years preceding the survey were 39%, 11.7% and 11.1%, respectively [17].

Study design and sample size

A community-based cross-sectional survey was conducted to assess the magnitude of husbands' involvement in skilled maternity care services. The sample size was computed using a single population proportion sample-size formula:

$$Sample\,Size = \frac{Z^2 P(1-P)}{d^2}$$

We assumed 95% confidence level, 5% alpha (α) and a 40% proportion for ANC mothers who accompanied by their husbands for skilled ANC visits, from a study in urban Nepal [18]. However, majority of our study areas were rural communities, and we assumed that the proportion of ANC mothers accompanied by their husbands for skilled ANC visits for rural women is lower than the urban areas. Therefore, to get adequate sample-size for our analysis, we used a 4% degree of precisions (*d).*

$$n = \frac{z^2 \times p \times q}{d^2} = \frac{(1.96)^2 \times (0.4)(0.6)}{0.04^2} = \frac{(3.8416) \times (0.4) \times (0.6)}{0.0016} = \frac{0.921984}{0.0016} = 576$$

The estimated sample size, using the above-mentioned formula yields 576; then we considered a design effect of two and a 20% non- response rate for face-to-face interviews with men; then, the final sample-size became 1382.

Sampling procedures

A simple random sampling technique in a form of two-stage sampling method was employed for selecting the required sample size of eligible participants from the study areas. The list of all kebeles (rural and urban kebeles) in the zone was taken from the concerned office. The rural kebeles were stratified into the three geo-ecological zones. The total sample size was divided for each of the three strata proportionally to their population size (20% for lowland, 50% for midland, and 30% for highland). From each geo-ecological stratum/zone, six rural kebeles (eighteen kebeles) and three urban kebeles were selected at random. Again, each stratum's sample-size was distributed to the six kebeles proportionally to the expected number of less than one year children in the respective kebeles (based on the assumption that 3% of the population size in SNNPR is contributed by children under-one year of age) [14, 15]. Then, we identified 1403 households with less than one-year children during the survey and prepared a list of those households from 18 kebeles. However, twenty-one households were excluded because no husbands in the house due to different reasons (seven divorced, five widowed, six woman left behind, and three of the pregnancy were before marriage). Finally, all eligible households (1382) were included in the study. Then, for data collection purpose, every household was given an identification number based on their addresses, from the HEWs' registration books (family folders). The schematic presentation of the sampling method is given as follows:

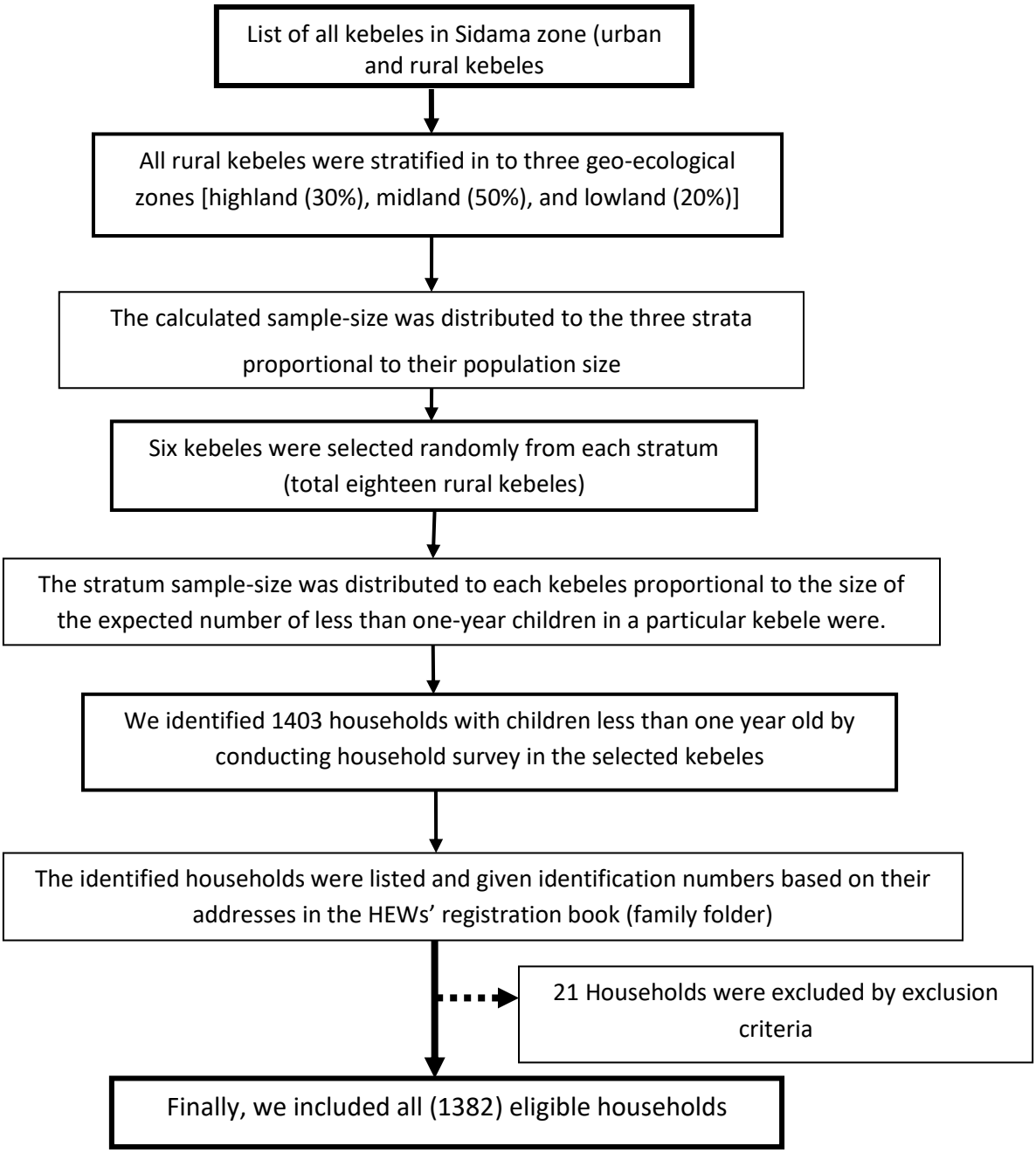

Figure 1: Schematic Presentation of the Sampling Method for the Study

Data collection

A pre-tested structured interview questionnaire was initially developed in English; then translated into the Amharic language. Data were collected on socio-demographic characteristics, on husbands' experiences in maternity care services; and about maternal factors (women's history of antenatal, delivery, and postnatal cares). Twelve trained nurses and health officers (bachelor degree holders), and five data collection supervisors (master degree in public health) who are fluent both Amharic and Sidamu_Affoo languages conducted the interviews with husbands (male partners) at a place around the respondents' home. Identification number (ID) for each selected household in the specific kebele was given. The HEWs were the one who guided the interviewers to each selected household at that particular kebele based on their ID numbers. During the interview, women's utilization of ANC and PNC services (including the initiation and number of visits) in their last pregnancy were confirmed by checking the women's ANC cards and family planning/vaccination-cards, respectively. The woman's place of birth was ascertained from the written information on HEWs' registration books.

Operational Definition

Husband's involvement, in this study, is defined as when a husband (male partner) accompanied his wife to health institutions for at least one ANC visit or PNC visit, or for delivery care service during his wife's last pregnancy and recent childbirth.

Study variables

The *main outcome variables* of this study were three; these are a husband accompanied his wife for at least one: (1) skilled ANC visit, (2) skilled delivery care, and (3) skilled PNC visit. These outcomes were ascertained by asking the husbands (have you ever accompanied your wife to health facility for ANC visits or PNC visits, or for delivery services during the last pregnancy or recent childbirth; Yes/No). The *independent variables* were husbands' socio-demographic characteristics; economic, cultural, and health system factors; and maternal factors such as past obstetrics history of women, and number of under five year children during the study time.

Data Analysis

Before the data was entered to the computer, we checked the completeness of the data (responses) in the interview questionnaires. The data was entered, cleaned, validated, and analyzed using SPSS version-20. Continuous variables were summarized using range, mean, and standard deviation. Univariate analysis presented as proportion and percentage. A bivariate analysis was carried out by calculating the Crude Odds Ratio (COR) and 95% Confidence intervals (CIs). The independent variables that had significant values in bivariate analysis were entered into multivariate logistic regression analysis model and the adjusted Odd Ratios (aOR) with the corresponding 95% C.I. were obtained. The level of significance was set when the range of 95% C.I. does not include one for particular parameter.

Ethical considerations

Ethical approval for the study was obtained from the Institutional Review Board of the College of Health Sciences at Addis Ababa University (AAU). Permission for the study was obtained from the Regional Health Bureau, Zonal Health Department, and wereda Health Offices. Informed/verbal consent was obtained from respondents prior to commencement of the interviews. The content of the consent form was translated into local language (Sidamu_Affoo for Sidama ethnic group and Amharic language). For those who read we gave the consent form to read; otherwise the data collectors read the consent information for those who unable to read. The consent information included about explanation of the purpose of the study, confidentiality of individual information and absence of any hazard due to their participation or not.

Results

Characteristics of the respondents

Of 1382 respondent men, 1318 (95.4%) were give complete responses to the interview questionnaires. The analytic sample for the three independent outcomes was restricted to all husbands who completed the questionnaires for ANC, delivery care and PNC services. The age of respondents ranged from 23 to 55 years (with mean 34.3 years and Standard deviation ± 6.18). About 52% of the husbands were below 35 years of age and 36% reported that they had less than three under 5 year children during the study time. About 82% and 86% of the respondents were Protestant Christians and from Sidama ethnic group, respectively. The others respondents were from Orthodox (12.1%), Catholic (1.1%) and Muslim (5.2%) religions groups. The others ethnic members were those ethnic groups with a small in number in the study areas, which accounts 6% for Amhara, 3.6% for Guragie, 3.3% for Oromo, and 0.6% for Wolita. The proportion of respondents who were government employee was 25.6%, and the remaining were farmers (50.1%), businessmen (20.6%), and religious leaders (3.7%). (Table 1)

Table-1: Socio demographic characteristics for the respondents in Sidama Zone, Southern Ethiopia, 2014/15

Characteristics	n (%)
Place of residence	
Urban	158 (12)
Rural	1160 (88)
Age in years	
< 30	275 (20.9)
30-34	413 (31.3)
35 and above	630 (47.8)
Ethnicity	
Sidama ethnic	1140 (86.5)
*Others ethnic group	178 (13.5)
Occupations	
Farmer	660 (50.1)
Businessman& others	321 (24.4)
Government employed	337 (25.6)
Education level	
No formal education	370 (28.1)
Primary education	513(38.9)
Secondary & above	435 (33.0)
Religion	
Protestant Christians	1076 (81.6)
**Others religion	242 (18.4)
Total	1318

**others ethnic group: included Amhara, Guragia, Oromo& Wolita.*
***others religion: included Orthodox, Catholic & Muslim religions.*

Husbands' involvement in antenatal care, delivery, and postnatal care services

The result of this study shows that among 1318 respondent husbands, 66.3%, 47.5%, and 42.6% of their wives received skilled ANC, delivery care, and PNC services, respectively, in the health facilities, before the beginning of this study. The proportion of husbands, among those whose wives attended skilled ANC, PNC and delivery care service, who accompanied their wives to the health facilities for at least one skilled ANC visit, delivery care services and PNC visit were 19.9%, 42.7% and 11.8%, respectively.

Factors associated with husbands' involvement in antenatal care services

Bivariate regression analysis

The findings of bivariable analysis in table 2 shows that the number of U5 years children during last pregnancy (<3 versus ≥3 children; COR 2.6, 95% CI: 2, 4), offering an invitation letter to a husband for ANC visit (COR 3.6, 95% CI: 2.5, 5.0), women's initiation of ANC visit (at 1st versus 3rd trimester, COR 6.5, 95% CI: 3.2, 13.0; and at 2nd versus 3rd trimester, COR 2.6, 95% CI: 1.7, 4.0) and couples' communication on ANC issues (COR 2, 95% CI: 1.4, 2.7) were significantly associated with a husband accompanied his wife at least for one ANC visit.

Regarding husbands' background characteristics, place of residence (urban vs. rural, COR 3.1, 95% CI: 2.1, 4.7), young age (< 25 years versus 35 years and above, COR 2.4, 95% CI: 1.6, 3.5), educational status (secondary education or above versus no formal education, COR 2.8, 95% CI: 1.7, 4.6), occupation type (farmer versus government employee, COR 0.3, 95% CI: 0.2, 0.5) and distance to health facility (<=5 km versus >5 km; COR 2.5, 95% CI: 1.7, 3.5) were also show a significant association with a husband accompanied his wife for at least one ANC visit without controlling potential confounders.

Table 2: Bivariate and multivariable logistic regression analyses of husbands' involvement in wives' ANC by selected characteristics in Sidama zone, Southern Ethiopia, 2014/15; [n=874]

	Husband accompanied for ANC			
Variables	**Yes (%)**	**No (%)**	**COR (95% CI)**	**AOR (95% CI)**
Place of residence				
Urban	48 (38.7)	76 (61.3)	3.1 (2.1-4.7)	2.9 (1.6-5.4)*
Rural	126 (16.8)	624 (83.2)	1.00	1.00
Husbands' Age (in year)				
Less than or equal to 29 years	63 (31.6)	136 (68.4)	2.4 (1.6-3.5)	1.4 (0.9-2.4)
30-34 years	46 (16.6)	231 (83.3)	1.02 (0.7-1.5)	0.8 (0.5-1.3)
35 years & above	65 (16.3)	333 (83.3)	1.00	1.00
Husbands' Educational level				
Primary education	58 (16.5)	294 (83.5)	1.4 (0.8-2.4)	1.2 (0.7- 2.2)
Secondary education & above	92 (28.3)	233 (71.7)	2.8 (1.7- 4.6)	0.9 (0.5- 2.0)
No education	24 (12.2)	173 (87.8)	1.00	1.00
Ethnicity				
Sidama ethnic	156 (20.6)	601 (79.4)	1.4 (0.8 – 2.4)	1.5 (0.8 - 3.2)
Others ethnic groups	18 (15.3)	99 (84.7)	1.00	1.00
Religion				
Protestant Christians	147 (80.7)	562 (79.3)	1.3 (0.8-2.1)	1.5 (0.8 – 2.8)
Orthodox & other religions	27 (16.3)	138 (83.7)	1.00	1.00
Occupations				
Farmer	46 (12.1)	334 (87.9)	0.3 (0.2-0.5)	0.6 (0.3 -1.1)
Businessman & others	55 (23.1)	183 (76.9)	0.7 (0.5-1.1)	1.2 (0.7- 2.0)
Government employee	73 (28.0)	183 (72.0)	1.00	1.00
Number of children (under 5 years)				
Less than 3 children	100 (29.5)	239 (70.5)	2.6 (2 - 4)	3.3 (2.1 - 5.1)*
Three or more children	74 (13.8)	461 (86.2)	1.00	1.00
Distance to health facility				
≤ 5 Km	127 (75.7)	366 (24.3)	2.5 (1.7-3.5)	1.6 (1.03 - 2.5)*
> 5 Km	47 (12.3)	334 (87.7)	1.00	1.00
Initiation of ANC visit				
1st trimester	19 (43.2)	25 (56.8)	6.5 (3.2-13)	3 (1.3 – 7.0)*
2nd trimester	123 (23.5)	401 (76.5)	2.6 (1.7-4)	2 (1.2 - 3.2)*
3rd trimester	32 (10.4)	274 (89.6)	1.00	1.00
Number of ANC visits				
More than three visits	68 (28.2)	173 (71.8)	1.9 (1.4-2.8)	1.1 (0.7-1.7)
Less than or equal to three visits	106 (16.7)	527 (83.3)	1.00	1.00
Couples' discussion & jointly decision on ANC				
Yes	89 (26.8)	243 (73.2)	2 (1.4-2.7)	1.5 (1.03 - 2.3)*
No	85 (15.7)	457 (84.3)	1.00	1.00
Husbands received invitation letter				
Yes	81 (37.1)	137 (62.8)	3.6 (2.5-5.0)	6.1 (4.0 – 9.1)*
No	93 (4.2)	563 (85.8)	1.00	1.00

**the C.L. does not include one- it means: there is a significant association.*

Factors associated with husbands' involvement in delivery care services

Bivariate regression analysis

Table-3 shows that the number of U5 years children during the recent birth (<3 versus >=3 children, COR 2.4, 95% CI: 1.7, 3.3), a husband accompanied his wife in the preceding ANC visit (COR 2.8, 95% CI: 1.8, 4.4), woman's initiation of ANC visit (1^{st} versus 3^{rd} trimester, COR 2.4, 95% CI: 1.1, 5.7; and 2^{nd} versus 3^{rd} trimester, COR 2, 95% CI: 1.3, 3.0), couples' joint decision on place of delivery (COR 1.5, 95% CI: 1.0, 2.1) and a husband having a prior arrangement for place of delivery (COR 1.4, 95% CI: 1.0, 2.0) were significantly associated with a husband accompanied his wife for delivery care service. Husbands being urban residence (COR 3.8, 95% CI: 2.4, 6.2), young age (<30 years versus 35^{+} years, COR 2.0, 95% CI: 1.4, 3.0), educational status (being secondary education or above, COR 1.8, 95% CI: 1.2, 2.7) and occupation type (businessmen or farmers versus government employee, COR 0.5, 95% CI: 0.3, 0.7) were also show a significant association with a husband accompanied his wife for skilled delivery services without controlling potential confounders.

Table 3: Bivariate and multivariable logistic regression analyses of husbands' involvement in wives' delivery care by selected characteristics in Sidama zone, Southern Ethiopia, 2014/15; (n =626)

	Husband accompanied for labour and delivery care			
Variables	**Yes (%)**	**No (%)**	**COR (95% CI)**	**AOR (95% CI)**
Place of residence				
Urban	66 (70.2)	28 (29.8)	3.8 (2.4-6.2)	4.8 (2.4-9.4)*
Rural	201 (37.8)	331 (62.2)	1.00	1.00
Husbands' Age (in year)				
Less than 30	88 (53.9)	75 (46.1)	2.0 (1.4 – 3.0)	1.1 (0.6-1.9)
30-34	80 (41.2)	114 (58.8)	1.2 (0.8 - 1.7)	1.2 (0.8-1.9)
35 & above	99 (36.8)	170 (63.2)	1.00	1.00
Husbands' Educational level				
Secondary education & above	129 (52.8)	115 (47.2)	1.8 (1.2-2.7)	0.7 (0.4-1.3)
Primary education	82 (34.6)	155 (65.3)	0.8 (0.5-1.3)	0.9 (0.6-1.6)
No education	56 (38.6)	89 (61.4)	1.00	1.00
Employment status				
Farmer	103 (37.5)	172 (62.5)	0.5 (0.3-0.7)	0.9 (0.6-1.6)
Businessman & Others	64 (37.4)	107 (62.5)	0.5 (0.3-0.7)	0.6 (0.3-1.02)
Government employee	100 (55.5)	80 (44.5)	1.00	1.00
Number of children (under 5 years)				
Less than 3 children	148 (54.6)	122 (45.2)	2.4 (1.7-3.3)	1.9 (1.2-2.9)*
Three or more children	119 (33.4)	237 (66.6)	1.00	1.00
Distance to health facility				
≤ 5 Km	147 (41.4)	208 (58.6)	0.9 (0.6-1.2)	-
> 5 Km	120 (44.3)	151 (55.7)	1.00	-
Initiation of ANC visit				
1st trimester	14 (53.8)	12 (46.2)	2.4 (1.06-5.7)	1.8 (0.7-4.7)
2nd trimester	150 (48.7)	158 (51.3)	2 (1.3 - 3.0)	1.9 (1.2 - 2.9)*
3rd trimester	51 (32.3)	107 (67.6)	1.00	1.00
Couples' discussion & jointly decision on ANC				
Yes	98 (47.3)	109 (52.6)	1.3 (0.9-1.8)	-
No	117 (41.0)	168 (51.0)	1.00	-
Accompanied wife for ANC				
Yes	74 (63.2)	43 (36.8)	2.8 (1.8-4.4)	2 .1 (1.3 - 3.4)*
No	141 (37.6)	234 (62.4)	1.00	1.00
Couple's joint decision on place of birth				
Yes	83 (49.4)	85 (50.6)	1.5 (1.02 - 2.1)	1.01 (0.6-1.6)
No	184 (40.2)	274 (59.7)	1.00	1.00
Prior arrangement for place of birth				
Yes	181 (45.9)	213 (54.1)	1.4 (1.03-2.0)	1.02 (0.7-1.5)
No	86 (37.1)	146 (62.8)	1.00	1.00

**the C.L. does not included one, meaning, there is a significant association.*

Factors associated with husbands' involvement in postnatal care services

Bivariate regression analysis

Table-4 shows that the number of U5 years children during last childbirth (<3 versus >=3 children, COR 3.4, 95% CI: 2.0, 5.8), a husband accompanied his wife in the preceding ANC visits and during delivery care (COR 4.3, 95% CI: 2.3, 8.0; and COR 2.1, 95% CI: 1.2, 3.8, respectively), women's initiation of ANC visit (at 1st trimester versus 3rd trimester, COR 5.5, 95% CI: 1.7, 17.0), couples' communication on PNC issues (COR 2.2, 95% CI: 1.3, 3.6), husbands' having a prior arrangement for place of delivery (COR 1.8, 95% CI: 1.0, 3.3), offering an invitation letter to a husband for PNC visit (COR 2.7, 95% CI: 1.6, 4.5) and number of ANC visits by women (>3 versus <=3 visits, COR 2.2, 95% CI: 1.2, 4.0) were significantly associated with a husband accompanied his wife for at least one PNC visit. Among husbands' background characteristics, being urban residence (COR 1.9, 95% CI: 1.1, 3.5), young age (<30 years versus 35 years and above, COR 3.8, 95% CI: 2.1, 7.0) and educational status (secondary education or above versus no formal education, COR 2.0, 95% CI: 1.0, 4.4) were show a significant associations with a husband accompanied his wife for at least one PNC visit, without controlled the effect of confounders.

Table 4: Bivariate and multivariable logistic regression analyses of husbands' involvement in wives' PNC by selected characteristics in Sidama zone, Southern Ethiopia, 2014/15; (n =561)

	Husband accompanied for PNC			
Variables	**Yes (%)**	**No (%)**	**COR (95% CI)**	**aOR (95% CI)**
Place of residence				
Urban	18 (18.3)	80 (71.7)	1.9 (1.1 - 3.5)	1.3 (0.4 - 3.8)
Rural	48 (10.3)	415 (89.7)	1.00	1.00
Husbands' Age (in year)				
< 30	32 (24.8)	97 (75.2)	3.8 (2.1 - 7.0)	1.8 (0.7 - 4.7)
30-34	14 (7.8)	164 (72.2)	0.9 (0.5 – 2.0)	1.2 (0.4 - 3.5)
35 & above	20 (7.8)	234 (92.2)	1.00	1.00
Husbands' Educational level				
No formal education	10 (9.0)	101 (90.9)	1.00	1.00
Primary education	18 (7.8)	211 (92.1)	0.9 (0.4-1.9)	1.1 (0.2 – 4.8)
Secondary education & above	38 (7.2)	183 (92.8)	2 (1.0 - 4.4)	2.9 (0.6 – 12.8)
Number of children (under 5 years)				
Less than 3 children	44 (19.3)	184 (80.7)	3.4 (2.0-5.8)	3.8 (1.5 - 9.5)*
Three or more children	22 (6.6)	311 (93.3)	1.00	1.00
Initiation of ANC visit				
1st trimester	6 (28.5)	15 (71.5)	5.5 (1.7 - 17)	2.5 (0.5 - 12.5)
2nd trimester	32 (12.4)	226 (87.6)	1.9 (0.9 - 4)	2.0 (0.7 - 6.2)
3rd trimester	10 (6.8)	137 (93.2)	1.00	1.00
Number of ANC visits				
More than three visits	21 (17.3)	100 (82.6)	2.2 (1.2 – 4.0)	1.01 (0.4 – 2.4)
Less than or equal to three visits	27 (8.8)	278 (91.2)	1.00	1.00
Accompanied wife for ANC				
Yes	25 (24.7)	76 (75.2)	4.3 (2.3 - 8)	2.7 (1.2 - 5.9)*
No	23 (7.1)	302 (92.9)	1.00	1.00
Prior arrangement for place of birth				
Yes	49 (14.0)	300 (86.0)	1.8 (1.05-3.3)	0.9 (0.4 - 2.2)
No	17 (8.0)	195 (92.0)	1.00	1.00
Husband escort for delivery care				
Yes	31 (16.8)	152 (83.2)	2.1 (1.2-3.8)	1.3 (0.6 – 3.0)
No	22 (8.7)	230 (91.2)	1.00	1.00
Couples' jointly decision on PNC issues				
Yes	37 (16.8)	183 (83.2)	2.2 (1.3-3.6)	2.7 (1.2 – 6.0)*
No	29 (8.5)	312 (91.5)	1.00	1.00
Received invitation letter				
Yes	30 (20.3)	118 (79.7)	2.7 (1.6 - 4.5)	3.3 (1.3 -8.0)*
No	36 (8.7)	377 (91.3)	1.00	1.00

**the C.L. does not included one, meaning, there is a significant association.*

Multivariate regression analysis

Factors associated with husbands' involvement during Antenatal Care

The results of multivariate logistic regression analysis presented in table 2 show that, after adjustment for potential confounding, offering an invitation letter to a husband for ANC visit (aOR 6.1, 95% CI: 4.0, 9.1), number of U5 years children during last pregnancy (<3 versus ≥3 children, aOR 3.3, 95% CI: 2.1, 5.2), women's initiation of ANC visit (as early as possible in the 1st or 2nd trimester, aOR 3.0, 95% CI: 1.3, 7.0, and aOR 2.0, 95% CI: 1.2, 3.2, respectively), place of residence being urban (aOR 2.9, 95% CI: 1.6, 5.4), distance to the nearest health facility being <5 km (aOR 1.6, 95% CI: 1.03, 2.5) and couples' communication on ANC issues (aOR 1.5, 95% CI: 1.03, 2.3) remained a significant predictors to a husband accompanying their wives for at least one ANC visit. (Table 2)

Factors associated with husbands' involvement during delivery Care

The results of multivariate analysis in table 3 show that husbands who accompanied their wives in the preceding ANC visits (aOR 2.1, 95% CI: 1.3, 3.4), place of residence being urban (aOR 4.8, 95% CI: 2.4, 9.4) and the number of U5 years children during last pregnancy (<3 versus ≥3 children, aOR 1.9, 95% CI: 1.2, 2.9) remained a significant predictors for husbands accompanying their wives for delivery care service.

Factors associated with husbands' involvement during postnatal care

The results of multivariate analysis presented in table 4 show that the number of under 5 year children during recent childbirth (<3 versus ≥3 children, aOR 3.8, 95% CI: 1.5, 9.5), offering an invitation letter to husbands for PNC visits (aOR 3.3, 95% CI: 1.3, 8.0), husbands' involvement in the preceding ANC visit and couples' communication on PNC issues (aOR 2.7, 95% CI: 1.2, 5.9) remained a significant predictors to husbands accompanying their wives for at least one PNC visit. (Table 4)

Discussion

Husbands' involvement in their wives' maternity care services

The proportion of husbands involved in their wives' maternity health care, in this study, was lower than the findings reported by a recent study in Ethiopia [19], studies in Africa [20, 21-23], India [24], Nepal [18] and El-Salvador [25]. Despite few data from sub-Saharan Africa with which to compare our results, and to our knowledge no international targets against which to benchmark these figures, our findings of husbands' involvement in maternity care services were lower than the studies reported from the developed countries. For example, studies in developed countries (like U.S.) shows that today upwards of 90% of fathers are present at birth, where they are expected to reinforce what has been taught in childbirth education and act as advocates for the mother [26].

The difference between our finding and other African countries might be due to the differences in the definition that used for husbands' involvements in maternal health care by the studies. The other possible explanation could be due to methodological differences among the studies. While the majority of these studies were use an interventional study designs [18, 21, 24], and some of the studies were conducted in the context of HIV prevention activities during ANC visits [22, 23].

The other important finding of our study was the difference in husbands' involvement during the three routine maternity cares (ANC, delivery care, and PNC services). The lower proportion of husbands accompanied their wives during ANC and PNC visits compared to the delivery care of their last child in this study is consistent with the results of previous studies in African countries [20, 27, 28]. This could be explained by the shared culture in most African countries, which could reflect the common notion that delivery is usually a more important and singular event compared to ANC and PNC services [28].

Factors associated with husbands' involvement in maternity care services

This study tried to see factors that associated with husbands accompanying their wives for maternity care services. Among the factors that included in the analysis, only six factors were found to be common predictors for husbands accompanying their wives for at least two of the three routine cares. Specifically, the number of U5 years children a man has during the recent pregnancy, offering an invitation letter to husbands, place of residence, husband's experience of accompanying his wife in the preceding ANC visit, couples' communication on maternity care issues, and women's initiation of ANC visit are factors that independently explain the differences in husbands' involvement in maternal health care. However, only the number of under 5 year children during recent pregnancy was a common predictor for husbands' involvement in all the three components of maternal health cares services.

Number of U5 years children at the recent pregnancy

Interestingly, the number of children (age under five years) during last pregnancy was the only factor that found to be a common predictor for husbands accompanying their wives during the three routine care. Our finding shows that husbands who had less than three U5 years children during their wives' last pregnancy were about four, three and two times more likely to accompany their wives for PNC, ANC and for delivery care, respectively, as compared with those husbands who had three or more U5 years children. This is consistent with most studies in Ethiopia, which point out that couples' are significantly more likely to use the three routine cares for their first child than the later children [19, 29, 30-32]. A possible explanation could be that the couples during their first child are usually with fear and stress, and women have difficulties during labor and delivery than women of high parity. On the other hand, a husband with more number of children may developed confidence and may believe that his wife does not face any birth problem due to the experience and knowledge accumulated from previous pregnancies and births. Such a husband prefers his wife to be escorted by other relatives/neighbors, and he usually takes care of the others children at home. This may result in husband of low parity woman being more motivated his wife to deliver in medical facilities and to accompany with her than a husband of high parity woman [29, 33].

Offering an invitation letter to a husband for ANC and PNC visits

Another important finding of this study was the contribution of offering an invitation letter to a husband for his involvement during ANC and PNC services. The husbands who received an invitation letter were about six and three times more likely to accompany their wives for ANC and PNC visits, respectively, as compared to their counterparts. This finding is consistent with findings of studies in South Africa [21] and Uganda [22]. One possible explanation for this could be that the letter provided is a good opportunity to encourage couples' communication and negotiation on maternity issues, which has been reported to be positively associated with male involvement [34]. This finding suggests that the invitation letter for the husband to attend ANC and PNC with the wife should be made part of the package that a pregnant woman must receive (on her choice) after the first contact with maternal health care services.

Place of residence

Place of residence, among the background characteristics, came out to be a common predictor of husbands' involvement during ANC and delivery care services in our logistic regression model. Husbands who reside in urban place were about three and five times significantly more likely to accompany their wives during ANC visit and delivery care, respectively, as compared with their rural counter parts. With regard to PNC services, even though our finding shows that the urban husbands were more likely to accompany their wives during PNC visit as compared with the rural husbands, it was not significant. This result is consistent with other studies in Ethiopia and Africa [32, 35-37]. The reason for the high level of urban husbands' involvement in ANC and delivery care compared with their rural counterparts is easily understood. As in most sub-Saharan countries, urban men in Ethiopia tend to benefit from increased knowledge and access to maternal health services. This is because health facilities are more accessible in urban areas and the various health promotion programs that use urban-focused mass media work to the advantage of urban residents and explain the close connection between urban residence and use of maternal health services. Currently, however, the media has worked to the advantage of rural residences especially in the area of health information in Ethiopia. Moreover, rural husbands are more readily influenced by traditional practices that are contrary to modern health care [38].

Husband's experience of accompanying his wife in the preceding ANC visit

The contribution of husbands' involvement in the preceding ANC visits to their involvement during the subsequent delivery care and PNC visit was also an important finding of this study. Our finding revealed that husbands who accompanied their wives in the preceding ANC visits were about two times and three times more likely to accompany their wives for delivery care and PNC visit, respectively, as compared to their counterparts. This finding is in agreement with the finding of other studies [39, 40]. A possible explanation for this may be that attending ANC helps in raising awareness on safe delivery care and gives men a familiarity with the types as well as the time of health services, which are provided during postpartum periods [32]. The implication of this finding is that we need to design messages and package them in simple terms; such that all what we would provide the couples during ANC visit and delivery care, so that this will prepared them in time and the couple comes well prepared to avoid confusion that keep men away from maternal health care services [39].

Couples' communication on maternity care issues

Another important finding of this study was the relationship between couples' communication on ANC and PNC issues and husbands' involvement in maternal health care. Our finding shows that husbands who discussed and jointly decided with their wives on ANC and PNC issues were 1.5 times and about three times more likely to accompany their wives for ANC visit and PNC visit, respectively, as compared with their counterparts. This finding is compatible with studies in Nepal [18], Tanzania, Indonesia, and other studies in Nepal [41-43]. This could be explained by the fact that couple's communication and discussion leads to a common understanding for joint decisions on the issues [18, 42, 43]. This implies that spousal communication about reproductive health is an important in decisions about accessing maternal health services in both developed and developing countries [18, 42]. For example, a study from Nepal showed that, when women discussed family planning with their partners, they were more likely to receive antenatal and delivery care [43].

Women's initiation of ANC visit

In our finding, women's initiation of ANC visit was an important factor associated with husbands' involvement only during ANC visit. Women who initiated their ANC visit as early as possible in the first trimester or the second trimester of pregnancy were three times and two times, respectively, more likely to be accompanied by their husbands for at least one ANC visit as compared with women who initiated their ANC visit lately in the third trimester. This finding is consistent with other studies in El Salvador and Nigeria [25, 35]. One possible explanation for this finding could be the fact that a woman will have more chance of getting repeated ANC visits (at least 4 visits) when she started early than women who started lately in third trimester. Due to these repeated visits, a woman may more exposed to ANC information and this may help her to get more confidence to communicate and agree with her husband and to invite him to the services than a woman who initiate her ANC visit lately [41].

The study limitations

Despite for all measures to insure the quality of the data this study cannot be free of limitations. Because of its cross-sectional nature, cause and effect relationships cannot be concluded based on this study. Social desirability and recall biases could be other limitations of this study.

Moreover, some important factors describing socio-demographic background of women and type of family (modern or extended) were not included in the analysis. Data on household income and access to services such as distance to the health facility were an estimated measure rather than direct measure from respondents' residence. Further, the reliability of men´s answers can be questioned to some extent as the study objects were asked about events they might not have participated themselves. Especially ANC visits may be difficult to remember if the man has not been present himself. An important weakness regarding to the stratified analysis was the small number of representatives in some classes, especially in religion and ethnicity data. This problem was pronounced with variables such as religion, ethnicity, and occupation that had in some classes there appeared to be only small or no representatives at all. Consequently, the Odds Ratios could not be computed or the confidence interval resulted very wide; also, many comparisons turned out to be insignificant.

Strengths of the study

The strengths of this study include, up to the authors' knowledge, its being the first study in the areas, and the result of a large sample size that used represented the whole area of a zone. Moreover, its non-response rate was relatively low because of meticulous data collection. One more advantage that can be pointed out is that the phenomenon in question has been explored quite widely; a look has been taken at three dimensions of maternal health care utilization (ANC, delivery care and PNC) and also important variables have been included to describe men´s socio-demographic background thoroughly.

Conclusions and recommendations

The proportion of husbands accompanied their wives for maternal health care, in this study, was low as compared with the findings of other African countries. The number of children during the recent pregnancy, offering an invitation letter to husbands by health providers for ANC and PNC visits, husbands' experience of involvement in the first phase of care (during ANC visits), couples' communication on maternal health care issues, women's initiation of ANC visit, and place of residence were the factors which have a significant association with husbands' involvement for at least one ANC visit, delivery care and PNC visit.

Therefore, it is recommended that Regional, Zonal, and Wereda Health Offices together with the Federal Ministry of Health should take steps to make the services available at each level of health facilities, particularly for rural men. Promote health professionals to invite husbands for maternal health care. Moreover, initiate or strengthen couples' counseling services during ANC, delivery care and PNC services so that strengthen postpartum family planning services, couples' communication and joint decision on use of maternity care services, as well as to provide a continuum of maternity care services for the couples.

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Competing interests

The authors declare that they have no competing interests.

Authors' contributions

WT and WD contributed equally during the process of proposal development. WT participated in data collection, data analysis and in preparing the draft manuscript. WD made significant contributions in revising the manuscript. Finally, all authors read and approved the final version of the manuscript.

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Paper- II

Barriers to husbands' involvement in maternal health care in Sidama Zone, Southern Ethiopia: A qualitative study

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Abstract

Background: Husbands' involvement in prenatal care is considered as a crucial step in scaling up women's utilization of prenatal care. However, the factors related with low husband's involvement in maternal health care have hardly been studied to date in the study areas. Therefore, this study aimed to explore barriers to husbands' involvement in maternal health care, in Sidama zone, Southern Ethiopia.

Methods: The study employed a qualitative method to explore ideas. The data were collected using focus group discussions, in-depth interviews, and key-informants' interview in April and May 2015. Then, data were analyzed thematically.

Results: The study tried to explore a range of factors that hindered husbands' involvement in maternal health care. The respondents mentioned the existed social norms, men's lack of awareness and women's reluctance to men involvement, husbands' bad attitude toward health providers, and absence of guidelines as factors that deterred husbands to involve in maternal health care.

Conclusions: The two main themes that were emerged as barriers to husbands' involvement in maternal health care were clients' related factors and health care systems' related factors. Therefore, we suggested, first, a contextual based awareness creation programs on husbands' involvement in maternal health care at community and facility levels to bring behavioral change and communication, and secondly, prepare and execute a national guideline that focused on the roles and responsibilities of health professionals and men-partners during husbands' involvement in maternity care at each level of health facilities.

Keywords: *husband involvement, barriers, maternity care, Sidama, Ethiopia*

Background

Husband (male partner) involvement is an important strategy for improving maternal health [1]. Positive husband involvement refers to the mental and physical participation of husbands in maternal and prenatal health and family planning in such a way as to increase maternal and infant survival rates and improve family planning outcomes [2]. Husbands' involvement in maternity care, especially, starting from conception, throughout pregnancy, delivery, and PNC periods has positive influences on birth outcome [3, 4].

However, men's role in reproductive and sexual health has not been so widely recognized [5]. Particularly in most developing countries with low utilization of maternal health care (MHC), the concept of husband involvement is not generally accepted, as it is evident in literature [4, 6-11]. In more developed nations, even with high utilization of maternal health care, husbands' involvement is almost a norm, and its benefits are well articulated [3, 4].

In Ethiopia, a country with low utilization of maternal health care and high maternal mortality ratio (MMR) and neonatal mortality rate (NMR), husbands' involvement is like that of low developing countries. According to Ethiopia demographic and health survey (EDHS 2011) reports, the MMR and NMR are estimated to be 676 per 100,000 live births and 37 deaths per 1,000 live births, respectively [12]. In recent decades, the country underwent a series of major social, cultural, and economic changes and profound transformations in family structures [7]. However, though the impact of these changes on gender and power relations remains to be further studied, it is believed that these changes might have influences on the role of husbands in the reproductive health of their wives during pregnancy and delivery periods [7, 13].

Husbands' involvement in MHC is a crucial step in scaling up women's use of skilled prenatal care and then, improving maternal and child health [7]. Studies in Africa countries demonstrated the essential roles of husbands in prenatal care to promote the health of pregnant mothers and infants, and reduce maternal and infant mortality during pregnancy and delivery [7, 14]. Despite that fact, research evidence about factors that hinder husband's involvement in MHC is limited in Ethiopia in general and in Sidama zone in particular. Therefore, this study tried to explore barriers to husbands' involvement in maternal health care, in Sidama zone, Southern Ethiopia.

The findings will help to formulate policy guidelines and to design contextual based husbands' involvement programs in maternal health care aiming to improve women's utilization of maternal health care.

Methods

Study design

We used a qualitative study design to explore ideas from men and women in the study areas. Focused Group Discussion (FGD), In-depth interview (IDI), and Key informants interview (KII) were used for data collection technique. The number of participants involved per FGD was between eight to twelve [15-18]. Regarding the number of FGDs, IDIs and KIIs were determined based on the generated information from time to time until it becomes saturated (i.e. redundancy of the information) [15].

Study setting

The study was conducted in five weredas of Sidama zone from April to May 2015. Sidama zone is one of the 14 zones and 13 special weredas of Southern Nations Nationalities Peoples Region (SNNPR), which were divided in to 21 weredas [19]. The total number of population in the zone was estimated to be 2.9 million; of which, 6.7% are urban inhabitants [19-21]. Women of the reproductive age group (15-49 years) and children under one year of age were estimated to be 23% and 3% of the total population, respectively [21]. In 2015 E.C., there were seven primary hospitals, one general hospital, 127 health centers, and 524 health posts in the zone. According to Mini-EDHS 2014 report, skilled ANC, delivery care and PNC (within two days after birth) coverage of the region in the five years preceding the survey were 39%, 11.7% and 11.1%, respectively [22].

Study participants

Focus group discussions and in-depth interviews

In each study site, FGDs were separately conducted with male and female participants. The participants were categorized by age, and educational levels. Eligible participants for FGD and IDI were identified and recruited in consultation with heads of woreda health offices and HEWs in the study sites. Individuals who participated in IDIs were not included in FGDs.

Key informant interviews

Key informants were selected from zonal and wereda health offices such as maternal and child health program officers, chairman/woman of a gender's offices, community leaders, religious leaders, TBAs, HEWs, chairperson or secretary of women's and youth's bureau, head of health centers and midwives from maternity units were included. Health care providers who have had one year or more work experiences in the maternity care department were interviewed individually.

Inclusion criteria for FGDs and IDIs

An individual who was a resident of the study sites for a minimum of 12 months, age ≥18 year-old, married or in union, and a man whose female partner or a woman who had a history of pregnancy or had a child in the past one to five years preceding this study were included in the discussions and interviews.

Recruitment procedures of study participants

We used a purposive sampling technique to select participants for the study. First, we selected five weredas in the zone. Then, participants for FGDs and IDIs were recruited based on the inclusion criteria. Participants for KIIs were recruited from governmental and non-governmental organizations as well as from community. We recruited them in collaboration with heads of weredas Health Office, HEWs, and kebele leaders in the selected woredas.

Operational Definition of husband involvement

There is no universal definition of husbands' involvement in maternal health care [23]. According to USAID (2009) definition, husbands' involvement in maternal health care as men presences physically with his pregnant wife in health facility to give her physical, emotional, and financial support that enables her to access the routine ANC, delivery care, and PNC services from skilled providers [2]. *Therefore, for this study,* husband's involvement *is defined as 'when a husband (a male partner) accompanying his pregnant wife to the health facility for at least one skilled ANC visit or delivery care or PNC visit'.*

Data Collection Procedures and Materials

For data collection purpose, first, we developed interviewer guides questions in English language and translated it to Amharic language, then translated back to English language. A three days training about the overall objective and procedures of the study, moderating skills on data collection techniques with role-plays, and a one-day field practice in the nearest one kebele were done for the study team by Principal Investigator (PI).

Informed written consent for the study was obtained from all eligible participants who agreed to participate before we commenced data collection. The data were collected during the month of April and May 2015. The interview guide included four parts. Part I and II were FGD guide questions for men and women, respectively. Part III was IDI guide questions, and part IV was KII guide questions. The interview guides included seven to ten broad questions with suggested probes. Trained facilitators (two males and two females) who were supported by note-takers conducted the FGDs. The facilitators have a master degree in health related fields and previous experience of facilitating FGD or IDIs. While the female moderators conducted the women's FGDs and IDIs, the male moderators conducted the men's FGDs and IDIs. The locations of FGDs were prepared in consultation with the kebele leaders and health extension workers (HEWs). For IDIs, the locations were determined by the research team with consideration given to potential sensitivities relevant to each participant. KIIs were conducted in the informants' offices in the selected organizations. The discussions and interviews were conducted in quiet rooms/offices, and privacy was ensured to enable discussants and interviewees to feel free and express their opinions. The interviews and FGDs were scheduled two or three days ahead of time in consultations with the participants. During fieldwork, besides taking field notes on face-to-face discussions, a tap-recorder was used for participants who gave consent for recording. On average, 45 minutes was given for each KII and IDI. Whereas each FGD comprised between eight to twelve participants of the same sex and took approximately one hour [24]. Finally, a total of 12 IDIs, 10 KIIs, and 10 FGDs (five FGDs with men and five FGDs with women groups) were conducted in the study areas.

Data analysis

At nighttime after data collection period, data were transcribed, edited, and entered to ATLAS.ti software program for analysis. During data editing, we identified and corrected errors for next interviews and discussions. Moreover, important issues for next interviews were added. Transcriptions were made word by word (verbatim) with reviewed of extensive field notes by interviewers and PI. The data were analyzed using a thematic analysis method**.** First, open codes were created by reading the transcripts line by line; and then, words with similar meanings were grouped into categories. In the next step, selective coding was performed and relevant codes were further categorized to form themes. Prominent themes were then further categorized to sub-themes, which are presented as results. In addition, direct quotes and narrations from participants were reported without editing to avoid losing contextual meaning of important issues.

Results

The participants' responses for the questions related to factors that hinder husbands' involvement in maternal health care were emerged into two main-themes: clients' and health care system's related factors. The sub-themes emerged under clients' related factors were perceived social norms, women's reluctances, husband's attitudes towards facility-based care and lack of awareness about male involvement. The other sub-themes that emerged under health care systems' related factors were absence of guidelines and health workers' attitude towards men's involvement in maternal health care.

Perceived social norms

The first theme that was emerged from the participants' responses on which we focused was perceived social norms related to pregnancy and childbirth, which were gender roles and traditional view of childbirth.

Gender role is an important social norm that identified in this study. Participants mentioned that, in Sidama culture, men and women have different roles in their home. With regard to pregnancy and childbirth care, the women's roles are providing body care for pregnant woman and perform house chore on behalf of the pregnant woman. All women living around a birthing woman's home, including a husband's and a laboring woman's sisters and mothers, are expected to give

care and support to a pregnant woman (especially, after six to seven months of pregnancy). The men's roles during this time are to provide financial support, to buy foods from a town or market, to prepare transportation, to prevent a pregnant woman from heavy work or carrying heavy object; if there is no other option he may also participate in works like cutting firewood, carrying water, and digging a hole, etc.

Participants believed that pregnancy and childbirth are natural gift to females and needs to be managed by women. They reported that a husband's role during pregnancy and birth are providing physical, emotional, and financial supports to his wife. Discussants in the FGDs mentioned that they have seen men [especially, the young one] accompanying their wives to health facility, but no one was allowed to enter the ANC unit and the delivery unit. Even during home delivery, a man is not allowed to near to a birthing woman. Only females attend the birthing woman, and at that time, he may rotate around a hut.

"A husband is thought to accompany his wife to the hospital. Especially in areas where there is no transport access, he may carry her to hospital on a horseback or an animal-vehicle (Aheya-Gari in Amharic). The other thing is, he is the one who should inform the relatives and to call a birth attendant [?]" (A 36-year-old male participant)

Traditional view of childbirth is the second sub-theme under the theme perceived social norms. Many husbands preferred home deliver for their wives and they were not willing to go to health facility unless a woman is with major health problems or complications that are beyond the ability of TBA. Since, they considered childbirth as a natural process that should be endured at home according to local practices.

"I have eight children and all of them have been borne without any problem in my own home by our birth attendants [TBA]. Since we received this practice from our parents and grandparents, they brought [created] us here by the same process. They did not know about any medical treatment for pregnancy and birth; it is a natural process for human and animals creatures! They [our parents] said that it is given by God and it may be taken by God's choice; no one stops it!" (A 47-year-old male participant)

Few interviewees, further, reported that people's view of birth either a traditional view or modern view are categorized as the 'old-generation' and 'new-generation' thinking. Men in the

"old-generation" expected a normal or natural birth at home and they prefer home delivery. These men have expected traditional practices during childbirth and unwilling to involve a health professional unless there is a health problems. Many husbands of the old generation group described the accustomed experiences from their parents and the pressure from other family members, including their wives, for a home delivery.

"If my wife is not sick, we prefer home birth; I mean home is better. Because, our father and mother told [us] that our six brothers and sisters were delivered at home safely" (A 47-yearold male participant.) A 30-year old man added, "I suppose home delivery is preferred by the elderly people of old day. Currently, this idea is not acceptable! Since, it is not possible to do everything at home. Unaware women may think there is always a normal delivery; but it is risky if we do not be in line with modern medical care.

Men who were coded as "a new generation husbands" were those who perceived the importance of going to health facility for delivery care. The majority of young husbands and few of elderly fathers, in this study, reflected the new generation thinking.

"Home delivery is an old custom [I mean it came from old time]. But, now, time has changed! We are not in the old era; there are many medical technologies. Suppose, if there is complication, a birth should be managed by a doctor or a nurse in the hospital" (A 35-year-old male participant.) Similarly, a 27-year old mother responded, "Everything that save life can be found in the hospital, but not at home. If something may happen in the hospital, the doctors or nurses could give medicine to the baby and a mother!"

The majority of discussants in both men and women groups agreed on the point that husbands' involvement in ANC, delivery care, and PNC services is not a cultural taboo, but it is related to a woman's privacy issues. It descends from their past grandparents as a norm that influences them not to actively engage in the services. On the other hand, they also mentioned their willingness to participate in their wives' maternal health care.

"For instance, in our culture [Sidama culture], no one allow a pregnant woman to do heavy jobs, like carrying a pot of water from river, firewood, digging a pit hole, etc. If someone looks a woman doing that, it is a shame for her husband, even her relatives may give him the impression of being unkind and immediately they could ask him! I mean, in general, a husband gives support for his pregnant wife; and if he could not do that, [some housework] his or her sister or her mother will do it! (A 41-year old male participant.)

Women's reluctance to have husbands' involvement

Another theme that emerged in this study was women's reluctance to husbands' presence during maternity care. Discussants from women groups mentioned that most women could not freely talk and discuss with other clients or doctors in the presence of their husbands. The male respondents also reported that, in their tradition if a woman with her husband, it is his responsibility to talk or explain about her conditions; otherwise, she needs his permission to talk to others. As a result, many women (particularly, from rural) don't wont with their husbands at such place.

"If both husband and wife are present in ANC or PNC examination room with a nurse, she could not talk freely about what she needs to do. Since she bashful and fear him [her husband]. Due to this reason, even though few husbands have interested to accompany their wives for maternity care, their wives hold them back." (A 34-year old male participant)

Regarding husbands' involvement during delivery care, it is a common idea that a husband should present and support his wife at that critical time whether the birth is at home or at health facility. However, almost all interviewees and discussants opposed the idea of husbands' presence at the side of laboring woman in the delivery room. Particularly, the women participants are strongly disagree with this idea. Since, they perceived that childbirth is disgraceful with dirty things. The women repeatedly reported that childbirth through vagina is with dirty things and they would not allow a husband to see that. Moreover, the female participants reported that women shy to expose their privacy body part in front of their husbands.

Husband's attitude towards health facility-based care

The other theme emerged as barrier for husbands' involvement in maternal health care is their bad attitude towards health care providers in the health facility. The discussion was generally focused on families', especially husbands', feeling on the interactions between mothers and traditional birth attendants versus health care professionals. A common feeling was worry of unkind treatment from health care staffs that put off husbands from the health facilities.

Similarly, the explanations from female discussants to the reason why mothers and their husbands might avoid facility-based maternity care were agreed with the explanations from many of the males' focus group members.

"There are people, usually, who do not attend the clinics; but when they visit the clinic, the nurse first asked them "where is your card?" if he/she has not it, this makes them scared! So, the nurses aren't usually very good, compared to the birth attendants. They shout to you, they say bad things to you... because [nurses] do not treat people so nicely" (A male participant.)

In contrast, majority of the participants mentioned that they are more satisfied by the treatment provided by traditional birth attendants than health care providers are.

"The traditional birth attendants encouraged us [mothers] during labor, they cleaned us with warm water after delivery, and they fed and cleaned the newborns! I mean, they just give care as a woman!" (A woman participant)

Similarly, in the males' focus groups, some dialogue emerged on the reassuring and familiar manner of traditional birth attendants with mothers in the community.

"They [Traditional Birth Attendants] are tied to you more than the nurses where a challenge there" (A 28-year-old female participant.) A 34-year-old male participant added, "The traditional birth attendants care you well compared to the nurses. I think the nurses are very harsh to the clients; Most of us choice home delivery by traditional birth attendants."

Lack of awareness about husbands' involvement

Lack of awareness about male involvement in maternal health care was another sub-theme that is reported by majority of the respondents in this study.

"We [men] know that pregnancy care is for women's health; so what we [men] could get there unless waste our time" (A 37-year-old male participant.)

Discussants from both men and women's groups expressed that they do not know about what a husband could do during ANC. Yet they mentioned that a husband might be called with his wife for HIV counseling and testing.

"I do not know about any examination for man! I mean, there is nothing that men can participate in ANC visit, even in labor and delivery care, apart from just observing what is happening" (A 31-year-old female participant.)

A 28 year-old man as reported, "I'm always accompanying my wife for ANC and PNC at least two or three times during her appointments, but nothing was given to me; so, I often asked what they [the nurses] told her and what they did for the baby or to her in the room. Still, I don't know what I should do to my wife and baby during pregnancy and after delivery, except buying things to them."

FGD discussants repeatedly mentioned that they do not know the reasons why men should come for ANC and PNC services with wives.

"PNC services are for women, why need to come men unless to carry the baby; that is also good to be done by his/her sisters or our mommy" (A 43 year-old male participant.) A 36-year-old female health provider mentioned, "Not all husbands involved during their wives' ANC and PNC. However, many of them are involving during childbirth. Many factors could have contributed to their (husbands) absence during pregnancy care, including lack of awareness that they are expected to be involved in their wives' ANC and PNC; and it may be due to their wives' lack of knowledge about the labor process or a general lack of communication between spouses."

Absence of guidelines

The other important theme that emerged as a barrier for husbands' involvement in maternal health care was lack of national guidelines at the health facilities. The participants from health providers mentioned that there is no guideline how to work with men during ANC, delivery, and PNC visits; thus, they do not know what roles a husband can play by his presence during ANC, delivery, or PNC.

"There is a need for written guidelines for male involvement in maternal health care and proper orientation to both health providers and the community" (A 29 year female participant [midwife].)

"There is no guideline or standards of practices [SOPs] about male involvement in maternity care services at health centers as well as at hospital levels. I doubt its existence even at national [MOH] level. So, if a husband enters to ANC or delivery room, what could be his role unless they crowded the room? Actually, I know some private hospitals, which have started a couple's counseling sessions during ANC examinations or before Caesarean section (CS), especially for ultrasound examination and others intensive diagnostic tests. That is also another thing! I mean, it is related to some sort of benefits to the hospital" (A 34 years male health officer.)

Health workers' attitude towards husbands' involvement

Another key barrier to husbands' involvement in maternal health care is health workers' bad attitudes, which marginalized men and promote the view that pregnancy care is a woman domain. Many participants reported that inhospitable and unreceptive words directed at women and their husbands from skilled health professionals were a barrier to husbands' involvement.

"It is not allowed a man to enter the ANC unit. He might be called if his wife needs his support like to carry her to examination bed or for other referral purpose….I mean…hi…hi…. if there is a serious problem" (A 30 years old male health officer.)

A 32-year-old female midwife respond to the question 'why husbands are not involved in their wives' maternity care?' as follow:

"To be honest, we did not try this kind of work! In general, we had not such experience in our facility and in the country too!"

Moreover, the participants in FGDs mentioned that a pregnant or laboring mother does not get the proper care, and the reception from health care providers is not welcoming and attractive. So, husbands prefer a woman to give birth at home. The other thing, it is not allowed for man to enter to a labor room; no one look at him and no one inform him about his wife's condition, even at the last event.

"They [nurses] do not properly handle a woman in labor. So, women as well as her husband prefer the traditional Birth Attendants" (A 42-year-old male participant.) A 32 years-old male participant expressed, "Not only forbid a man to enter a labor room, but also he has not a right to get information from the doctor or nurse about his wife's birth outcome."

Discussion

Clients' related factors and health care systems' related factors were the two emerged main themes that related with barriers to husbands' involvement in maternal health care.

The concept of men accompanying wives to ANC and PNC services is not yet accepted in the study communities. This may be explained by socially constructed norms particularly, gender role norms and traditional view of childbirth. Social norms are "... expectations held by social groups that dictate appropriate behavior and are thought of as rules or standards that guide behavior" [25]. In this study, we recognized the influence of an existed social-constructed norms particularly gender norms and traditional view of childbirth on the type of supports a husband provides to his wife during pregnancy, birth, and after birth. This is supported by other studies that mentioned husbands' perceived social-norm is an important factor that influence his wife health care utilization as well as his involvement in the services because of his close social relationships and decision-making power within the household [6, 7]. With regard to gender roles, particularly in the patriarchal system, like in Ethiopia, men's role is predominantly in the public sphere of production and politics, while women's is in the domestic one, household, and child-rearing [5]. This implies that the social norm that women should care a woman in labor is entirely entrenched in the study areas. [6, 7, 26-31].

The other important finding under social norms was the people's views towards childbirth. In this study, two different views of childbirth (a traditional view of childbirth and the modern view of childbirth) were recognized. The traditional view of childbirth refers childbirth as a normal and natural process that can be managed by traditional birth attendants at home according to the local customs. Whereas, the modern view of childbirth refers childbirth as physiological reproductive processes that should be managed with the help of skilled birth attendants [26]. Moreover, with regard to their views, people were classified as the old-day generation and modern-day or a new generation groups. However, there were men who had both views of childbirth in the same interview. Individuals or communities in the former views group (traditional views) were generally categorized as *old generation group*. On the other hand, individuals or communities who believed medical intervention was necessary during ANC, delivery care and PNC were categorized as *modern or new generation groups*. It is believed that

many husbands in the modern age category may have a positive attitude towards skilled maternal health care than the old-generation category. On the other hand, in the study communities, majority of the old age husbands and some of young adulthood husbands have still a traditional view of childbirth. This is similar with a study in Malawi [6, 32]. This implies that the new generation husbands are more likely to involve in their wives' maternity care than the old generation group. A possible explanation for having a more tendency of involvement by the new generation group could be due to the information, education, and communication improvement in the country, especially in the last decade.

Moreover, in this study, we recognized the influence of social norms, particularly, the influence of communities, families, and peers perceived social norms on husbands' involvement in maternal health care. This is similar with the explanation to why a husband is often responsible for making decisions about health care during childbirth that related to family or community pressures [32]. It is also supported by a literature that explained how communication between partners is influenced by perceived social norms and how the motives, preferences, behaviors, and health outcomes can be affected [25]. This implies that the differences between men and women, by gender concept, are socially constructed, changeable over time, and have wide variations within and between cultures. So, using the cultural label of gender, individuals grasp and replicate what is allowed and forbidden; gender exhibits their perceptions and their sense of responsibility with respect to all the social aspects of life [5]. For instance, in African context, women are likely to be responsive to their husbands' beliefs and opinions about pregnancy and delivery care than the reverse [32]. Thus, husbands' perceived social norms about maternal health care and their good spousal communication have a strong relationship with their involvement in, and women's utilization of maternal healthcare [32-38].

In this study, women themselves were one of the barriers to husbands' involvement in maternal health care. Women participants in this study expressed that some women were reluctant to be with their husbands at health facility for ANC and PNC. Similar results have been documented in earlier studies done in Malawi and Ghana [6, 29]. A study in Africa reported that often women are embarrassed to be with their husbands in maternal health care services. Since, ANC services and other maternity care services are seen as "female" places, which designed and reserved for

women. Interestingly, some of the women reported that they do not like to be seen with their male partner attending ANC [29]. In addition, women mentioned that the presence of husbands at health care units makes difficult for some women to express their feeling or opinion freely and honestly. Thus, women who do not want their husband to accompanying them to ANC or PNC would not communicate to them when the health care providers requested women to come with their husbands during the subsequent antenatal care visit [6]. This implies that husbands' participation was depended upon the relationship that exists among the couples.

The husbands' negative attitudes towards a service provided by health care professionals were mentioned as a major barrier for their involvement in maternal health care. It was mentioned that fear of unkind treatment from health care staffs that put off husbands from the health facilities. On the other hand, majority of the participants in this study indicated a positive or kindness manner of traditional birth attendants while providing the treatment. A preference for the type of care provided by traditional birth attendants during home deliveries over the care provided by health staffs at health facilities can be taken as a social barrier to husbands' involvement in skilled maternal health care. Similar findings are reported by other Africa countries [26, 39-41].

Information communication in the communities has their own influence on utilization of health care services. It is obvious that social dynamics between mothers in the community can play an influential role on husbands not to choice skilled maternity care for their wives. Commonly, we understood this social influence act as a barrier to women seeking both antenatal care and delivery services [42]. It is also important to recognize the fear created by the social consequences of attending antenatal care and skilled birth care prevented mothers as well as their husband from accessing skilled maternity care. For instance, bad stories heard from others women delivering in health facilities caused a woman and her husband to keep away from health facility services [39]. In most cases, husbands admit what they heard from the social exchanges and then, they are more likely discouraged to access health care at the time of their wives' pregnancy and delivery [39].

Lack of awareness about husbands' involvement during maternal health care was one important barrier for their involvement in their wives' ANC, delivery care, and PNC. In this study, almost

no respondents had known that men are expected to involve in their wives' ANC and PNC services. Similar findings in Africa and Asia have shown that some men expressed ignorance and others did not understand why they had to be involved [6, 9, 27, 38, 43, 44]. A study in Cambodia reported that many men are not aware of why they need to be involved in SRH, how they can be involved, and what services are available for them and their partner [44]. Moreover, RH literatures indicated that men's retained the negative health beliefs from the overall lack of knowledge about maternal health care may attributed to husbands' lack of involvement in maternal health care. One possible reason for this could be due to the absence of men-or-couples oriented community-level reproductive health campaigns [6, 45]. Similarly, the finding of current research indicates a need to educate men in the public sphere with appropriately tailored health messaging to attract towards RH services [45]. This implies that educating men about male's involvement in maternal health care is a crucial for their participation in the care.

With regard to health care system's related factors, lack of practical guidelines at the health facilities was an important factor that hindered husbands' involvement in maternal health care in the study areas. This is supported by findings of studies in other African countries [26, 46]. This implies that without locally adopted national guideline the health providers may not confident to accept and implement the program without knowing what a husband would do in ANC, labor ward, and PNC unit. A study in Cambodia indicated that most health related policies do not specifically refer to male involvement and fail to offer suggestion for how to involve men in program implementation [44].

Regarding to health workers' negative attitude, the way in which maternity care was provided to mothers was an important factor that prevents husbands' involvement in their wives' maternity care. 'The idea that maternal health care is for women' has been deep-rooted in the majority of health care providers at all levels. Due to this reason, they do not have an initiative to involve husbands in their wives' health care. They have not allowed husbands to participate during ANC, delivery care, and PNC counselling, which enhance men's banishment from the services. Moreover, as we mentioned above, inhospitable and unreceptive words directed at women and their husbands from health professionals discourage men from returning or accompanying their wives to health facilities. This is agreed with the findings of studies in other African countries [6,

26, 46]. In a systematic review of factors affecting use of antenatal care in developing countries, rude and unfriendly attitudes of health care providers were identified as major barriers deterring mothers from delivering in hospital [40-42]. A study in Tanzania expressed the fears of discrimination from health facility staffs as a reason for avoiding hospital deliveries [39]. This implies that the attitudes of health care providers are related to husbands' participation in maternal health care.

Study limitations

The findings and recommendations in this paper should however be read against the backdrop of certain limitations. The research reported in this paper was conducted in a context where patriarchy and male domination is prevalent. The country has diverse culture and different utilization rates of skilled health professionals during ANC, childbirth and PNC by women. However, the study sites were selected purposively. Even though the findings are similar with other relevant studies, we cannot generalize the findings of this study for the whole nation. This notwithstanding, important lessons can be drawn from the findings in this paper to inform policies that seek to encourage husbands to be involved in their wife's maternal health care and in promoting women's access to and use of skilled maternity care services in other parts of the country and beyond.

Conclusions

Many husbands did not know the expectation of their involvement during maternal health care and its benefits. The findings suggest that men were often excluded from participating in routine check-ups partly because their societies consider maternal healthcare as women's business, and partly because the health care system does not accommodate them. In general, the two main themes, which are clients' and health care systems' related factors were emerged as barriers to husbands' involvement in maternal health care. Therefore, to enable husbands to play more supportive roles in the area of maternal healthcare: first, we recommended a contextual based behavioral change programs at community and facility levels. Second, a national guideline for husbands' involvement in maternity care programs needs to be prepared and executed in all health facilities.

List of abbreviations

ANC: Antenatal Care; CS: Caesarean Section; EDHS: Ethiopia Demographic and Health Survey; FGD: Focused Group Discussion; HEW: Health Extension Workers; HIV: Human Immunodeficiency Virus; IDI: In-depth interview; KII: key informants' interview; MMR: Maternal Mortality Ratio; MOH: Ministry of Health; NMR: Neonatal Mortality Rate;
IMR: Infant Mortality Rate; PI: Principal Investigator; PNC: Postnatal Care; SNNPR: Southern Nations Nationalities Peoples Region; SOP: Standards Of Practices; TBA: Traditional Birth Attendant

Declarations

Ethics approval and consent to participate

Before the commencement of the study, ethical approval letter was obtained from the Institutional Review Board of the College of Health Sciences, Addis Ababa University in Ethiopia (Protocol No. 067/13/SPH and Approval Meeting No.054/13). Then we obtained permission letters from South Region and Sidama Zone Health Bureaus, as well as from Weredas Health Offices and health institutions. Before started data collection, written consent was obtained from respondents. They were informed to interrupt the interview at any time that they desire if they are not willing to continue with the interview. To ensure confidentiality, codes instead of names were used during data entry and in depicting the results of the study. Participants found sick were referred to the nearby health center for medical care.

Consent for publication

Not applicable.

Availability of data and material

The datasets generated and analyzed during the current study are not publicly available; but are available from the corresponding authors on reasonable request and with permission of the Southern Region and Sidama Zone Health Bureau.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

WT involved in proposal development, data collection, analysis, report writing and incorporating comments provided from reviewers. WD involved in proposal development, analysis, reviewing the draft manuscript and agreed with the final version of the manuscript. Both authors read and approved the final manuscript.

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Paper- III

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RESEARCH ARTICLE Open

Husbands' involvement in antenatal care and its association with women's utilization of skilled birth attendants in Sidama zone, Ethiopia: a prospective cohort study

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Abstract

Background: There is limited evidence about husbands' roles on women's utilization of skilled maternity care in Ethiopia, a country with low utilization coverage of skilled birth attendants and high maternal mortality. This study examined the association between husbands' involvement in antenatal care and women's use of skilled birth attendants in Sidama zone, Southern Ethiopia.

Methods: Using a cohort study design, we followed a random sample of 709 antenatal women until delivery from June 01 to November 30, 2015. Main exposure variable was husband's involvement in at least one antenatal care visit, and outcome variable was women's use of skilled attendants during birth. Data were analysed using SPSS software-version20. We computed univariate and bivariate analyses to describe characteristics of the study subjects. A chi-square test with p-value < 0.05 level of significance and logistic regression analyses with odds ratio and 95% confidence interval were computed to test homogeneity of the two groups' baseline characteristics and examine the association between husbands' involvement in antenatal care and women's use of skilled attendants during birth. Model assessment of the regression equation was checked using a likelihood ratio test, score test, and Hosmer-Lemeshow goodness-of-fit test.

Results: Women who reported at least one antenatal care visit in which their husbands accompanied them were 6.27 times (95% Confidence interval: 4.2, 9.3) more likely to use skilled birth attendants compared to women attended antenatal care alone.

Conclusion: There was a strong statistically significant association between husbands' involvement during antenatal care and women's use of skilled attendants during birth. This implies that woman's utilization of skilled attendants during birth can be improved by involving their husbands in at least one antenatal care visit.

Keywords: Husband, Male involvement, Antenatal care, skilled birth attendant, Ethiopia

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Background

Globally, in 2015, approximately eight hundred and thirty women were dying every day due to pregnancy and childbirth complications. Almost all these deaths (99%) occurred in low-resource settings, and more than half occur in sub-Saharan Africa [1–3]. The probability that a 15 year-old girl in sub-Saharan Africa eventually dying from a maternal cause was as high as 1 in 36 compared to 1 in 4900 in developed Region [1, 4].

Ethiopia is one of the six countries that account for 50% of maternal deaths globally [3]. Trends in maternal mortality ratios (MMRs) in Ethiopia, however, showed a significant reduction of maternal deaths from 897 per 100,000 live births in 2000 to 353 per 100,000 live births in 2015 [1]. There is no doubt that the country will need to make huge reductions in MMRs to meet the target of MDG5 and Sustainable Development Goals (SDG3), a transformative new agenda for maternal health towards ending preventable maternal mortality [1]. This will require a great commitment from the government and its partners [5] with community effort.

The challenges of maternal mortality and morbidity in Ethiopia are aggravated by the underutilization of skilled delivery services [6]. The proportion of births with skilled attendants is still very low in Ethiopia [5, 7]. Unskilled persons assist the majority of births at home and only 16% of births are at health facilities in 2014, in Ethiopia [7]. Even though the percentage of facility births continues to be low in Ethiopia, it increased from 5% in 2000 to 16% in 2014 in the last 15 years. In South-ern region, 11.7% of the women delivered by SBAs, which is lower than other similar regions in Ethiopia [7].

Ethiopian Federal Ministry of Health (EFMOH), as part of reproductive health (RH) strategies to reduce MMR, had planned to raise the number of deliveries attended by SBAs from 16% in 2006 to 60% by 2015 [5]. This RH strategy did not consider the roles of men in ma-ternal health services. However, the majority of studies in Ethiopia indicates men's roles as head of the households and key decision-makers of all issues including women's need for health care services. Moreover, common reasons cited by many studies in Ethiopia for the low utilization of SBAs are focused on the socio-demographic and maternal characteristics, and little has been done to involve male partners in maternal health care services [6, 8, 9].

Evidence from an interventional study in African coun-tries suggest that the three exposure indexes consistently and significantly associated with women's use of SBAs are husband's involvement in decision-making, couple's dis-cussion and planning within the household, and having received counselling on birth preparedness during ANC [8]. Despite that fact, research about the association be-tween husbands' involvement in ANC visits and women's utilization of SBAs is limited. Therefore, identifying such association would be important for policy and program planning for maternal health care, specifically to improve women's utilization of skilled birth attendants. Using a co-hort study design, our study sought to determine whether husbands' involvement in ANC visits is associated with women's utilization of SBAs.

Methods

Design, aim, and setting of the study

This study employed a prospective cohort design to examine the relationship between husbands' involvement in ANC visits and women's utilization of SBAs during birth, in Sidama zone, Southern Nations, Nationalities, and People's Region (SNNPR) of Ethiopia, from June 1, 2015 to November 30, 2015. SNNPR is one of the regions in Ethiopia, with 14 administrative zones and 13 special weredas. One of the most populous zones in the region is Sidama zone. The capital of Sidama zone as well as the re-gion is Hawassa town, which is situated 275 km south of Addis Ababa. The total population size of the zone was 2,966,652; of which 49.5% was females and 5.5% are urban inhabitants [10, 11]. The population density in the zone was 452/km^2 with an average household size of 4.9 per-sons. Women of reproductive age (15–49 years) and chil-dren under-one-year of age were estimated to be 23 and 3% of the total population, respectively [10]. According to the zonal health department's report, there are seven pri-mary (district) hospitals, one general hospital (a compre-hensive and specialized university hospital), one-hundred and twenty-seven health centres, and five-hundred and twenty-four health posts in the zone. According to 2011 EDHS report, the total fertility rate of the region (SNNPR) was 4.9 children per woman, which was almost similar to the national fertility level of 4.8 children per woman in three years preceding the survey [12]. Skilled ANC, deliv-ery care, and postnatal care (PNC) services (within two days after birth) utilization coverage of the region in the five years preceding the survey were 39, 11.7, and 11.1%, respectively [7].

Study population and sampling technique

The study was conducted on a random sample of 709 antenatal women who were eligible to be included in this study. The sample-size was estimated by using 'Power and Sample-Size' software Program' (PS version 3.1.2) [13]. The computation was made with 95% confidence level, 5% alpha (α), 80% power (β), and with 1:1 ratio of inde-pendent exposed and unexposed groups. We used 90 and 82% of the women attended by SBAs (outcome variable) among women who attended ANC education with their husbands (intervention group) and those who did not attend the services (control group) respectively, from a study in Nepal [14]. The calculated sample-size indicated an appropriate sample size of 638 women. Assumed loss

to follow-up was 10%. Hence, total sample of 702 preg-nant women were needed to test the hypothesis that women whose husbands were involved during ANC visit are more likely to utilize SBAs during birth compared to women whose husbands were not involved during ANC visit. Then, we applied a random sampling technique to select the study sample. First, we randomly selected eight out of twenty-one weredas in Sidama Zone using a lottery method. Lists of all pregnant women between 24th and 36th weeks of gestational age from June 01 to November 30, 2015 (i.e. 712 women) were prepared using household survey, health institutional records reviews, and by linking them at follow-up schemes with collaborations of the health extension workers (HEWs). Women on the lists were sent invitation letters to participate in the study. Finally, 709 pregnant women were included.

Inclusion and exclusion criteria

Women with a gestational age (G.A.) between 24th weeks to 36th weeks, living with their husbands for at least a year in the study area and those who initiated ANC service in the selected health institutions before or during the study period were asked to participate. Mothers were excluded if they had complications of pregnancy (high-risk preg-nancy confirmed during ANC check-up), being unmar-ried, and those who were sick and unable to undergo an interview during the study period.

Definition of exposure and outcome variables

In this study, husbands' involvement in antenatal care (ANC) is the exposure variable- defined as- women who were accompanied by their husbands at least once for ANC visits, and women who attended ANC visits without their husbands were considered as 'non-exposed'. Women's use of skilled birth attendants (SBAs) was an outcome indicator to evaluate the effect of husbands' involvement in ANC visits. Women used SBAs - means women were assisted by SBAs during births in health institutions or at home. Skilled Birth Attendants (SBAs) – are doctors, nurses, and midwives who have a special training on childbirth practices [8].

Data collection

Data were collected using a semi-structured follow-up questionnaire, which was prepared for a progressive evaluation of maternal conditions (Additional file 1). Twenty-eight nurses who were working in maternity units and five supervisors collected data after they were trained for three days. Both data collectors and supervi-sors had a bachelor degree in nursing and a master degree in public health, and had at least one experience in quanti-tative data collection. The interviews were conducted using the local language (Sidamigna and Amharic) after the questionnaire was pretested for cultural appropriateness and clarity. Data collectors were fluent speakers of both the local and Amharic languages. The questionnaire included three major components: background information of study subjects, past and current obstetric conditions, utilization status of ANC services, husband's involvement status during ANC visits, and women's utilization status of SBAs during births.

Data collections were conducted at three time points. At the beginning, data collectors approached each po-tential subject to inquire about their eligibility and inter-est in volunteering for this study. This inquiry included a description of the study, its importance for maternal health care, responsibilities for participating, and potential benefits of participating.

The questions to confirm eligibility included

Information on maternal characteristics such as month of pregnancy, pregnancy intention, initiation of ANC visit, marital status, number of U5 children currently alive, 'Are you living with your husband or not?', and 'Did your husband accompany you for at least one ANC visit in this recent pregnancy?', and information on women's background characteristics. All mothers who met the study criteria were asked to participate and give informed consent. Study aids included a client information booklet, writing pad with pen and pencil to calculate expected date of delivery (E.D.D), 'fundal height' measurement guide for abdominal palpation were given to data collectors; and telephone numbers of the study team to all HEWs for ad-vice in case of complications or questions regarding follow up visits. During initial assessment, data collectors and su-pervisors estimated each woman's date of last ANC check-up (or at 9 months of pregnancy) for next contact.

The first interviews with the women were conducted at their last ANC check-up according to the estimated schedule for each woman (or at 9 months of pregnancy). It was to ascertain information on women's utilization status of ANC services (the number of ANC visits) and the status of their husbands' involvement in ANC visits (did your husband accompany you for at least one ANC visit? [yes/no]). These included a baseline evaluation and planned visits according to the schedule given for every woman. The second interviews were conducted on date of delivery (or within a week after birth) to collect data on women's place of birth and utilization status of SBAs during birth. If place of births were at health facility, data collectors checked the information available in the delivery care 'logbook'. Each specific date of interview for every woman was estimated beforehand, based on gestational age by data collectors and supervisors as well as principal investigator. In addition, HEWs at each kebele were assigned to assist data collectors during home visits according to the given schedule. The HEWs in the selected weredas used telephone reminders for

upcoming study visits, which was no less frequently than once every month or when there was unscheduled or unexpected childbirth.

Data processing and analysis

After appropriate coding, data were entered from the completed questionnaires to computer software (SPSS version20) for analysis. Data entry was validated (logic checks including range checks and missing value checks) by visual inspection. Monitoring of the interviews oc-curred regularly through site visits by supervisors and principal investigator. This included ensuring all ques-tionnaires were completed, few questionnaires were matched randomly with the source information, and all scheduled and unscheduled visits were documented. Inconsistencies were resolved by contacting the study participants.

We hypothesized that SBA would be higher in the ex-posed group than in the control group. Study participants were coded as lost to follow-up if the questionnaire on de-livery care was not completed. Descriptive statistics were presented mainly as frequency listings and percentages because most of the variables were categorical. For con-tinuous variables, we computed means and standard devi-ations. We used a chi-square ($\chi 2$) goodness-of-fit test with p-values < 0.05 for level of significance to test the compar-ability (homogeneity) of women's baseline variables (their proportions) in our sample population.

Bivariate logistic regression analyses were computed to examine the association between exposure and outcome variables. Then, we computed multivariate logistic regres-sion analyses to evaluate the independent effects of each predictor variable on the outcome variable by controlling for confounding factors. Odds ratios with 95% confidence intervals (C.I.) were used to evaluate the direction and strength of associations. We checked presence of inter-action effects between independent variables, performed an overall model evaluation, statistical test of individual predictors, and goodness-of-fit statistics of the model using SPSS software version20 (Additional file 2). As women's demographic and maternal characteristics were a priori expected to have moderation or interaction effects on the relationship between husbands' involvement and women's use of SBAs, stratified odds ratios of the expos-ure and outcome variables were estimated for each inde-pendent factor, but are only reported when found to be statistically significant.

Results

Of 709 study participants, 54% (n_1 = 385) reported at least one ANC visit, in which they were accompanied by their husband whereas 46% (n_2 = 324) reported that they were never accompanied by their husbands. On the first interview dates, women were asked about the total number of ANC visits and whether their husbands' were involved in at least one or not. This helped to cross-check their first and second responses, and we took the similar (agreed) responses as a true response to ascertain exposure status. Moreover, 41% (n = 143) of the women from the exposed group were observed with their husbands at health facilities for at least one ANC visit during the initial assessment. Fortunately, we did not find variations between the two responses with respect to their husbands' involvement. During the second inter-view sessions, 664 women (100% of the exposed and 86% of the non-exposed groups) completed their follow-up, yielding a 93.6% response rate. Incomplete follow-up for 45 (6.3%) women from the non-exposed group was due to those who changed their residence with unknown rea-son even though repeat visits took place.

Characteristics of study subjects

One hundred and seventy-five (26.4%) respondents were 15 to 24 years of age and 110 (16.6%) were 35 to 49 years of age when their last children were born. (Table 1) Mean age was 28.2 (SD ± 5.43 years). Among these women, 141 (21.2%) had no formal education, 248 (37.3%) had attended primary education, and 176 (26.5%) of the women had attained secondary education. A higher proportion (77.3%, n = 513) of the women were 'housewives'; and the majority (67.6%,n= 449) were Prot-estants while others belonged to Muslim, Orthodox and Catholic religion. (Table 1) The proportion of births at health facility (329; 49.5%) and at home (335; 50.5%) was nearly equal. Similarly, the women's responses on use of skilled birth attendants (SBAs) and health facility delivery (HFDs) were equal. The two groups of women had nearly even distributions by place of residence, age, level of edu-cation, and number of under five children at recent pregnancy (Table 1).

A higher proportion of the exposed group used SBAs compared to the non-exposed group (67.5%, n = 260 versus 24.7%, n = 69)). (Table 2) Variance inflation fac-tors (VIFs) for each covariate were between '1.06 to 1.278', indicating no multicollinearity; since the values are < 5.0 (Additional file 3) [15]. However, the results of stratified analyses showed instability of ORs for 'initi-ation of ANC visits during the recent pregnancy', which has both confounding and modification effect on the relationship between the number of ANC visits and the outcome variable. Due to this reason, the variable 'initi-ation of ANC visit' dropped from the final model.

Bivariate and multivariate logistic regression analyses

Bivariate analysis showed that husbands' involvement during ANC visit was statistically significantly associated with women's use of SBAs during births [COR 6.33, 95% C.I.: 4.5, 8.9]. (Table 2) Regarding women's background

Table 1 Baseline characteristics of women in the two groups, in Sidama zone, Southern Ethiopia, 2015

Characteristics	Was your husband involved at least in one ANC visit? Yes, (%) (n = 385)	No, (%) (n = 279)	Total (N = 664)	X^2, (p-value)
Residence				
Urban	194 (60.1)	129 (39.9)	323	1.117 (=0.291)
Rural	191 (56.0)	150 (44.0)	341	
Age in year				
15–24	103 (58.9)	72 (41.1)	175	0.090 (=0.956)
25–34	218 (57.5)	161 (42.5)	379	
35–49	64 (58.2)	46 (41.8)	110	
Education level				
Tertiary	62 (62.6)	37 (37.4)	99	3.010 (=0.390)
Secondary	103 (58.5)	73 (41.5)	176	
Primary	134 (54.0)	114 (46.0)	248	
None	86 (61.0)	55 (39.0)	141	
Occupation type				
Government employee	64 (69.6)	28 (30.4)	92	6.159 (=0.046)*
Businesswomen	35 (59.3)	24 (40.7)	59	
Housewife	286 (55.8)	227 (44.2)	513	
Religion				
Protestant	251 (55.9)	198 (44.1)	449	8.908 (=0.031)*
Orthodox	45 (63.4)	26 (36.6)	71	
Catholic	47 (73.4)	17 (26.6)	64	
Muslim	42 (52.5)	38 (47.5)	80	
Initiation of ANC visit				
1st trimester	41 (71.9)	16 (28.1)	57	9.764 (=0.008)**
2nd trimester	231 (60.0)	154 (40.0)	385	
3rd trimester	113 (50.9)	109 (49.1)	222	
Number of ANC visits				
4+	64 (76.2)	20 (23.8)	84	13.087 (< 0.001)***
1 to 3	321 (55.3)	259 (44.7)	580	
Number of under 5 children				
< 1	127 (62.0)	78 (38.0)	205	1.918 (=0.166)
> 1	258 (56.2)	201 (43.8)	459	
Is the pregnancy planned?				
Yes	280 (64.2)	156 (35.8)	436	20.282 (< 0.001)***
No	105 (46.1)	123 (53.9)	228	

***P-value < 0.001, **p-value < 0.01, and *P-value < 0.05, indicate the significance differences of the two groups (women with husbands' involvement and without involvement by indicated variables)

and maternal factors, nine variables were significantly associated with women's use of SBAs during births, though there was a weak association with women's age. All independent variables, which had a p-value < 0.25 in the bivariate analysis were included in a multivariate regression analysis to ascertain their independent effects on women's utilization of SBAs during deliveries. (Table 2) On a multivariate analysis, husbands' involvement during ANC visits and women's use of SBAs during birth showed a strong significant association [AOR 6.27, 95% C.I.: 4.2, 9.3] (Table 2).

There was no homogeneity of the odds ratios for the relationship between 'husbands' involvement during ANC visit' and 'women's use of SBA' across categories of place of residence and women's age (as layer variables). (Table 3) However, across categories of women's education (as layer

Table 2 Logistic regression analysis of skilled birth attendant utilization by selected characteristics, Sidama Zone, Ethiopia, 2015

Characteristics		Have you received SBAs' service?			
		Yes, n (%)	No, n (%)	COR (95%C.I.)	AOR (95%C.I.)
Husband involved in ANC	Yes	260 (67.5)	125 (32.5)	6.33 (4.5, 8.9)*	6.27 (4.2, 9.3)*
	No	69 (24.7)	210 (75.3)	1.00	1.00
Place of residence	Urban	193 (59.8)	130 (40.2)	2.2 (1.6, 3.0)*	1.7 (1.14, 2.5)*
	Rural	136 (39.9)	205 (60.1)	1.00	1.00
Age in year	15–24	100 (57.1)	75 (42.9)	1.9 (1.2, 3.1)*	–
	25–34	184 (48.5)	195 (51.5)	1.4 (0.9, 2.1)	–
	35–49	45 (40.9)	65 (59.1)	1.00	–
Education level	Tertiary	61 (61.6)	38 (38.4)	1.9 (1.14, 3.3)*	1.6 (0.8, 2.9)
	Secondary	102 (58.0)	74 (42.0)	1.7 (1.06, 2.6)*	1.3 (0.7, 2.2)
	Primary	102 (41.1)	146 (58.9)	0.8 (0.5, 1.3)	0.6 (0.4, 1.1)
	None	64 (45.4)	77 (54.6)	1.00	1.00
Occupation type	Government employee	56 (60.9)	36 (39.1)	1.8 (1.2, 2.8)*	–
	Businesswomen	36 (61.0)	23 (39.0)	1.8 1.05, 3.2)*	–
	Housewife	237 (46.2)	276 (53.8)	1.00	–
Religions	Protestant	207 (46.1)	242 (53.9)	1.5 (0.9–2.5)	1.7 (0.9, 3.1)
	Orthodox	49 (69.0)	22 (31.0)	3.9 (1.9–7.8)*	3.8 (1.7, 8.6)*
	Catholic	44 (68.8)	20 (31.2)	3.8 (1.9–7.8)*	3.4 (1.5, 7.8)*
	Muslim	29 (36.2)	51 (63.8)	1.00	1.00
Planned pregnancy	Yes	262 (60.1)	174 (39.9)	3.6 (2.6–5.1)*	2.5 (1.7, 3.7)*
	No	67 (29.4)	161 (70.6)	1.00	1.00
Number of U5 yr children	≤ 1	135 (65.9)	70 (34.1)	2.6 (1.9–3.7)*	2.5 (1.6, 3.8)*
	> 1	194 (42.3)	265 (57.7)	1.00	1.00
Initiation of ANC visit	1st trimester	37 (64.9)	20 (35.1)	3.2 (1.7, 5.8)*	–
	2nd trimester	210 (54.5)	175 (45.5)	2.0 (1.5, 2.9)*	–
	3rd trimester	82 (36.9)	140 (63.1)	1.00	–
Number of ANC visits	4+	66 (78.6)	18 (21.4)	4.4 (2.6–7.6)*	3.3 (1.7, 6.5)*
	1 to 3	263 (45.3)	317 (54.7)	1.00	1.00

COR Crude Odds Ratio, AOR Adjusted Odds Ratio
*Where 95% C.I. does not include 'one', it shows a significant association between the outcome and the factor The sign"------ "indicates the variable was not included in the multivariate analysis

variable), a significance value of homogeneity test was greater than 0.10, indicating homogeneous odds ratios among categories. (Table 3).Among women's background and maternal factors, place of residence, religion, number of under five children, and number of ANC visits attended by women during the recent pregnancy were found to be significant predictors for women's use of SBAs during births, after controlling for confounding variables. Women with one or no U5 children during the recent pregnancy were 2.5 times more

Table 3 Homogeneity tests for Odds Ratio of factors (layer variable), in Sidama zone, Southern Ethiopia, 2015

Layer variable (by categories)		Chi-Squared	df	Asymp. Sig. (2-sided)
Place of residence (2 categories.)	Breslow-Day	9.808	1	0.002
	Tarone's	9.806	1	0.002
Women's age (3 categories)	Breslow-Day	21.613	2	0.000
	Tarone's	21.455	2	0.000
Women's education level (4 categories)	Breslow-Day	4.114	3	0.249*
	Tarone's	4.112	3	0.250*

*p-value > 0.10, indicating homogeneity of the odds ratios among categories of a particular variable

likely to use SBAs during births compared to women with more than one U5 children during the recent births [AOR 2.5, 95%C.I.: 1.6, 3.8]. Similarly, urban women were 1.7 times more likely to use SBAs during births compared to rural women [AOR 1.7, 95% C.I.: 1.14, 2.5]. (Table 2) Women who belong to Orthodox [AOR 3.8, 95% C.I.: 1.7, 8.6] and Catholic [AOR 3.4, 95% C.I.: 1.5, 7.8] religions were 3.8 and 3.4 times more likely to use SBAs during births compared to Muslim women. (Table 2).

The odds of using SBAs during birth for women with planned pregnancies were 2.5 more times as likely as women with unplanned pregnancies [AOR 2.5, 95%C.I.: 1.7, 3.7]. Women who attended four or more ANC visits during recent pregnancies were 3.3 times more likely to use SBAs during birth compared to women who attended less than or equal to three ANC visits [AOR 3.3, 95% C.I.: 1.7, 6.5]. In addition, there was a positive relationship between number of ANC visits and odds of using SBAs during births. (Table 2).

Discussion

A higher proportion of women from the exposed group attended skilled assistance during birth compared to the non-exposed group. Husbands' involvement in their wives' ANC visits was an important predictor found to be strongly and significantly associated with women's use of SBAs during birth. This is consistent with other studies in Africa including Ethiopia, and Asia [16–20]. This could be due to a man involved in ANC who is more likely to discuss and jointly decide on his wife's place of birth than an uninvolved man. This is supported by studies in Ethiopia and Uganda [16, 21]. Male part-ners' concern and the presence of open discussion be-tween partners may help a woman to use SBAs during birth. Similarly, our finding reinforces studies in Uganda [18] and Bangladesh [19] showing that women were more likely to have better outcomes when their hus-bands were directly involved in maternal health care by attending ANC visits and by supporting them during pregnancy. This implies that the influences from other people (especially, partners) are important determinants of women's delivery place [8, 17, 20].

There were variations in the influence of husbands' involvement during ANC visits on women's use of SBAs across categories of residence and women's age, although it did not differ with respect of categories of women's education levels. This implies that women's odds of using SBAs during births may be increased by targeting husbands of both rural women and young women (age 15–25 years old) to be involved in their wives' ANC visits. Women who reside in urban places were more likely to use SBAs during births compared to rural women. This is consistent with other studies in Ethiopia and other African countries [6, 9, 22]. A likely explanation for this relationship is that urban women are more accessible for health information through either mass media or other sources.

Moreover, as in most sub-Saharan African countries, urban women in Ethiopia tend to benefit from relatively easy access to maternal health services [22]. However, currently, the Ethiopian government has tried to reach rural communities with health information through HEWs as well as some elec-tronic media like television and mobile phones.

Women who belong to Orthodox and Catholic religions were more likely to use SBAs during birth than women belong to Muslim religion. This is consistent with other studies in Ethiopia, Asia, and Kenya [6, 22–29]. A previ-ous study in Ethiopia, however, did not find a significant association between religion and SBAs utilization [9]. This difference might be due to the difference in study context, study design and sample size. Further studies are needed to ascertain the discrepancies with respect to religion.

The relationship between level of education and women's use of SBAs during birth did not attain statis-tical significance. It is similar with another study in Ethiopia that showed women's education is a weak pre-dictor of the use of skilled assistance at birth [6]. Other studies in Ethiopia [9, 11, 22, 28], however, documented that women's education is a major factor influencing ma-ternal health care utilization, but these addressed mater-nity care services in general and utilization of SBAs not as a separate issue. It is commonly believed that educa-tion serves as proxy for information and knowledge of available health care services [30]. Moreover, education enhances level of women's autonomy and increases decision-making power that results in improved freedom to make decisions including the use of maternal health care [31]. A study in Tanzania reported that educated women were more likely to make decisions to use assist-ance from medical personnel at birth themselves com-pared to their uneducated counterparts [32]. Similarly, studies in Bangladesh [33] and Turkey [34] found that women's education was a strong determinant of the use of skilled assistance at birth. Possible explanations for the dif-ferences may be, first, due to differences in study designs and sample sizes; second, it could be due to an effect modification between women's education levels and our main exposure variable in the association with the out-come variable. So, how women's education levels influence SBAs utilization with and without the influence of hus-bands require further study.

The association of women's use of SBAs during birth with the number of ANC visits, the number of under five children, and the pregnancy intention are consist-ent with three studies in Ethiopia [6, 35, 36], studies in Kenya [17, 37], Tanzania [38] and Nepal [39]. It is, how-ever, not only the quantity but also the quality of ANC that influences care seeking during birth [8].

Although this study did not address quality of ANC services, a study in Africa showed that women with the highest focused ANC Index scores (care involved both quantity and quality) were three times more likely to deliver in health facilities than women with the lowest scores. This illustrates that even in an area where women have a strong preference to use traditional birth attendants for delivery, quality and quantity of ANC can have a major impact on care-seeking [8]. Women who had one or no under-five children were more likely to use SBAs during birth than those with more than one. Similarly, women whose pregnancy was planned were more likely to use SBAs during birth compared to women with unplanned pregnancy. This is consistent with studies in South and South-East Ethiopia [6, 35] and Kenya [17, 37]. Women with two or more under five children may prefer to deliver at home because of experiences from previous birth. Parents with fewer children lack experience and thus may seek more easily professional care [9, 28]. In addition, the first deliveries tend to be more difficult and that may motivate women for institutional delivery [6, 28].

Study limitation

Loss of follow up was a limitation in this cohort study. Respondents often changed their place of residence during follow-up time. To manage this, we tried re-peated visits during data collection periods. To examine the effect of the lost follow-up cases, we computed an intent-to-treat analysis and there was no significant dif-ference on the outcomes. The other potential biases in this study may be social desirability bias in favour of their husbands' involvement in ANC service. To reduce this, we tried to interview each woman in a separate room by explaining the benefits of their honest re-sponses for improvement of maternal health services, and we used repeated interviews (before and after deliv-ery) to ensure the response was genuine. Further limita-tion of this study is data on service quality were not included. Also data on household income were incom-plete, since most respondents did not volunteer to re-spond to such questions due to unknown reasons. This may have influenced both husbands' involvement and women's use of skilled services.

Strengths of the study

The strengths of this study were, first, a cohort design and an adequate sample size. Secondly, the observations of up to 41% of women being accompanied by their hus-bands lend credence to the findings from the interviews. Moreover, it is the first study in the region to determine the relationship between husbands' involvement in ANC services and women's utilization of skilled birth attendants during delivery.

Conclusions and recommendations

The strong relationship between husband's involvement during ANC visits and women's use of SBAs during birth implies that raising awareness about husbands' involvement during ANC visits through mass media, religious leaders and community elders should be given due attention, especially in regions and areas with contextual similarities. Besides that, there is a need to promote husbands' involvement in their wives' ANC visits by targeting large proportions of rural and young women. Further, it is necessary to provide information and advice on the frequency of ANC visits, at least four visits per pregnancy through contextual based couple's ANC counselling sessions. Therefore, there is a need for planners of maternal health programs to develop contextual-based approaches that promote husbands' involvement in maternal health care at Wereda, Zone and Regional levels. Our findings also strongly recommend a policy to mainstream male involvement in routine maternal health care. Such policies should address husbands' roles and constraints, as well as an educational component to sensitize husbands to the benefits of their involvement in pregnancy care and outcomes. Based on our findings, we also strongly recommend health institutions to start well-organized ANC couples' counselling sessions at least once after the first ANC visit of every pregnant woman based on the women's consent. Antenatal care couple-counselling sessions should address the benefits of skilled maternal health care in general; and the benefits of repeated ANC visits and postpartum services in particular. For men, such efforts could help to deflate the assumption that maternal health care is an exclusively women's concern.

Additional files

Additional file 1: Participants'Information Sheet & Consent-form.(PDF 219 kb)

Additional file 2: SPSSOutput-logistic regression table. The data described the output of a multivariate analysis of selected predictors for women's utilization of skilled birth attendants; and it is the best-fitted model selected from six models constructed by forward log-likelihood methods in SPSS. (PDF 176 kb)

Additional file 3: Multicollinearitystatistics output table. The datadescribed the multicollinearity statistics output- i.e. the tolerance and Variance Inflation Factor- of selected independent variables. (PDF 168 kb)

Additional file 4: Englishversion Interview Questionnaire. (PDF 271 kb)

Abbreviations

ANC: Antenatal Care; AOR: Adjusted Odds Ratio; CI: Confidence Interval; COR: Crude Odds Ratio; E.D.D.: Expected Date of Delivery;; EDHS: Ethiopia Demographic and Health Survey; EFMOH: Ethiopia Federal Ministry Of Health; G.A.: Gestational Age; HEW: Health Extension Worker; MMR: Maternal Mortality Rate/Ratio; OR: Odds Ratio; PNC: Postnatal Care; RH: Reproductive Health; SBA: Skilled Birth Attendant; SDG: Sustainable Development Goals; SNNPR: Southern Nation Nationality and People's Region; SPSS: Statistical Software Package for Social Science; VIF: Variance Inflation Factor

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Authors' contributions
WT and WD contributed equally during the process of proposal development. WT participated in data collection, data analysis and in preparing the draft manuscript. WT and WD made significant contributions in revising the manuscript. Finally, both authors read and approved the final version of the manuscript.

Ethics approval and consent to participate
Before the commencement of the study, ethical approval letter was obtained from the Institutional Review Board of the College of Health Sciences, Addis Ababa University in Ethiopia (Protocol No. 067/13/SPH and Approval Meeting No.054/13). Then we obtained permission letters from South Region and Sidama Zone Health Bureaus, as well as from Weredas Health Offices and health institutions (Additional file 4). Before started data collection, written informed consent was obtained from respondents. With regard to participants under the age of 18 years, the parent provided written informed consent on behalf of them. They were informed to interrupt the interview at any time that they desire if they are not willing to continue with the interview. To ensure confidentiality, codes instead of names were used during data entry and in depicting the results of the study. In addition, the questionnaires and other collected information were kept locked and only the P.I had access. Participants found sick were referred to the nearby health centre for medical care.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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Paper- IV

Husbands' involvement in antenatal care and its association with women's utilization of postnatal care in Sideman-Zone, Ethiopia: A prospective Cohort study

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Abstract

Background: The level of postnatal care (PNC) coverage is extremely low in Ethiopia. The majority of women (92%) did not receive a postnatal checkup. Particularly, the Southern region is one of the regions with lowest postnatal care coverage in Ethiopia, with 93.2% of women did not receive a postnatal checkup. Evidence about husbands' contribution for utilization of PNC is limited in Ethiopia. Therefore, this study examined the relationship between husbands' involvement in antenatal care (ANC) and women's use of PNC in Sideman Zone, Southern Ethiopia.

Methods: using a cohort design, we followed antenatal mothers until their postnatal periods, from June 01 to November 30, 2015. The main exposure variable was husband's involvement in at least one ANC visit and the outcome variable was women's use of PNC. Data were collected using semi-structured questionnaire and analyzed using SPSS version20. A chi-squared test with a p-value < 0.05, and bivariate and multivariate regression analyses with 95% confidence levels were computed to look for the associations between the exposure and outcome variables. Before we reported the findings, multicollinearity tests for potential variables were checked. Further, the overall model assessment of the regression equation were checked using a likelihood ratio test, score test, and Hosmer-Lemeshow goodness-of-fit test.

Results: Women whose husbands' involved for at least one ANC visit were 7.5 times more likely to use PNC compared to their peers who attended ANC alone (adjusted Odds Ratio 7.45; 95% Confidence Interval: 4.18, 13.3).

Conclusions: Based on our findings, we conclude that husbands' involvement during ANC visits and women's utilization of PNC services have had a strong and significant association. This implies that if we do more on husbands' involvement in at least one ANC visit, the utilization of PNC services by women could be improved. Therefore, we strongly recommend the health care providers should promote husbands' involvement in ANC services by providing adequate information through couples' ANC counseling sessions at least in the first visit.

Keywords*: Husband involvement, antenatal care, postnatal care utilization, Ethiopia*

Background

The postnatal period – the time immediately after the birth of the baby and up to six weeks (0-42 days) – is critical to the health and survival of a mother and the newborn [1]. The most vulnerable time for both within this period is during the hours and days after birth [2, 3]. Lack of care in this period may be a missed opportunities to promote healthy behaviors, which affecting women, newborns, and children, or beyond that it results death or disability [2, 4].

The level of postnatal care (PNC) coverage is extremely low in Ethiopia. The majority of women (92%) did not receive a postnatal checkup [2]. Particularly, the Southern region is one of the regions with lowest PNC coverage in Ethiopia, with 93.2% of women did not receive a postnatal checkup [2]. A cross-sectional study previously done in Sidama Zone,, Southern, Nations, Nationalities, and peoples Region (SNNPR) shows that PNC service utilization coverage in the study zone is lower than that of Amhara region [5] (37.2% versus 45.9 %, respectively) [4].

A recent study in Ethiopia revealed that as the frequency of ANC visits increases mothers are more likely to use PNC service [6]. Nevertheless, there is a high discrepancy between ANC and PNC utilization in Ethiopia. The ANC utilization from skilled provider, in Ethiopia, is about 34%, which is higher than utilization of PNC services (6.7%) [2]. But women who attended four or more ANC visits in Ethiopia were 19%, which is very low compared to other countries [2]. Several previous studies in Ethiopia examined women's utilization of ANC and skilled delivery care, but not PNC utilization, to determine the factors that affect women utilization of maternal health care services. Although one goal of ANC is to improve women's use of PNC services, there are contextual factors that affect women's understanding and retaining of ANC information given from health providers. A study reported that women are not always happy with the amount of information and support that they receive during pregnancy, childbirth, and in the PNC periods [7]. Particularly, woman may not be comfortable to receive all the given information while her pregnancy going to term, since her priority needs may be medical help. During this time, a woman needs a family supporter, preferably the husband, from the family members. A study revealed that men's feeling about their partner's pregnancy and the amount of social support they provide for their partner could influence upon women's commitment to the pregnancy, confidence in their abilities, and take-up of ANC [7].

Over the years, however, the issue of maternal health has been predominantly seen and treated as a purely feminine matter [8]. Even today, though huge changes in how men and women share work and caring roles, there is still an underlying belief that, whilst motherhood is essential, fatherhood is over looked. In focusing almost entirely on mothers, most service providers tend to forget fathers – both in terms of the support they could provide and any support they may need to play a positive role [9].

In the Ethiopian context, males are close to their partners, the owners of significant household resources, and the primary decision makers even on maternal health care; so that their influence on women's use of maternal health care are well known [4-6]. However, the previous studies about determinant factors that related to utilization of PNC services were focused on socio-demographic and maternal factors. Contextual evidence about husbands' contribution for women's use of maternal health care services is limited in the study areas. Therefore, this study was made to examine the contribution of husbands' involvement in ANC for their spouses' utilization of PNC service, with the intent of using the findings to suggest the need of designing couples' ANC counseling session program to the policy makers, program planners, and health care providers at all levels in Sidama Zone, Southern Ethiopia.

Methods

Study design

The study used a prospective cohort design to follow a representative sample of a cohort of antenatal mothers until PNC periods from June 01 to November 30, 2015. First, based on the initial assessment findings, we grouped the mothers into two groups, i.e. mothers whose husbands involved in at least one ANC visit "*as an exposed group"* and mothers who attended all ANC visits alone or whose husbands never involved during ANC visit "*as un-exposed group"*. The main outcome of this study (utilization of PNC) was ascertained by interview and record reviews from each mother using scheduled follow-up.

Study setting and population

The study was conducted in Sidama zone, one of the most populous zones of Southern Ethiopia. Sidama zone is located in SNNPR. The capital of the zone is Hawassa town. According to the 2007 census, Sidama had the total population of 2,954,136 and a population density of 452/km2 with an average household size of 4.99 persons [10]. Women of the reproductive age group and children under one year were estimated to be 23% and 3% of the total population, respectively [10]. An estimated 592,539 households were enumerated in the zone [4, 10]. According to the zonal health department report, in 2014, seven primary hospitals, one general hospital, 127health centers and 524 health posts were found in the Zone. The Region's utilization coverages of skilled ANC, delivery care, and PNC within two days after birth in the five years preceding the survey were 39%, 11.7%, and 11.1%, respectively [11].

Sample size calculation

The sample size was computed with 95% confidence level, 5% alpha, 80% power and a 1:1for exposed and unexposed groups. We used the proportions: 60% and 49% of women attended PNC among women who attended ANC educations with their husbands (an intervention group) and without their husbands (a control group), respectively, from a Nepal's study [12]. Based on these assumptions, the calculated sample-size was 678 study subjects for both groups, to be able to reject the null hypothesis that the proportion of women who used PNC for exposed and unexposed subjects are equal with probability (power) 0.8. Since a 5% loss of follow-up was expected, we added 5% of the calculated sample-size and our final sample-size became 712.

Sampling methods

First, we predetermined the number of woredas to be included in this study. This was due to shortage of time and fund, besides considering the shared culture and similarity of maternal health care coverages reports of the neighboring woredas [4]. Then, we selected eight out of twenty-one woredas using a simple random sampling technique. Next, by conducting a household survey and reviewing of Health Extension Workers' (HEWs') Registration Books or 'family folders' and health institutions' ANC logbooks in the selected woredas, a total of 712 potentially eligible women were identified as a sampling frame. Finally, 709 eligible women were included in the study. Based on their exposure statuses that were assessed during baseline interviews, we identified 385 women in exposed and 324 women in non-exposed group.

Inclusion and exclusion criteria

Women with gestational age of 24^{th} weeks to 36^{th} weeks, living with their husbands, those who initiated ANC visits in the selected health institutions before or during the initial assessment periods were included in this study. On the other hand, mothers were excluded if they had complications of pregnancy (a high-risk pregnancy) confirmed during ANC check-up, and being unmarried during the study period.

Definition of Exposure and Outcome Variables

The exposure variable- *husbands' involvement during ANC visit* - was defined as- women who were accompanied with their husbands to health facility for at least one ANC visit 'exposed'; and women who were not accompanied with their husbands or who attended ANC services alone, were considered as 'non-exposed'. *Women who attend or use SBAs* means - when women assisted by SBAs during their delivery in health institutions or at home [13]. *Women's utilization of PNC services*, for this study, was "an outcome indicator"- to evaluate the contribution of husbands' involvement in ANC visit for women's use of PNC. PNC utilization was measured by the receiving of PNC services by mothers or couples (within 24 or 48 hours or after 42 days, following childbirth for both mothers who gave birth at health institution and home). Women who reported the health worker visited them within six weeks after delivery are considered receiving Postpartum Care [14]. The PNC services are five components of postpartum care (such

as counselling on danger sign, family planning, nutrition, and checking bleeding and checking breast) and newborn care during the first month of life [15].

Data collection

We used a semi-structured follow-up questionnaire for data collection. It was prepared in English and translated to the local language (Amharic and Sidamu_Affoo). Fifteen A Bachelor degree nurses and five supervisors who had a master degree in public health and had experience in quantitative data collection were recruited, and trained for three days. The questionnaire was pretested for cultural appropriateness and clarity. The questionnaire included four major components: background information, antenatal care, delivery care, and postnatal care information.

The data collections were conducted *at three time points.* Before the actual data collection periods, *initial assessments* of study participants were done through household survey and review of health records from health institutions as well as from HEWs' family folders in the selected weredas. During this time, potentially eligible mothers during our study periods were identified and listed. The data collectors approached each potential subject to inquire about their eligibility and interest in volunteering for the study. This inquiry included series of questions to confirm eligibility, a description of the study, its importance in maternal health care, their responsibilities for participating, and the potential benefits of participating. At this phase, all mothers who met the study criteria were asked to give informed consent. Then, information were asked about their socio-demographic and maternal characteristics, and their husband's involvement status: 'did your husband accompany you for at least one ANC visit in this recent pregnancy, yes/no?' Moreover, the data collectors, the supervisors, and P.I, separately, estimated every woman's gestational age (G.A.) (including the expected date of their last ANC check-up or her nine month of pregnancy), which helps to schedule the next contact by data collectors and supervisors. Study aids focused on the study information and support, which included a client information booklet, writing pad with pen and pencil for calculating expected date of delivery, and 'fundal height' measurement-guide for abdominal palpation, were given to the data collectors. Moreover, we gave telephone numbers of the study team to all HEWs for advice in case of complications or questions regarding follow up visits.

Thefirst interviews with the women were conducted at their last ANC check-up time (or at 9 month of the pregnancy), according to the estimated schedule for each woman, to ascertain information on women's utilization level of ANC services (the number of ANC visits) and the status of their husbands' involvement in ANC visits i.e. women's exposure status. These included a baseline evaluation and planned visits according to the schedule given for every woman. *The second interviews* were conducted on the date of delivery or within a week after birth to collect data on women's place of delivery, utilization of skilled birth attendants (SBAs) during delivery, information on initiation of PNC visit (within 24 or 48 hours or within 3 to 7 days) and whether their husband's 'presence or not' during facility delivery. During the second interviews period, women's use of SBAs was ascertained by asking the women about their place of delivery. If place of births were at health facility, the data collectors checked the information available in the delivery care 'logbook', including whether the woman initiated PNC service or not. Finally, *the third interviews* were conducted after 6^{th} weeks of delivery or during PNC period, according to the schedule given on the second interviews. During this time, data on the main outcome variable of this study (women's use of PNC) were collected, including information about date of initiation and number of PNC visits and types of care women and newborn received). The outcome variable was ascertained, first, by asking the woman whether she received PNC services or not (yes/no); second, if 'the woman said 'yes' for the first question', the data collectors asked her about the time when she initiated the PNC (in days); and he/she checked her 'PNC or immunization card' and recorded information about the time of her first PNC check-up, the number of PNC visits, and types of PNC received. During data collection times, the HEWs in each kebele were assigned to assist the data collectors during home-visits according to the given schedule. Furthermore, the HEWs used the telephone reminders for upcoming study visits, which was not less frequently than once every month or when there was unscheduled or unexpected childbirth.

Data processing and analysis

The data were coded and entered during the course of the study to the computer software (SPSS version20) for analysis. The data entry was validated through inspection (logic checks including range checks and missing value checks) by principal investigator (P.I.).Monitoring of the data

collection interviews occurred regularly through site visits by supervisors as well as principal investigators. This included ensuring all questionnaires were completed, few questionnaires were matched randomly with the source of information, and all scheduled and unscheduled visits were documented. Inconsistencies were resolved by contacting the study participants.

Study participants were coded as lost to follow-up if the questionnaire on postnatal care was not completed. Descriptive statistics were presented mainly as frequency listings and percentages because most of the variables were categorical. For continuous variables, we computed means and standard deviations. The distributions of baseline variables were compared to test homogeneity (similarity of their proportions) between the exposed and non-exposed groups using chi-square ($\chi 2$) tests and their p-value < 0.05 for level of significance. Moreover, differences between those who completed the study versus loss of follow-up were examined using an intent-to-treat approach (data not shown).

Using a binary logistic regression, we computed bivariate analyses to examine the association between the exposure and outcome variables. A multivariate analyses was run to evaluate the independent effects of each predictor on the outcome variable by controlling confounding effects. In a multivariate analysis, we used a backward likelihood ratio method to select the best-fitted model. The odds ratio with 95% confidence intervals was used to evaluate the magnitude of associations. Before reporting the findings, we checked the interaction effects between independent variables, and we performed an overall model evaluation, statistical test of individual predictors, and goodness-of-fit statistics. As women's demographic and maternal characteristics were a priori expected to have interaction effects with husbands' involvement during ANC visits, stratified odds ratios of the exposure and outcome variables were estimated for each independent factor but are only reported when found to be statistically significant.

Results

Socio-demographic characteristics of respondents

Table 1 displays the baseline characteristics of the respondents. In this study, six-hundred and sixty-four (93.6%) respondents gave a complete responses to the PNC questionnaires.The mean age of these respondents was 28.19 (SD $\pm$ 5.43) years old. The age distribution showed that a larger proportion of the women (57.1%) were in the early adulthood (age 25-34 years) followed by the youngest age group of 15-24 years (26.4 %). The distribution by educational levels revealed that 37.3 % of respondents were at primary education followed by secondary education (26.5 %) while the remaining respondents without formal schooling and at higher education level accounted for a smaller proportion (21.2% and 14.9%), respectively. More than two-third (77.3%) of the respondents, in this study, was housewives and 13.9 percent were government-employed while the remaining categories contributed for a smaller proportion of the respondents. Regarding the number of U5 children during recent birth, larger proportions (69.1%) of the women had more than one U5 children during the study period.

In the religious distribution, Protestant account for the highest proportion (67.6%) followed by Muslim and Orthodox (12.0% and 10.7 %), respectively. About 66% the pregnancies were intended, and more than half (58%) of the respondents initiated ANC visit within the second trimester of pregnancy. The majority (87%) of the respondents attended less than four ANC visits for the recent pregnancy. The proportions of childbirths at health facility and at home in this study were nearly equal (49.5% and 50.5%, respectively). Similarly, the women's responses on use of skilled birth attendants (SBAs) and health facility delivery (HFDs) were equal, so it is similar when we used the terms 'HFDs' and 'SBAs' during childbirth. (Table 1) Regarding PNC utilization, about one-fifth (21.8%) of the respondents received at least one PNC service during the first two days or 45 days following childbirth. Majority of the mothers among the exposed group were received PNC services compared to the mothers in the non-exposed group (32.7% vs. 6.8%). (Table 1)

The chi-square analysis, in table 1, showed that the distributions of the baseline characteristics (i.e. four of the women's background characteristics) in the two groups were not significantly different, which means they were similar or comparable.

Table 1: Baseline characteristics of women study groups by their husbands' presences during antenatal visit, in Sideman Zone, Southern Ethiopia, 2015

	Did your husband present for at least one ANC visit?			
Characteristics	**Yes, (%)** (n=385)	**No, (%)** (n=279)	**Total (%) (**N=664)	**X^2, (p-value)**
Residence				
Urban	194 (50.4)	129 (46.2)	323 (48.6)	**1.117 (=0.291)**
Rural	191 (49.6)	150 (53.8)	341 (51.4)	
Women's age (in years)				
15-24	103 (26.8)	72 (25.8)	175 (26.4)	**0.090 (=0.956)**
25-34	218 (56.6)	161 (57.7)	379 (57.1)	
35 -49	64 (16.6)	46 (16.5)	110 (16.6)	
Women's Education level				
Above secondary	62 (16.1)	37 (13.3)	99 (14.9)	**3.010 (=0.390)**
Secondary	103 (26.8)	73 (26.2)	176 (26.5)	
Primary	134 (34.8)	114 (40.9)	248 (37.3)	
No formal education	86 (22.3)	55 (19.7)	141 (21.2)	
Number of under 5 children				
≤ 1	127 (33.0)	78 (28.0)	205 (30.9)	**1.918 (=0.166)**
>1	258 (67.0)	201 (72.0)	459 (69.1)	
Women's occupation type				
Government	64 (16.6)	28 (10.0)	92 (13.9)	6.159 (=0.046)*
Businesswoman & others	35 (9.1)	24 (8.6)	59 (8.9)	
Housewife	286 (74.3)	227 (81.4)	513 (77.3)	
Religion				
Protestant	251 (65.2)	198 (71.0)	449 (67.6)	8.908 (=0.031)*
Orthodox	45 (11.7)	26 (9.3)	71 (10.7)	
Catholic	47 (12.2)	17 (6.1)	64 (9.6)	
Muslim	42 (10.9)	38 (13.6)	80 (12.0)	
Time of first ANC visit				
1st Trimester	41 (10.6)	16 (5.7)	57 (8.6)	9.764 (=0.008)*
2nd Trimester	231 (60.0)	154 (55.2)	385 (58.0)	
3rd Trimester	113 (29.4)	109 (39.1)	222 (33.4)	
Number of ANC visits				
4+	64 (16.6)	20 (7.2)	84 (12.7)	13.087 (<0.001)**
1 to 3	321 (83.4)	259 (92.8)	580 (87.3)	
Planned pregnancy				
Yes	280 (72.7)	156 (55.9)	436 (65.7)	20.282 (<0.001)**
No	105 (27.3)	123 (44.1)	228 (34.3)	
Used Skilled Birth Attendant				
Yes	260 (67.5)	69 (24.7)	329 (49.5)	118.55 (<0.001)**
No	125 (32.5)	210 (75.3)	335 (50.5)	

***P-value < 0.001 and *p-value < 0.05, indicate the presence of significance differences of the two groups (women with husbands' involvement and without involvement by indicated variables)*

The results of bivariate and multivariate analyses

On bivaraite analysis, husbands' involvement during ANC visit, women's age and education levels, the number of U5 year children during the recent birth, initiation of ANC visit, the number of ANC visits, pregnancy intention, and women's use of SBA during recent childbirth were significantly associated with women's utilization of PNC services. (Table 2) Since the bivaraite analysis indicates the effects or associations of dependent and independent variables without controlling the confounding effects, multivariate logistic regression analysis was applied in view of further examining the predictor variables. All the variables, in a bivariate analysis, with a p-value of <0.20 were included in the multivariate analysis model (Data not shown). As clearly seen in table 2, we constructed a regression model using a backward likelihood ratio method to determine the best fitted data in the model.

On multivariate analyses output, the four predictors in the best fitted logistic regression model, such as husbands' involvement during ANC visits (aOR 7.45, 95%C.I.: 4.18, 13.3), women's age between15-24 years (versus 35-49 years old; aOR 3.35, 95% CI: 1.43, 7.82), women being at higher education level (versus no formal education; aOR 4.94, 95%CI: 2.01, 12.2), and housewife women (versus government employed women; aOR 3.87, 95% CI: 1.75, 8.53) were significantly associated with women's utilization of PNC services. (Table 2)

Stratified analysis for PNC utilization: by husbands' involvement status

We computed stratified analysis by splitting the data in two: for women whose husbands involved, and did not involve, during ANC services. In the data of women whose husbands 'involved in ANC services, the association between all the background variables (except place of residence) and their utilization of PNC services were significant in the bivariate analysis. But, after adjusting for each other, only women's age, occupation types, and number of U5 years children during recent birth turned out to be the significant predictors of PNC utilization for women whose husbands involved in at least one ANC visit. The results are presented in table 3. On the other hand, in the data of women whose husbands' didn't involve in ANC visit all women's background variables were not statistically significant in a bivariate analysis. However, when adjusted for each other, women's age, education levels, and the number of U5 years children in recent birth remained the significant explanatory variables (table 3).

Table 2: Bivariate and multivariate analyses of postnatal care utilization by selected characteristics in Sideman Zone, Southern Ethiopia, 2015

	Did the women use PNC service?			
Characteristics	**Yes, (%)** (n=145)	**No, (%)** (n=519)	**COR (95%C.I.)**	**AOR (95%C.I.)**
Husband presented in ANC visit				
Yes	126 (32.7)	259 (67.3)	6.66 (3.99, 11.1)*	**7.45 (4.18, 13.3)****
No	19 (6.8)	260 (93.2)	1.00	1.00
Women's Education level				
Above secondary	26 (26.3)	73 (73.7)	2.16 (1.12, 4.13)*	**4.94 (2.01, 12.2)****
Secondary	43 (24.4)	133 (75.6)	1.96 (1.09, 3.51)*	1.38 (0.65, 2.90)
Primary	56 (22.6)	192 (77.4)	1.77 (1.01, 3.09)	1.35 (0.68, 2.67)
No formal education	20 (14.2)	121 (85.8)	1.00	1.00
Women's age (in years)				
15-24	69 (39.4)	106 (60.6)	4.46 (2.36, 8.44)*	**3.35 (1.43, 7.82)***
25-34	62 (16.4)	317 (83.6)	1.34 (0.72, 2.50)	1.06 (0.49, 2.26)
35 -49	14 (12.7)	96 (87.3)	1.00	1.00
Women's occupation type				
Housewife	123 (24.0)	390 (76.0)	1.62 (0.9, 2.92)	3.87 (1.75, 8.53)**
Businesswoman & others	7 (11.9)	52 (88.1)	0.69 (0.26, 1.81)	1.32 (0.43, 4.06)
Government	15 (16.3)	77 (83.7)	1.00	1.00
Place of residence				
Urban	79 (24.5)	244 (75.5)	1.35 (0.93, 1..95)	**------**
Rural	66 (19.4)	275 (80.6)	1.00	**------**
Religion				
Protestant	100 (22.3)	349 (77.7)	0.86 (0.50, 1.49)	------
Orthodox	14 (19.7)	57 (80.3)	0.74 (0.34, 1.60)	------
Catholic	11 (17.2)	53 (82.8)	0.62 (0.27, 1.24)	------
Muslim	20 (25.0)	60 (75.0)	1.00	------
Planned pregnancy				
Yes	107 (24.5)	329 (75.5)	1.63 (1.08, 2.45)*	**------**
No	38 (16.7)	190 (83.3)	1.00	**------**
Number of ANC visits				
4+	32 (38.1)	52 (61.9)	2.54 (1.56, 4.14)*	1.33 (0.73, 2.43)
1 to 3	113 (19.5)	467 (80.5)	1.00	1.00
Number of under 5 children				
≤ 1	73 (35.6)	132 (64.4)	2.97 (2.03, 4.35)*	1.47 (0.84, 2.58)
>1	72 (15.7)	387 (84.3)	1.00	1.00
Time of first ANC visit				
1st Trimester	22 (38.6)	35 (61.4)	4.18 (2.16, 8.10)*	2.11 (0.97, 4.63)
2nd Trimester	94(24.4)	291 (75.6)	2.15 (1.37, 3.39)*	1.33 (0.77, 2.30)
3rd Trimester	29 (13.1)	193 (86.9)	1.00	1.00
Used Skilled Birth Attendants				
Yes	98 (29.8)	231 (70.2)	2.60 (1.76, 3.83)*	1.21 (0.75, 1.97)
No	47 (14.0)	288 (86.0)	1.00	1.00

***P-value ≤ 0.001 and *p-value ≤ 0.05, indicate the presence of significance differences of the two groups (women with husbands' involvement and without involvement by indicated variables)*

Table 3: Stratified logistic regression analysis by husbands' involvement status during antenatal care, for women's utilization of postnatal care with selected women's background characteristics, in Sideman Zone, Southern Ethiopia, 2015

Selected socio-demographic Characteristics of women	Among women whose husbands involved in ANC (n=385)		Among Women whose husbands did not involve in ANC (n=279)	
	Women's utilization of PNC services		Women's utilization of PNC services	
	OR (95%CI)	Adjusted OR (95%CI)	OR (95%CI)	Adjusted OR (95%CI)
Place of residence	P=0.586	P=0.838	P=0.052	P=0.288
Urban	1.13 (0.74, 1.72)	0.94 (0.54, 1.66)	2.69 (0.99, 7.30)	1.9 (0.59, 6.07)
Rural	1.00	1.00	1.00	1.00
Women's age (in years)	P=0.000	P=0.000	P=0.178	P=0.009
15-24	**11.5 (4.95, 26.6)****	**10.4 (3.69, 29.4)****	0.45 (0.14, 1.74)	**0.04 (0.005, 0.4)***
25-34	**2.31 (1.03, 5.14)***	2.47 (0.99, 6.14)	0.35 (0.11, 1.06)	**0.17 (0.04, 0.80)***
35 -49	1.00	1.00	1.00	1.00
Women's Education level	P=0.053	P=0.085	P=0.052	P=0.022
Above secondary	1.80 (0.86, 3.79)	2.8 (0.98, 8.04)	5.13 (0.98, 26.9)	**25.9 (2.0, 336)***
Secondary	**2.03 (1.05, 3.92)***	0.78 (0.33, 1.80)	2.81 (0.56, 14.1)	9.02 (0.86, 94.9)
Primary	**2.40 (1.28, 4.48)***	1.0 (0.46, 2.16	0.96 (0.17, 5.43)	2.27 (0.21, 24.9)
No formal education	1.00	1.00	1.00	1.00
Women's occupation type	P=0.002	P=0.003	P=0.446	P=0.435
Housewife	**2.17 (1.14, 4.11)***	**2.98 (1.25, 7.08)***	1.91 (0.24, 15.0)	4.18 (0.44, 39.7)
Businesswoman & others	0.46 (0.14, 1.53)	0.66 (0.16, 2.66)	3.86 (0.37, 39.8)	4.58 (0.38, 55.4)
Government	1.00	1.00	1.00	1.00
Religion	P=0.118	P=0.590	P=0.872	P=0.941
Protestant	0.68 (0.35, 1.33)	0.90 (0.42, 1.93)	1.48 (0.32, 6.73)	1.29 (024, 7.03)
Orthodox	0.60 (0.25, 1.45)	0.81 (0.30, 2.24)	--	--
Catholic	**0.32 (0.12, 0.82)***	0.49 (0.17, 1.48)	2.4 (0.31, 18.7)	1.98 (0.23, 17.3)
Muslim	1.00	1.00	1.00	1.00
Number of U5 children	P=0.000	P=0.02	P=0.161	P=0.031
≤ 1	**3.39 (2.16, 5.32)****	**1.95 (1.11, 3.42)***	1.97 (0.76, 5.11)	**8.6 (1.22, 60.9)***
>1	1.00	1.00	1.00	1.00

***P-value ≤ 0.001 and *p-value ≤ 0.05, indicate a statistical significance differences between of the two sub-categories of an indicated variable.*

Discussion

This study was aimed at proving the relationship between husbands' involvement during ANC visits and women's utilization of PNC services, and secondly, examining other key factors predicting women's behavior on utilization PNC in the study area.

Husbands' involvement during ANC visit was related to women's utilization of PNC services. The study showed that involving husbands during ANC visits increased women's odds of receiving the PNC services. Women whose husbands involved in at least one ANC visit had seven times higher odds of receiving PNC services compared to women attended ANC visits alone. This could be because of the presence of husbands at service delivery place that help them to get more information about the available type of services, their benefits, and their work hours in a particular health facility. Moreover, through attending couple's ANC education sessions as a partners, or through communication with their wives or other clients in the health facilities, their perception, imagination, and understanding about the services could be improved. As a result; those husbands- as a decision-maker, partner, and father - could be responsible for their wives' pregnancy; so that they may promote and support their wives to pass in the continuum of pregnancy care (i.e. ANC, delivery care, and PNC). This is supported by an evidence that suggest when couples' communication and interaction regarding to health practices increase (informally, or otherwise during or after the education sessions), there would be a greater understanding and retention of new information [12].

Our finding is consistent with the findings of a cross-sectional survey and a randomized controlled trial (RCT) that conducted in Nepal [12, 16]. Those studies show that husbands' participation during ANC education sessions and the increasing awareness about attending the recommended four ANC visits can have a positive effect in increasing institutional deliveries and PNC services [16, 17]. In addition, when husbands were encouraged to be involved in the reproductive health care services, they support their wives to start using reproductive health care service [18]. Studies in Africa and Asia also show the contribution of men through attending more ANC visits for reducing risk health behaviors and do more birth preparedness in case of pregnancy complications [17-20]. Furthermore, the results of stratified analysis showed that to improve PNC utilization by young or young adolescent women, women at lower education

levels, and housewife women, there should be a special emphasis to involve their husbands during ANC services.

To address the second objective, we examined the associations between others explanatory variables and the main outcome variable. The three explanatory variables that influence women's utilization of PNC services were women's age, education levels, and their occupation types during the recent birth. Women's age and their education levels, even though, had not followed a similar pattern in influencing their utilization of PNC services, the young women and women having a higher level of education had higher odds of receiving PNC service compared to their respective reference categories (older women in the age 35-49 years and women without formal schooling, respectively). Consistently, the studies in Nepal, WestBank, and Nigeria show a significant association of PNC utilization with women's educational status and women's occupation, but not with women's age [16, 21-23]. However, studies in Ethiopia reveal a significant association of PNC utilization with only women's education levels [4, 5]. On the other hand, recent studies in Ethiopia revealed no significant association of PNC utilization with age, education, and occupation of the women [6, 24-27]. This could be due to methodological difference among studies which needs further large scale study to fill this gap.

One possible explanation for high utilization of PNC services by young women could be due to the improved awareness and positive attitudinal change of young women (the new generation) towards modern health practice compared to the old women. This may be because of the widening information network in the country that made many young women accessible to health care information through different media sources, such as radio, television, and mobile phone. Since young women can easily adapt new technology than the older groups.

Another possible explanation could be due to the confidence they developed through the experience and knowledge of the previous pregnancies and births, many older women become less motivated to go through the formalities in the health institutions. Therefore, they may delivery at home, and consequently, they may not receive PNC services. This is consistent with other studies [4, 28]. Secondly, labor that is more difficult and associated complications are believed to occur among younger women who become pregnant for the first time compared to

the older and high parity women. Hence, these groups of women prefer to get birth at health facility, and they could get the opportunities to receive PNC services. Despite that fact, the association between PNC utilization and young women (15-24 years old) in this study might be due to the interaction effect with high proportion of husbands' involvement in ANC among young women in this study. This needs a largle scale analytical study to fill this gap.

The association between women's education level and PNC utilization may be explained by the fact that the female's autonomy and greater confidence can be developed when their education level increase and this also may help the capability of making decisions about their own health. Moreover, higher educated women look for quality services and have more capability of using health care inputs that offer better care [26]. Furthermore, educated women could have more access to get information from different sources compared to illiterate women [4, 25, 26]. In contrast to our finding, two cross-sectional studies in Ethiopia show non-significance association between PNC utilization and women's education [4, 5]. The reason for such variation could be due to methodological differences among the studies; and it needs further study to fill the existed gaps.

The women's occupation types in this study were related to their utilization of PNC service, though the direction of the associations was not as we expected. In our finding, housewife women had a higher odd of utilizing PNC services compared to government employee women. In contrast, the finding of previous studies in Ethiopia shows a non-significant association between women's occupation types and use of PNC services [4-6, 24-27]. One possible explanation for our finding could be due to the effect modification between husbands' involvement and women's occupation types. Therefore, we did a stratified analysis; and the results revealed that husbands' involvement during ANC visit have had a higher effect on women's utilization of PNC services among a housewife women compared to government-employed women (table 3). The other possible explanation could be due to the small sample-sizes of 'government employee' and 'businesswomen or other job' categories compared to housewife women category (table 2). To fill this gap there is a need to conduct a large-scale study.

Limitations and strengths of the study

First, as a cohort design, there was loss of follow up. It was due to the respondents changed their place during the follow-up time. As a solution, we tried to conduct at least three repeated-home-visits. Further, we examined the effect of lost group during analysis. Second, the effects of other family members who accompanied the women to ANC check-up were not considered in the analysis. Since, the enhanced knowledge that seen in women, by receiving education with their husbands, might be seen if another individual important to the woman is present; so that we suggested to other studies to fill this gap. Third, problems of potential social desirability bias, which is in favor of their husbands' involvement in ANC service in this study. We tried to reduce this bias, by interviewing each woman in separate room after explaining the importance of their honestly responses. Moreover, we interviewed the women at two different times about their husbands' involvement during ANC visits to ensure the response was genuine. Then, we took similar responses in both interviews as true responses. Fourth, due to small size of sub-categories of occupation types may affect the odds ratios, which might be a potential selection biases, so that we have put the same explanation for the given results.

Regarding the strength of this study was first, the design being an analytical prospective cohort study and adequate sample size of study population were participated. The other important strength was women could easily remember and respond the recent events of their husbands' involvement status at their pregnancy during the study period, and this may be reducing recall bias. Moreover, we observed 41% of husbands who accompanied their wives at health facilities, to ascertain exposure status. Further, as the authors' knowledge, this follow up study was conducted in the study areas where there was no previously done similar study.

Conclusions

Husbands' involvement during ANC visits and women's utilization of PNC services have had a strong and significant association. The contribute of husbands' involvement during ANC visits to the utilization of PNC services in this study pointed up more than that of the women's backgrounds characteristics included in this study. Based on this finding, we conclude that if we do more on husbands' involvement in at least one ANC visit with their wives, the utilization of PNC services by women could be improved. Therefore, first, we strongly recommend that the

health care providers, at health facility levels, should promote husbands' involvement in ANC services by providing adequate ANC information through couples' ANC counseling sessions at least in the first visit. Secondly, the findings in this study can usefully guide policymakers and program planners who aim to increase husbands' involvement in maternal health care services. Finally, we suggest an interventional study include both women and men participants to improve our understanding of others predictor variables that were not addressed in this study.

List of abbreviations

ANC: Antenatal Care

aOR: adjusted Odds Ratio

B.SC.: Bachelor degree in Science

CI: Confidence Interval

COR: Crude Odds Ratio

G.A.: Gestational Age

HEW: Health Extension Worker

HFD: Health Facility Delivery

P.I: Principal Investigator

PNC: Postnatal Care

RCT: Randomized Control Trial

SBA: Skilled Birth Attendant

SD: Standard Deviation

SNNPR: Southern Nation Nationality and People's Region

SPH: School of Public Health

SPSS: Statistical Software Package for Social Science

U5: Under Five year

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Institutional Review Board of the College of Health Sciences, Addis Ababa University in Ethiopia (Protocol No. 067/13/SPH and Approval Meeting No.054/13). Permission letters from Regional (SNNPR) and Sidama Zone Health Bureau; informed consent from weredas health offices, health institutions, and from respondents were obtained before data collection. They were informed to interrupt the interview at any time that they desire. To ensure confidentiality, codes instead of names were used during data entry and in depicting the results of the study. Any risk from the study procedure to the study participants was minimal. The content of the consent form was translated into local language (Sidamu_Affoo for Sidama ethnic group and Amharic language). The consent form was read by the facilitators before each interview; then, we received informed consent from the study participants. In addition, the filled questionnaires and other collected information were not freely accessible without permission from the P.I. During the study period, participants found sick were referred to the nearby health center for medical care.

Consent for publication

Not applicable.

Availability of data and material

The data sets supporting the conclusion of this study are available to the editor-in-chief upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

None

Authors' contributions

WT and WD contributed equally during the process of proposal development. WT involved in data collection, analysis, report writing and incorporating comments provided from reviewers. WD made significant contributions in revising the manuscript. Finally, both authors read and approved the final manuscript.

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Annex-2: English and Amharic Questionnaires

English Questionnaire for population-based survey (for Men)

Participant's information sheet

Title: Assessment of husbands' involvement and influence on women's utilization of maternal health services in Sidama-zone, Southern Nations, Nationalities and Population Region, Ethiopia.

Principal Investigator: Wondwossen T/silasie

Advisor: 1. Dr. Wakgari Deressa

Coordinating office: Addis Ababa University, School of Public Health

Introduction: Maternal health is one of the major concerns of public health organizations, policy makers and researchers throughout the world, particularly in developing countries. This is because of high number of pregnancy related health complications and death of women. One major reason is the non-utilization of available maternal health services. Among the factors for low utilization of maternal-health services by women could be low husbands involvement in these services.

Purpose: This study aimed to describe the magnitude of and factors that affect husbands' involvement in maternal health services and their influence on women's utilization of these services, through describing and exploring both husbands' and women's view and experiences.

Procedure and Participation: The study will use both descriptive and analytic study designs. The expected duration of the participant's contact with the interviewer will be not more than fifty minutes. You asked to participate in this research because the trustful information which you will provide is important for the understanding of the proposed subject matter. The interview will include your knowledge, attitude and involvement status in maternal health services.

Confidentiality: to establish secured safeguards of the confidentiality of research data, the PI will use codes during data collection period instead of using names. The original data will be locked in cabinets until the data analysis carryout and no person shall access except the PI and the advisor for data checking and cleaning purpose. The use of information for any purpose other than that to which participants consented is unethical to the participants. The information you provide is not disclosed in the way it identified your personal characteristics and privacy. After the research defense and final work is approved by the school of public health and academic commission and university senate, the original data questionnaire will be burned in secure manner.

Benefit: The research does not have a short term financial, health care and capacity building benefit to the research participant as an individual or as a group but in the long run it will help the concerned

organization and policy makers to have a policy consideration and direction and formulation of strategy and design of husbands' involvement in maternal health services based on the recommendations findings.

Risk: The proposed research does not have any inhumane treatment of research participants and any physical harm, social discrimination, psychological trauma and economic loss.

Inducement, incentive, and Compensation: The study process has no any form of inducement, coercion and the study does not bring any risks that incur compensation.

Results Dissemination: The researcher is responsible for dissemination of findings moreover fully accountable to provide feedback to the health institutions and to the policy makers. Maximum effort will be done to publish the finding in scientific reputable journal.

Freedom to withdraw: If you want to participant in the study, you have full right to withdraw from the study any time you wish. This would have no effect at all on your health benefit or other administrative effect that you get from the health institutions as routine moreover no body will enforce you to explain the reason of withdrawal.

Person to Contact: The participant has the right to ask information that is not clear about the research context and content before and/or during the research work. You can contact the principal investigator and his advisors. Moreover, this research undergone ethical reviewed and approved by Addis Ababa University College of Health Sciences IRB. The main task of this board is to make sure that the ethical principles is adhered or not and the research participants are protected from harm.

If you want more information and check about this project you can contact the following people:

Addis Ababa University College of Health Sciences IRB Secretary Office Tel. 0115512876

School of Public Health: Office phone: +251-11-515 77 01; P.O.Box: 6850

Principal Investigator name and address: Wondwossen T/silasie, Tel: 0911424432;
E-mail: wondeti@yahoo.com;
Primary supervisor name and address: Wakgari Deressa' Tel No.: +251-911-483714, E-mail: deressaw@gmail.com

Informed consent form

Title of the project: Assessment of husbands' involvement and influence on women's utilization of maternal health services in Sidama-zone, Southern Nations, Nationalities and Population Region, Ethiopia.

I have been well aware of that this research undertaking is a postgraduate degree partial fulfillment of research thesis, which is fully supported and coordinated by AAU School of Public Health, and the designate principal investigator is Wondwossen T/silasie. I have been fully informed in the language I understand about the research project objectives that are to understand about husbands' involvement and influence in maternal health services.

I have been informed that all the information I shall provide to the interviewer will be kept confidential. I understood that the research has no any risk and no compensation. I also knew that I have the right to withhold information, skip questions to answer or to withdraw from the study any time; I have acquainted and nobody will impose me to explain the reason of withdrawal. It is also enlighten there would have no effect at all in my health benefit or other administrative effect that I get from the health institutions.

I have assured that the right to ask information that is not clear about the research before and or during the research work and to contact:- *Addis Ababa University College of Health Sciences IRB Secretary Office Tel. 0115512876*; *School of Public Health: Office phone: +251-11-515 77 01; P.O.Box: 6850*
Principal Investigator name and address: *Wondwossen T/silasie, Tel: 0911424432;E-mail: wondeti@yahoo.com;*
I have read this form, or it has been read to me in the language I comprehend and understood the condition stated above, therefore, I am willing and confirm my participation by signing the consent.

Name of the participant _____
Agreed to participate in the study: Yes /No (mark one of them for verbal consent)
Signature _____ (if written consent)
Name of witness _____ (Data collector, supervisor, any third person)
Signature _____
Date _____

Households Identification

Questionnaire code ----------Wereda/ Town Administration ----------

Place of Usual residence: (1) Urban _____(2) Rural_____ *(*Tick mark)*

Kebele ----------House number/Address code ----------

Instruction: – Circle the responses for questions with alternatives and write for open ended questions on the space provided.

1. Socio-demographic and economic Information			
No	**Questions**	**Choices**	**Code skip**
1.1	Age (In completed years)	..... Years	
1.2	What is your educational status?	1. Above grade 12 2. Grade 11-12 3. Grade 7-10 4. Grade 0-6 5. Able to read and write 6. Unable to read and write	
1.3	What is your occupation?	1. Farmer 2. Government employee 3. Privately owned business 4. NGO employee 5. If other, specify _____	
1.4	What is your religion?	1. Orthodox 2. Catholic 3. Protestant 4. Muslim 5. If other specify _____	
1.5	What is your ethnicity?	1. Sidama 5. Gurage 2. Wolita 6. Amhara 3. Gedio 7. Oromo 4. Kembata 8. Tigray. 9. If other specify _____	
1.6	Household size	----------	
1.7	How many under 5 year children do you have?	----------	
1.8	What is your monthly income?	---------- ETB.	

2.	Male involvement in maternal health care		skip
2.1	Is there health facility in your vicinity?	1. Yes 2. No ----------.>	2.4
2.2	If yes, how far is it?	_____kms or _____walking hours	
2.3	What type of health facility is it?	1. Health post 2. Health center 3. Hospital 4. Private clinic 5. Other specify	
2.4	Have you and your wife ever used any modern health facility?	1. Yes 2. No 3. I do not know	
2.5	Does the health facility provide maternal health care/delivery care?	1. Yes 2. No 3. I do not know	
2.6	Did your wife get ANC services in the recent pregnancy?	1. Yes 2. No ---------->3. I do not know	2.15
2.7	When she started?	…….	
2.8	How many ANC visit does she have till delivery time?	……	
2.9	Have you discussed and made a joint plan with your wife where she is to attend ANC during the most resent pregnancy?	1. Yes ……...> 2. No	2.11
2.10	Who makes the final decision of where your wife should attend ANC?	1. The woman 2. The husband 3. Relatives 4. Neighbors 5. Other specify …….	
2.11	Did you escort your wife to the health unit during ANC visit for the most recent pregnancy?	1. Yes 2. No ---------->	2.14
2.12	Have you ever attended ANC information with your wife at the health unity?	1. Yes 2. No ---------- >	2.13
2.13	Why did not attend?	……	
2.14	Why did not escort her?	……..	
2.15	If she did not start the visit, what are the major reasons?	…….	
2.16	Why men or husbands don't escort their wives to the health unit during ANC?	----------	
2.17	Have you ever received an invitation from a health worker to attend ANC issues with your wife?	1. Yes 2. No	
2.18	Where your wife was get delivered her last child?	1. Home 2. Hospital/Health center -----> 3. Other specify ……	2.20
2.19	Why she delivered at home?	…….. ……..	
2.20	Why she delivered at health institution? (Benefits)	……..	
2.21	Who makes the final decision of where your wife is to deliver?	1. Make a decision as a couple 2. Wife decides 3. Husband decides 4. Other specify ……	
2.22	Did you escort your wife to the health unit during labour for the most resent delivery?	1. Yes 2. No ----------→	2.24
2.23	Were you present the labor room together with your wife during delivery?	1. Yes 2. No ----------→	2.25

2.24	What could have prevented you to be with her during labour for the most resent delivery?	1. Social stigma 2. Cultural taboo 3. Health workers don't allow you into the labour room 4. Fear of outcome of mother/baby	
2.25	What could have prevented you to be with her in the labor & delivery room?	1. Social stigma 2. Cultural taboo 3. Health workers don't allow you into the labour room 4. Fear of outcome of mother/baby	
2.26	Have you made any fixed arrangement where your wife is to deliver?	1. Yes 2. No	
2.27	Did your wife start PNC?	1. Yes 2. No ----------→	2.29
2.28	When she started?	……	
2.29	If she did not start PNC services, what are the reasons?	…….	
2.30	Did you discuss and made a joint decision on PNC services with your wife for the last pregnancy?	1. Yes 2. No ---------- >	2.32
2.31	Who made the decision of her wife to get PNC services?	1. The woman 2. The husband 3. Other specify ……..	
2.32	Did you accompany your wife to seek care in health unit within 6 weeks after delivery of your youngest child?	1. Yes 2. No ----------→	2.34
2.33	Have you ever attended PNC information with your wife at the health unity?	1. Yes 2. No ----------→	2.35
2.34	If no for 'Q.No.2.31', what was the reason?	……	
2.35	If no for 'Q.No.2.32', what was the reason?	…….	
2.36	Are you as a man supposed to be involved in maternal health care services?	1. Yes 2. No ----------→	2.38
2.37	If yes in question '2.36' above, in what way are you supposed to be involved?	.....…… ……	
2.38	Have you ever received an invitation from a health worker to attend PNC issues with your wife?	3. Yes 4. No	
2.39	What challenges do you face in escorting your wife to the health facility for ANC, delivery and PNC?	1. Lack of transport 2. Long waiting time at the H/facility 3. Concurrent job demand 4. Long distance to the health facility 5. It is a cultural taboo 6. Other (specify)……	
2.40	What do you recommend the health managers to do to encourage men to be more involved in the material health services?	…… ……	

3. Husbands' view and experience of institutional Health Services			
3.1	If your wife have ever given births at health facilities, how did she receive the service?	1. On payment basis 2. Free of charge ----------→ 3. I do not remember ----------→	 3.4 3.4
3.2	What was your opinion on the payment?	1. Unaffordable 2. Fair 3. Cheap 4. I do not have suggestions	
3.3	Were you able to pay for the services?	1. Yes 2. No	
3.4	Who decides your wife's health service utilization?	1. Husband 2. Wife 3. Relatives 4. Religious leader 5. Other specify….	
3.5	When you have a problem, to whom do you share it with first?	1. My wife 2. My relatives (Brothers, Sisters or your parents) / Friend	
3.6	Who has the final say about the health of your wife?	1. Woman has final say 2. Husband has final say 3. We discuss & decide as husband & wife 4. Other specify …….	
3.7	Have you ever received an invitation from a health worker to discuss pregnancy issues of your wife?	1. Yes 2. No ----------→	 3.10
3.8	If 'yes', did you go to the health unit to discuss with the health workers?	1. Yes 2. No	
3.9	How do you rate the overall accessibility of the available maternal health services?	1. Not easily accessible 2. Easily accessible	
3.10	What is the condition of maternal health services provided in the health unit nearest to your home?	1. Very good ----------→ 2. Not very good	3.12
3.11	If say 'not very good', why do you say so?	…… ……	
3.12	How do you find the attitude of health workers towards men who accompany their wives to hospital to seek care?	1. They attend to us very well and friendly 2. They are unfriendly 3. I don't know	
3.13	How long does the woman on average spend in the health facility when she goes for ANC or postnatal care?	1. Less than 30 minutes 2. More than 30 minutes 3. I don't know	
3.14	Have you had of bad practices going on in the health facilities?	1. Yes 2. No ----------→	 3.16
3.15	If 'yes' for Q3.14, why do you say so?	……	
3.16	What do people talk about men who escort their wives to the health unit for ANC, delivery and postnatal care?	1. Good and encouraging 2. Bad and discouraging 3. I don't know	
3.17	Are men allowed entry into the labour room at the health facilities?	1. Restricted to men 2. Not restricted to men	
3.18	What are the barriers for you not to involve in your wives' ANC, delivery, & PNC services?	…… ……..	

Thank you!

በአሚኖ የተዘጋጀ ማኪይቅ (ለወንዶች)

በአዲስ አበባ ዩንቨርሲቲ ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና ትምህርት ቤት

በደቡብ ክልል፣ ሲዳማ ዞን የሚኙ ነፍሰ-ጡር ሴቶችና እናቶች፤ የቅድመወሊድ፣ በወሊድና ከወሊድ በኋላ ያላቸውን የጤና አገልግሎት አጠቃቀም፤ እና ባሎች በአገልግሎት ውስጥ ያላቸውን ተሳትፎ በተመለከተ ለማጥናት ለወንዶች የተዘጋጀ ማኪይቅ ነው።

ሚጃ ማስጨበጫ

ጤና ይስጥልኝ !እንደምን አደሩ/ዋሉ፡ ። ከእኔ ጋር ለመወያያት ፍቃደኛ በመሆኖ አመሰግናለሁ። ።
እኔ ---------- ስሆን በአከባቢያቹህ በሚኙ ነፍሰ-ጡር ሴቶችና እናቶች ላይ ስለቅደመወሊድ እና ከወሊድ በኋላ ስላለውየጤና አገልግሎት አጠቃቀም፤ እና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ለማጥናት የመጣውየጥናት ቡድን አባል ነኝ፡ ። ጥናቱ የሶስተኛ ዲግሪ ትምህርት አካል ሆኖ በአዲስ አበባ ዩኒቨርስቲ ተመሪ የሚከናወን ነው። ።

<u>የዛሬዉ ጉብኝቴ ዋና አላማ</u> የነፍሰ-ጡር ሴቶችንና እናቶች የጤና አገልግሎት አጠቃቀም እና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ከእርሶ ሚጀ ለመሰብሰብ ነው። ። በዚህ ጥናት ለመሳተፍ ፍቃደኛ ከሆኑ ከ20-30 ዳቂቃ የሚወስድ ቃለ-መጠይቅ አደርጎለታለሁ። ። በጥናቱ ተሳትፎዎ ወቅት የጤና ችግር ቢኖርብዎት አስፈላጊዉን የጤና ሚጃ በማስጠት ህክምና እንዲያገኙ ይመክራሉ። ። ሆኖም ተሳትፎዎን አስመልክቶ የሚደረግሎት የገንዘብ ክፍያ እይኖርም። ። ሚጃ በምሰበስብበት ማኪይቅ ላይ ስሞአይመዝገብምእንዲሁምከማንኛዉምአይነት የጥናቱ ግኝት ጋር ተያይዞ አይቀርብም። ። በማኪይቁ ጊዜ ለመመለስ የሚፈልጉት ጥያቄ ካለ ያለመመለስ መብት ያሎት ሲሆን ጥናቱንም በፈለጉት ጊዜ ማቋረጥ ይችላሉ። ። ሆኖምየሚሰጡን እዉነተኛ የተሟላ መልስና በጥናቱ ላይ የሚደርጉት ተሳትፎ በአከባቢዉ ያለዉን የነፍሰጡር እናቶችን የጤና አጠቃቀምእና የወንዶችን ተሳትፎ ለማሻሻል የራሱ የሆነ አስተዋጽኦ ስለሚኖረዉ ማሎ ተሳትፎዎን አጥብቀን እንሻለን። ። በጥናቱ ላይ የሚኖሮት ተሳትፎ ማሎ በማሎ በእርሶ ፍላጎትና ምርጫላይ የተመሰረተ ነው። ። በጥናቱ አለመሳተፍ ቢሚጡመንግስታዊ ወይም መንግሰተዊ ካልሆኑ ድርጅቶች የሚያገኙትን ማንኛዉም የጤና ክብካቤ አይከለከሉም። ሌላም ማንኛዉም አይነት ተጽእኖ አይደርስቦትም። የሚጠቅም ማንኛዉም ጥቅም አይኖርም። ጥናቱ በሚከናወንበት ጊዜ ምንምአይነት ሀሳብ ቢገባዎት ጥናቱን አሰቁሚኝ ሊጠይቁኝ ይችላሉ። ። በዛሬዉ ጉብኝቴ ላይ ግልጽ ያልሆነ ልዎት ነገር ካለ ይግለጹልኝና ላብራራልዎት እችላለሁ። ።

ከዚህም በተጨሚ ባስፈለግዎት ጊዜ የዚህን ጥናት ዋና ተሚራሚ በ +251911424432 ደዉለዉ ሚጃ ማከየቅ ይችላሉ። ።

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የ ጥና ት ተሳ ትፎ ፍቃድ የ ማ ከ የ ቂ ያ ቅ ፅ

ከ ላ ይ የ ተ ሰ ጡ ት ን ሚ ጀ ዎ ች በ ማ ን ዘ ብ ና በ ሚ ዳ ት በ ጥ ና ቱ ለ ማ ሳ ተ ፍ ፋ ቃ ደ ኛ ኖ ት?

አ ዎ ን ☐ (ወ ደ ቃ ለ-ማ ኪ ይ ቁ ይ ለ ፉ)

የ ለ ም ☐ (ቃ ለ-ማ ኪ ይ ቁ ን ያ ቁ ማ

የ ሚ ጃ ሰ ብ ሳ ቢ ዉ ፊ ር ማ ስ ም_____ ፊ ር ማ_____ ቀ ን _____

የ ተ ቆ ጣ ጣ ሪ ዉ አ ስ ተ ያ የ ት ና ፊ ር ማ ስ ም_____ ፊ ር ማ_____ ቀ ን _____

የ ተ ጠ ያ ቂ ው ቤ ት ማ ላ ያ

የ ማ ኪ ይ ቁ ወ ረ ቀ ት ማ ላ ያ ኮ ድ ……..

ወ ረ ዳ/ከ ተ ማ ስ ተ ዳ ደ ር …….. ቀ በ ሌ …… የ ቤ ት ቁ ጥ ር ……..

መመሪያ፡ - ምርጫ ለተሰጣቸው ጥያቄዎች ምላሹን በማክበብ፤ ምርጫ ላልተሰጣቸው ጥየቄዎች በተሰጠውባዶ ቦታ ላይ በማፍ ምላሹን ማላ/ዪ፡ ፡

1. የማህበራዊ፡ ስነ -ህዝብና ኢኮኖማያዊ ሁኔታን በተመለከተ			
ተ.ቁ	**ጥያቄ**	**ምርጫ**	**ወደ ተ.ቁ**
1.1	እድሜው ስንት ዐመት ነው?	----------	
1.2	ከፍተኛውየ ትምህርት ደረጃዎት ምንድነው?	1. የኮሌጅ ዲፕሎማና ከዛ በላይ 2. የቴክኒክና ሞያ ስልጠና ሰርተፍኬት 3. ከ7ኛ - 12ኛ 4. ከ0-6ኛ 5. ማንበብና ማጻፍ እችላለሁ 6. ማንበብና ማጻፍ አልችልም	
1.3	ስራዎት ምንድን ነው?	1. ግብርና 2. የመንግስት ተቀጣሪ 3. ነጋዴ 4. የውጭድርጅት ተቀጣሪ 5. ሌላ ካለ ይጥቀሱ……	
1.4	የየትኛውሀይማኖት ተከታይ ነዎት?	1. ኦርቶዶክስ 2. ካቶሊክ 3. ፕሮቴስታንት 4. እስልምና 5. ሌላ ከሆነ (ይጥቀሱ)…..	
1.5	የየትኛውብሔር አባል ነዎት?	1. ሲዳማ 5. ጉራጌ 2. ወላይታ 6. አሚራ 3. ጌዲዮ 7. ኦሮሞ 4. ከንባታ 8. ትግሬ 9. ሌላ ከሆነ (ይጥቀሱ)……	
1.6	የቤተሰብ ብዛት ስንት ነው?	……	
1.7	ከአምክት አሞት እድሜ በታች የሆኑ ስንት ልጆች አልዎት?	----------	
1.8	በወር ምን ያህል ገቢ ያገኛሉ?	…… ብር	

6. ወንዶች፤ በእናቶች የጡት አገልግሎት ውስጥ ያላቸውን ተሳትፎ በተመለከተ			
2.1	በአካባቢያችሁ አገልግሎት የሚሰጥየ ጡት ድርጅት አለ?	1. አዎ 2. የለም ----------→	2.4
2.2	"ካለ" በምን ያህል እርቀት ይገኛል?	----------ኪ.ሜ ወይም --------- ደቂቃ/ሰአት የእግር ጉዞ	
2.3	የጡት ድርጅቱ ደረጃ ምንድን ነው?	1. የጡት ኬላ 2. ታዳጊ ጡት ጣቢያ 3. ጡት ጣቢያ 4. ሆስፒታል 5. የግል ክሊኒክ 6. ሌላ ካለ ይጥቀሱ …..	
2.4	እርስዎም ሆነ ባለቤትዎ በጡት ድርጅቱ ውስጥ የጡት አገልግሎት አግኝተውያውቃሉን?	1. አዎ 2. አይ 3. አላውቅም	
2.5	የጡት ድርጅቱ የወሊድ አገልግሎት ይሰጣል?	1. አዎ 2. አይ 3. አላውቅም	

2.6	ባለቤትዎ በእርግዝናቸው ወቅት የቅድመወሊድ ምርመራ አድርገው ነበር?	1. አዎ 2. አይ ----------→ 3. አላውቅም	ተ.ቁ 2.15
2.7	ሙቼ ነበር የመጀመሪያ ምርመራቸውን የደረጉት?	----------	
2.8	እስከወለዱበት ቀን ድረስ ለምን ያህል ግዜ የቅድመወሊድ ምርመራ አድርገውነበር?	----------	
2.9	በሜጩሻው አርግዝና ወቅት የቅድመወሊድ ምርመራን በተመለከተ ከባለቤተዎ ጋር ተወያይታችሁበጋራ አቅዳችሁነበር?	1. አዎ ----------→ 2. አይ	ተ.ቁ 2.11
2.10	ባለቤተዎ የቅድመወሊድ ምርመራ የት ማግኘት እንዳለባቸው የሜጩሻ ውሳኔ የሚወስነውማን ነው?	1. ባለቤቴ/ሚስት 2. እኔ ነኝ 3. ሌሎች ዘመዶች 4. ጎረቤቶች 5. ሌላ ካለ ይጥቀሱ -----	
2.11	በሜጩሻውየእርግዝና ወቅት ለቅድመወሊድ ምርመራ ከባለቤትዎ ጋር ወደ ጤና ድርጅት አብረውሄደውነበረን?	1. አዎ 2. አይ ----------→	ተ.ቁ 2.14
2.12	"አዎ" ካሉ፤ የቅድመወሊድ ምርመራን በተመለከት የሚሰጡውን የጤና ተምህርት ወይም ሚጃ በጤና ድርጅት ውስጥ ተገኝተው ከባለቤተዎ ጋር ተከታትለውያውቃሉ?	1. አዎ ----------→ 2. አይ	ተ.ቁ 2.13
2.13	አይ ካሉ ፤ ምንድን ነውምክንያቱ?	----------	
2.14	ለጥያቄ ቁጥር 2.11 አይ ካሉ፤ ምንድን ነውምክንያቱ?	----------	
2.15	ነፍሰጡር ሴቶች እና እናቶች የቅድመወሊድ ምርመራ አገልግሎትን በተገቢውሁኔታ የሚጠቀማበት ምክንያት ምንድን ነውብለውያስባሉ?	---------- ----------	
2.16	ወንዶች/ባሎች፤ ከሚስቶቻቸውጋር ለቅድመወሊድ ሚርመራ ወደ ጤና ድርጅት የ ማይሄዱበት ምክንያት ለምን ይመስልዎታል?	---------- ----------	
2.17	የባለቤትዎን የቅድመወሊድ ምርመራ እንዲከታተሉ በጤና ባለሞያ የጥሪ ተደርጎልዎትነበር	1.አዎ 2.አይ	
2.18	ባለቤትዎ የሜጩሻውን ልጅ የወለዱት የትነበር?	1. ቤት ውስጥ 2. ሆስፒታል/ጤና ጣቢያ ……› 3. ሌላ ካለ ይጥቀሱ ……	2.20
2.19	በቤት ውስጥካሉ; በቤት ውስጥ የወለዱበት ምክንያት ምንድን ነው?	----------	
2.20	በጤና ድርጅት ውስጥ የወለዱበት ምክንያት ምንድን ነው?	1. ጤና ሜእከል ውስጥ መውለድ ስለሚጥኩ 2. ሁልግዜም የምወልደው ጤና ሜእከል ውስጥበሚሆኑ 3. ከዚህ በፊት ቤት ወልጄ ሞጥሮ ነገር ስላጋጠመኝ 4. ጤና ሜእከል ውስጥ መውለድ እንዳለብኝ ስለተነገረኝ 5. ጤና ሜእከል ውስጥ እንድወለድ የሚያስገድድ የወሊድ ችግር ስለገጠመኝ 6. ሌላ ምክንያት ካልዎት ይጥቀሱ--	
2.21	የባለቤትዎን የመውለጃ ቦታ የሜጩሻ ውሳኔ የወሰነ ውማን ነው?	1. በጋራ አንድ ለይ ነው የወሰንነው 2. ባለቤቴነች የወሰነችው 3. እኔ ነኝ 4. ሌሎች ከሆኑ ይጥቀሱ ……	
2.22	ባለቤትዎ የሜጩሻውን ልጅ ለመውለድ ወደ ጤና ድርጅት በሄዱ ግዜ እርስዎምአብረውሄደውነበር?	1. አዎ 2. አይ ----------→	2.24
2.23	ከሄዱ፤ ባለቤትዎ በሚወልዱበት ወቅት በማለጃ ክፍል ውስጥ ተገኝተውነበር?	1. አዎ 2. አይ ----------→	2.25
2.24	ባለቤትዎ ለወሊድ ወደ ጤና ድርጅት በሄዱ ግዜ አብረውያልሄዱበት ምክንያቶች ምንድን ናቸው?	----------	
2.25	ባለቤትዎ በሚወልዱበት ወቅት በማለጃ ክፍል የልገቡበት ምክንያት ምንድን ነው?	----------	

2.26	ባለቤትዎ ሞውለጃቸው በደረሰ ግዜ የት ሞውለድ እንዳለባቸው ወስናችሁ ቅድመዝግጅት አድርጋችሁ ነበር?	1. አዎ 2. አይ	
2.27	ባለቤትዎ፤ የሜጩፈሻ ልጃቸውን ሲወልዱ ከወሊድ በኋላ የሚሰጡውን የጡፍ አገልግሎት አግኝተውነበር?	1. አዎ 2. አይ ----------→	2.29
2.28	ሞቼ ነበር የጀሞት?	----------	
2.29	ካልጀሞ፤ ያልጀሞበት ምክንያት ምን ነበረ?	----------	
2.30	በሜጩፈሻው እርግዝና ወቅት፤ ከወሊድ በኋላ ስለሚሰጡው የጡፍ አገልግሎት ከባለቤትዎ ጋር ተወያይተውበጋራ ወስናችሁ ነበር?	1.አዎ ----------→ 2.አይ	2.32
2.31	የባለቤትዎን፤ ከወሊድ በኋላ ስላለውየጡፍ አገልግሎት አጠቃቀም የወሰነ ውሳኔ ነበር?	1.ባለቤቴ 2.እኔ ውእራሴ 3.ሌሎች ከሆኑ ይጥቀሱ ……	
2.32	ባለቤትዎ ከወሊድ በኋላ፤ በ 6 ሳምንት ግዜ ውስጥ የሚሰጡውን የጡፍ አገልግሎት ለማግኘት ወደ ጡፍ ድርጅት በሄዱበተ ወቅት እርስዎምአብረውሄደውነበርን?	1.አዎ 2.አይ ----------→	2.34
2.33	ከወሊድ በኋላ ስላለው የጡፍ አገልግሎት በተሻለከተ በጡፍ ድርጅት ውስጥ የሚሰጡውን ትምህረት ወይምሚጃ ከባለቤትዎ ጋር ተገኝተውተከታትለውነበር?	1.አዎ 2.አይ ----------→	2.35
2.34	ለጥያቄ ቁጥር 2.31፤ ሜልስዎ አይ ከሆነ፤ ወደ ጡፍ ድርጅቱ አብረውያልሄዱበት ምክንያት ምንድን ነበር?	----------	
2.35	ለጥያቄ ቁጥር 2.32፤ ሜልስዎ አይ ከሆነ፤ በጡፍ ድርጅት ውሰጥ የጡፍ ሚጃ ወይም ትምህርት ያላገኙበትን ምክንያት ምንድን ነበር?	----------	
2.36	እንደወንድየትዳር ጋደኛነትዎ፤ ከባለቤትዎ ጋር በእናቶች የጡፍ አገልግሎት ውስጥ ሚሳተፍ ይኖርብኛል ይላሉ?	1. አዎ 2. አይ ----------→	2.38
2.37	ለጥያቄ 2.36 አዎ ካሉ፤ በምን አይነት ሜልኩ ወይምምን በሚድረግ ሚሳተፍ እችላሉ ይላሉ?	----------	
2.38	የባለቤትዎን የቅድመወሊድ ምርሚራ እንዲከታተሉ በጡፍ ባለሞያ የጥሪ ተደርጎልዎት ነበር	3.አዎ 4.አይ	
2.39	በቅድሚወሊድ፣ በወሊድና ከወሊድ በኋላ የሚሰጡውን የጡፍ አገልግሎት ለማግኘት ከባለቤትዎ ጋር በሚዱበት ግዜ ያጋጠምዎት ችግር ምንድን ነው?	----------	
2.40	ወንዶች፤ በእናቶች የጡፍ አገልግሎት ውስጥ የበለጠ እንዲሳተፉ ለማበረታታት፤ ለጡፍ ድርጅት ሐላፊዎች ምን አይነት አስተያየት ይሰጣሉ?	----------	

3. የጡፍ ድርጅት አገልግሎትን በተሻለከተ፤ ወንዶች ያላቸውን አሻለካከትና ልምድ በተሻለከተ			
3.1	ከዚህ ቀደም ባለቤትዎ በጡፍ ድርጅት ውስጥ የወሊድ አገልግሎት ካገኙ፤ ያገኙት እንዴት ነበር?	1.በክፍያ 2.ከክፍያ ነፃ ----------→ 3.አላስታውስም	3.4
3.2	ስለ ክፍያውሳኩን ያልዎት አስተያየት ምንድን ነው?	1.ዋጋውውድ ነው 2.ዋጋውደህና ነው 3.ዋጋውእርካሽ ነው 4.አስተያየት የለኝም	
3.3	በወቅቱ ክፍያውን ለማፈል አልተቸገሩምነበር?	1.አዎ አልተቸገርኩም 2.አይ ተቸግሬ ነበረ	
3.4	የባለቤትዎን የጡፍ አገልግሎት አጠቃቀምየ ሚወስነ ውሳኔ ነው?	1.እኔ ነኝ 2.ባለቤቴ/ሚስቴ 3.ዘመዶቼ 4.የሀይማኖት ሚ 5.ሌላ ካለ ይጥቀሱ ----------	

3.5	የሚያጋጥሞትን ችግር በመጀመሪያ ለማን ነው የሚካፍሉት/የሚወያዩት?	1. ለባለቤቴ/ሚስቴ 2. ለዘመዴቼ (ለወነ ድሜእህቴ ወይምለወለጆቼ)/ጓደኛዬ 3. ሌላ ካለ ይጥቀሱ ---------	
3.6	የባለቤትዎን የጡፍ ሁኔታ በተጫለከተ የሜጩፈሻ ውሳኔ የሚወስነው ማ ው?	1. ባለቤቴ እራሷ ነች 2. እኔ ነኝ 3. እንደ ባልና ሚስት ተወያይተን ነው የምንወስነው 4. ሌላ ከለ ይጥቀሱ ……	
3.7	ስለ ባለቤትዎ የእርግዝና ሁኔታ ለሚወያየት ከጡፍ ድርጅቱ የጡፍ ባለሞያዎች ጥሪ ወይምየጥሪ ደብዳቤ ደርስዎት ያውቅ ነበር?	1. አዎ 2. አይ ----------→	3.10
3.8	አዎ ካሉ፤ በጥሪውሚሰረት ሄደውተወያይተውያውቃሉ?	1. አዎ 2. አይ	
3.9	በአጠቃላይ የእናቶችን ጡፍ አገልግሎት ተደራሽነት እንዴት ይመዘኑታል?	1. አገልግሎቱን ለማገኘት ቀላል አይደለም 2. አገልግሎቱነ ለማገኘት ቀላል ነው	
3.10	በአቅራቢያችሁ በሚገኙየጡፍ ድርጅት የሚሰጡውን የእናቶች የጡፍ አገልግሎት ሁኔታእንዴት ያዩታል?	1. በጣምጥሩ ነው ----------→ 2. ጥሩ አያደለም	3.12
3.11	ጥሩ አይደለምካሉ ያሉበት ምክንያት ምንድን ነው?	----------	
3.12	ወንዶች/ባሎች ከሚስቶቻቸው ጋር ለጡፍ አገልግሎት ፍለጋ ወደ ጡፍ ድርጅት በሚሄዱበት ግዜ፤ የጡፍ ባለሞያዎች አሟላከበት እንዴት ያዩታል?	1. ጥሩ ነው፤ በወዳጅነት ይቀበላሉ 2. ጥሩ አይደለም፤ በወዳጅነት አይቀበሉም 3. አላውቅም	
3.13	አንድ እናት ለቅድሚወሊድ ምርሚራ ወይም ከወሊድ በኋላ ለሚሰጡው የጡፍ አገልግሎት ወደ ጡፍ ድርጅት ሞጥታ አገልግሎቱን ለማገኘት ምን ያህል ግዜ ትቆያለች?	1. ከ 30 ደቂቃ ያነሰ ግዜ 2. ከ 30 ደቂቃ በለይ ትቆያለች 3. አላውቅም	
3.14	በጡፍ ድርጅት ውስጥ ያጋጠምዎት ሞጥፎ ተግባር ነበር?	1. አዎ 2. አይ ----------→	3.16
3.15	አዎ ካሉ፤ ለምን እንዲህ አሉ?	----------	
3.16	ባሎች/ወንዶች ከሚስቶቻቸው ጋር በቅድሚወሊድ፣ በወሊድና ከወሊድ በኋላ የሚሰጡው የጡፍ አገልግሎት ለማገኘት በሚሄዱበት ግዜ የአካባቢውኅብረተሰብ ምን አይነት አስተያየት ይሰጣል?	1. ጥሩ እና አበረታች አስተያየት ይሰጣሉ 2. ሞጥፎ አስተያየት እና ይቃወማሉ 3. አላውቅም	
3.17	ወንዶች/ባሎች በጡፍ ድርጅቱ ማዋለጃ ክፍል ውስጥ ከሚገታቸው ጋር እንዲገቡ ይፈቀድላቸዋል?	1. አይ፤ ለወንድ የተከለከለ ነው 2. አዎ፤ ይፈቀዳል	
3.18	እርስዎ በቅድሚወሊድ፣ በወሊድና ከወሊድ በኋላ ለባለቤትዎ በሚሰጡው የጡፍ አገልግሎት ላይ እንዳይሳተፉ የሚለክሎት ነገሮች ምንድን ናቸው? (ቢያንስ 5ቱን ይጥቀሱ)	1. ---------- 2. ---------- 3. ---------- 4. ----------	

አመሰግናለሁ!

Women's questionnaire

Participant's Information Sheet and Informed Written Consent Form

Participant's Information Sheet

Title: Husbands' involvement during antenatal care visits and its association with women's utilization of skilled birth attendants in Sidama Zone, Southern Ethiopia.
Ethiopia: A Prospective Cohort Study

Principal Investigator: Wondwossen T/silasie

Co-investigator: Dr. Wakgari Deressa

Coordinating office: Addis Ababa University, School of Public Health

Introduction: Maternal health is one of the major concerns of public health organizations, policy makers, and researchers throughout the world, particularly in developing countries. This is because of high number of pregnancy related health complications and death of women. One major reason is the non-utilization of available maternal health services. Among the factors for low utilization of maternal-health services by women could also be low husbands involvement in these services.

Purpose: This study aimed to determine the association between husbands' involvement during antenatal care visits and women's utilization of skilled birth attendants in Sidama Zone.

Procedure and Participation: we will use an analytic study designs to follow eligible ANC mothers.

The expected duration of the participant's contact with the interviewer will be not more than fifty minutes. You asked to participate in this research because the trustful information, which you will provide, is important for the understanding of the proposed subject matter. The interview will include your view and experiences related to husbands' involvement and your utilization of maternal health care services.

Confidentiality: to establish secured safeguards of the confidentiality of research data, the PI will use codes during data collection period instead of using names. The original data will be locked in cabinets until the data analysis carryout and no person shall access except the PI and the co-investigator for data checking and cleaning purpose. The use of information for any purpose other than that to which participants consented is unethical to the participants. The information you provide is not disclosed in the way it identified your personal characteristics and privacy. After the final work is approved by the school of public health and academic commission and university senate, the original data questionnaire will be burned in secure manner.

Benefit: The research does not have a short term financial, health care and capacity building benefit to the research participant as an individual or as a group. But in the long run it will help the concerned organization and policy makers to have a policy consideration and direction, and formulation of strategy and design of husbands' involvement in maternal health services based on the recommendations and the findings.

Risk: The proposed research does not have any inhumane treatment of research participants and any physical harm, social discrimination, psychological trauma and economic loss.

Inducement, incentive, and Compensation: The study process will have not any form of inducement, coercion and the study does not bring any risks that incur compensation.

Results Dissemination: The researcher is responsible for dissemination of findings moreover fully accountable to provide feedback to the health institutions and to the policy makers. Maximum effort will be done to publish the finding in scientific reputable journal.

Freedom to withdraw: If you want to participant in the study, you have full right to with draw from the study any time you wish. This would have no effect at all on your health benefit or other administrative effect that you get from the health institutions as routine moreover no body will enforce you to explain the reason of withdrawal.

Person to Contact: The participant has the right to ask information that is not clear about the research context and content before and or during the research work. You can contact the principal investigator and his advisor. Moreover, this research undergone ethical reviewed and approved by Addis Ababa University College of Health Sciences IRB. The main task of this board is to make sure that the ethical principles is adhered or not and the research participants are protected from harm.

If you want more information and check about this project, you can contact the following people:

Addis Ababa University College of Health Sciences IRB Secretary Office Tel. +251-115512876
School of Public Health: Office phone: +251-11-515 77 01 P.O.Box: 6850 Addis Ababa, Ethiopia
Principal Investigator name and address: Wondwossen T/silasie, Tel: +251-911424432;
E-mail: wondeti@yahoo.com

Informed written consent form

Title of the project: Husbands' involvement during antenatal care visits and its association with women's utilization of skilled birth attendants in Sidama Zone, Southern Ethiopia: A Prospective Cohort Study

I have been well aware of that this research undertaking is supported and coordinated by AAU School of Public Health and the designate principal investigator is Wondwossen T/silasie. I have been fully informed in the language I understand about the research project objectives that are to understand about husbands' involvement and its influence on women's utilization of maternal health care services.
I have been informed that all the information I shall provide to the interviewer will be kept confidential. I understood that the research has no any risk and no composition. I also knew that I have the right to withhold information, skip questions to answer or to withdraw from the study any time I have acquainted nobody will impose me to explain the reason of withdrawal. It is also enlighten there would have no effect at all in my health benefit or other administrative effect that I get from the hospital.I have assured that the right to ask information that is not clear about the research before and or during the research work and to contact:
Addis Ababa University College of Health Sciences IRB Secretary Office Tel. +251-115512876
School of Public Health: Office phone: +251-11-515 77 01 P.O.Box: 6850
Principal Investigator name and address: Wondwossen T/silasie, Tel: +251-911424432;
E-mail: wondeti@yahoo.com

I have read this form, or it has been read to me in the language I comprehend and understood the condition stated above, therefore, I am willing and confirm my participation by signing the consent.

Name of the participant _____
Agreed to participate in the study: Mark 'yes' if agreed, or 'No' if not agreed)
If 'yes', signature _____
Name of witness signature _____ (Data collector, supervisor, any third person)
Signature _____
Date _____

Interview questionnaire for women participants

Households Identification

Questionnaire code ---------- Wereda/ Town Administration ----------

Place of Usual residence: (1) Urban (2) Rural

Kebele ---------- House number ----------

Instruction: – please circle the responses for questions with alternatives and write for open-ended questions on the space provided.

PHASE I - IDENTIFICATION OF STUDY PARTICIPANTS			
1. Socio-demographic and economic Information			
No	**Questions**	**Choices**	**Code skip**
101	Age (In completed years)	..... Years	
102	Educational level	1. Above grade 12 2. Grade 11-12 3. Grade 7-10 4. Grade 0-6 5. Able to read and write 6. Unable to read and write	
103	Religion	1. Orthodox 2. Catholic 3.Protestant 4. Muslim 5. If other, specify _____	
104	Ethnicity	1. Sidama 5. Gurage 2. Wolita 6. Amhara 3. Gedio 7. Oromo 4. Kembata 8. Tigray. 9. If other specify _____	
105	Occupation type	1. House wife 2. Farmer 3. Government employee 4. Privately owned business 5. NGO employee 6. If other specify _____	
106	Educationlevel of your husband	1. Above grade 12 2. Grade 11-12 3. Grade 7-10 4. Grade 0-6 5. Able to read and write 6. Unable to read and write	

108	Occupation type of your husband	1. Farmer 2. Government employee 3. Privately owned business 4. NGO employee 5. If other specify _____	
109	Household size	----------	
110	How many Under 5 year children do you have, currently?	----------	
111	How much is your monthly income? (in ETB)	……	

2. Obstetric Information			
No	**Questions**	**Choices**	**Remark**
201	Number of deliveries? (Including those who died, if any)	_____Children/Child	
202	Have you ever had abortion or stillbirth? (Induced or non-induced abortion)	1. Yes 2. No ----------→	204
203	If yes, how many?	_____ Abortions/Stillbirths	
204	How old is your last child? (in months)	----------	
205	When did you have your last normal menstrual period?	1. ___/____/____ (dd/mm/yyyy) 2. I don't know/Not sure	
206	How many months pregnant are you?	1. _____ months 2. I don't remember/Not sure	
207	Is the pregnancy planned?	1. Yes 2. No	
208	In your current pregnancy, did you receive ANC services?	1. Yes 2. No	
At nine months of pregnancy (G.A. of pregnancy)			
209	When was your first ANC visit?	……DD/ ……MM.	
210	How many ANC visits have you received? (in number)	_____	
211	When you went for ANC visit, are you decided jointly with your husband?	1. Yes ----------→ 2. No	301
212	If not, who made the last decision?	1. Wife 2. Husband 3. Other specify …….	

PHASE II - INTERVIEW OF PREGNANT WOMEN, 3 TO 5 DAYS AFTER DELIVERY			
3. Women's utilization of and husbands involvement in ANC services			
301	During your ANC visits, have you get enough information about delivery care and PNC services?	1. Yes 2. No	
302	Was your husband escort you to health facility during ANC visit?	1. Yes 2. No ----------→	304
303	Was he attend the health information with you at health facility?	1. Yes 2. No ----------→	305
304	If no for Q.No.302, what was the reason?	--------	
305	If no for Q.No.303, what was the reason?	----------	
306	Were you get regular ANC services? If not, what was the reason?	----------	

	4. Husbands' involvement in delivery care		
401	When are you delivered your last child?	…/…/…./ (dd/mm/yyyy)	
402	Where are you gave birth your last child?	1. Health facility -------→ 2. Home 3. Other specify _____	403
403	Who was attend your birth?	_____	
404	If at home; why?	…….	
405	Were you made a joint decision for your delivery place?	1. Yes ----------→ 2. No 3. I don't remember	406
406	If not, who made the final decision?	1. Wife 2. Husband 3. Other specify …….	
407	If you delivered at HF; was your husband escort you for labor and delivery to the health facility?	1. Yes 2. No ----------→	409 & 410
408	If yes, was your husband enter and attend your labour and delivery in the room?	1. Yes ----------→ 2. No	501
409	If 'no' for Q.No. 407, why?	……	410
410	If 'no' for Q.No. 406, why?	……	
411	Who escorted you during your labour and delivery to the health facility?	1. My mother 2. Relatives 3. Neighbor 4. Other specify ……	

PHASE III - INTERVIEW OF PREGNANT WOMEN, AT PNC PERIODS (AT 6TH WKS AFTER DELIVERY)			
	5. Husbands' involvement in postnatal care		
501	Were you get PNC service in your last childbirth?	1. Yes 2. No ----------→	510
502	If yes, when was your 1st PNC visit?	……..dd/mm/yyyy	
503	How many PNC visits are you received? (number/count)	----------	
504	Was your husband escort you during PNC visit?	1. Yes 2. No ----------→	507
505	Was your husband attend PNC information with you in the health unit?	1. Yes ----------→ 2. No	508
506	If no, for 'Q.No.505', what was the reason?	----------	
507	If no, for 'Q.No.504', what was the reason?	----------	
508	Were you made a joint decision for your PNC services?	1. Yes 2. No	
509	If no, who made the final decision?	1. Wife 2. Husband 3. Relatives 4. Other specify ……	
510	If 'no' for Q.No. 501, what was the reason?	----------	

Amharic version of questionnaire for women cohort

በአዲስ አበባ ዩንቨርሲቲ ሀክምና ፋኩሊቲ የህብረተሰብ ጤና ትምህርት ቤት

በደቡብ ክልል፣ ሲዳማ ዞን የሚኙ ነፍሰ-ጡር ሴቶችና እናቶች ስላላቸው የቅድመወሊድ፣ ወሊድና ከወሊድ በኋላ የጤና አገልግሎት አጠቃቀም፤ እና ባሎች በአገልግሎት ውስጥ ያላቸውን ተሳትፎ በተመለከተ ለማጥናት ለ<u>ሴቶች</u> የተዘጋጀ ማጠይቅ

ሚጃ ማነጫቅፅ

ጤና ይስጥልኝ !!!

እንደምን አደሩ/ዋሉ፡ ፡ ከእኔ ጋር ለመወያያት ፍቃደኛ በመሆኖ አመሰግናለሁ፡ ፡ እኔ ---------- ስሆን በአከባቢያቹህ በሚኙ ነፍሰ-ጡር ሴቶችና እናቶች ላይ ስለቅደመወሊድ እና ከወሊድ በኋላ ስላለው የጤና አገልግሎት አጠቃቀምኗ እና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ለማጥናት የመጣዉ የጥናት ቡድን አባል ነኝ፡ ፡ ጥናቱ የሶስተኛ ዲግሪ ትምህርት አካል ሆኖ በአዲስ አበባ ዩኒቨርስቲ ተሚሪ የሚከናወን ነዉ፡ ፡

የዛሬዉ ጉብኝቴ ዋና አላማየ ነፍሰ-ጡር ሴቶችንና እናቶች የጤና አገልግሎት አጠቃቀምእና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ከእርሶ ሚጀ ለመሰድ ነዉ፡ ፡ በዚህ ጥናት ለመሳተፍ ፍቃደኛ ከሆኑ ከ20-30 ዳቂቃ የሚወስድ ቃለ-መጠይቅ አደርጎ ለታለሁ፡ ፡ በጥናቱ ተሳትፎዎ ወቅት የጤና ችግር ቢኖርብዎት አስፈላጊዉን የጤና ሚጃ በማጠት ህክምና እንዲያገኙ ይመክራሉ፡ ፡ ሆኖም ተሳትፎዎን አስመልክቶ የሚደረግሎት የገንዘብክፍያ እይኖርም ፡

ሚጃ በምሰበስብበት ማጠይቅ ላይ ስሞአይጫዝገብምእንዲሁም ከማንኛዉም አይነት የጥናቱ ግኝት ጋር ተያይዞ አይቀርብም ፡ በማጠይቁ ጊዜ ለመመለስ የሚፈልጉት ጥያቄ ካለ ያለመመለስ መብት ያሎት ሲሆን ጥናቱንም በፈለጉት ጊዜ ማቋረጥ ይችላሉ፡ ፡ ሆኖምየሚሰጡን እዉነተኛ የተሟላ መልስና በጥናቱ ላይ የሚያደርጉት ተሳትፎ በአከባቢዉ ያለዉን የነፍሰጡር እናቶችን የጤና አጠቃቀም እና የወንዶችን ተሳትፎ ለማሻሻል የራሱ የሆነ አስተዋጽኦ ስለሚኖረዉመሉ ተሳትፎዎን አጥብቀን እንሻለን፡ ፡ በጥናቱ ላይ የሚኖሮት ተሳትፎ መሉ በመሉ በእርሶ ፍላጎትና ምርጫላይ የተመሰረተ ነዉ፡ ፡ በጥናቱ አለመሳተፍ ቢሚጉመጎስታዊ ወይም መንግሰተዊ ካልሆኑ ድርጅቶች የሚገኙትን ማንኛዉም የጤና ክብካቤ አይከለከሉም ፡ ሌላም ማንኛዉም አይነት ተጽእኖ አይደርስቦትም ፡ የሚያጠቅምማንኛዉምጥቅምአይኖርም ፡

ጥናቱ በሚከናወንበት ጊዜ ምንም አይነት ሀሳብ ቢገባዎት ጥናቱን አሰቁሚኝ ሊጠይቁኝ ይችላሉ፡ ፡ በዛሬዉ ጉብኝቴ ላይ ግልጽ ያልሆነ ልዎት ነገር ካለ ይግለጹልኝና ላብራራልዎት እችላለሁ፡ ፡ ከዚህም በተጨማሪ ባስፈለግዎት ጊዜ የዚህን ጥናት ዋና ተሚራሚ በ +251911424432 ደዉለዉ ሚጃ ማጠየቅ ይችላሉ፡ ፡

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ሚጃ ሰብሳቢ፡ ማንኛዉንምጥያቄ እንዲያነሱ ያበረታቷቸዉ፡ ፡

የ ጥና ት ተሳ ትፎ ፍቃድ የ ማ ከ የ ቂ ያ ቅ ፅ

ከ ላ ይ የ ተ ሰ ጡ ት ን ሚ ጀ ዎ ች በ ማ ን ዘ ብ ና በ ሚ ዳ ት በ ጥ ና ቱ ለ ማ ሳ ተ ፍ ፋ ቃ ደ ኛ ኖ ት?

አ ዎ ን ☐ (ወ ደ ቃ ለ-ማ ኪ ይ ቁ ይ ለ ፉ)

የ ለ ም ☐ (ቃ ለ-ማ ኪ ይ ቁ ን ያ ቁ ማ

የ ሚ ጃ ሰ ብ ሳ ቢ ዉ ፊ ር ማ ስ ም_____ ፊ ር ማ_____ ቀ ን _____

የ ተ ቆ ጣ ጣ ሪ ዉ አ ስ ተ ያ የ ት ና ፊ ር ማ ስ ም_____ ፊ ር ማ_____ ቀ ን _____

PHASE I - IDENTIFICATION OF STUDY PARTICIPANTS

1. የ ሚህበራዊ፡ ስነ -ህዝብና ኢኮኖሚያዊ ሁኔታን በተመለከተ

ተ.ቁ	ጥያቄ	ምርጫ	ወደ ተ.ቁ
101	እድሜው ስንት ዐመት ነው?	---------	
102	ከፍተኛውየ ትምህርት ደረጃዎት ምንድነው?	1. የ ኮሌጅ ዲፕሎማ ከዛ በላይ 2. የ ቴክኒክና ሞያ ስልጠና ሰርተፍኬት 3. ከ7ኛ - 12ኛ 4. ከ0-6ኛ 5. ማንበብና ማጻፍ እችላለሁ 6. ማንበብና ማጻፍ አልችልም	
103	የ የ ትኛውሀይማኖት ተከታይ ነዎት?	1. ኦርቶዶክስ 2. ካቶሊክ 3. ፕሮቴስታንት 4. እስልምና 5. ሌላ ከሆነ (ይጥቀሱ)…..	
104	የ የ ትኛውብሔር አባል ነዎት?	1. ሲዳማ 5. ጉራጌ 2. ወላይታ 6. አሚራ 3. ጌዲዮ 7. ኦሮሞ 4. ከንባታ 8. ትግሬ 9. ሌላ ከሆነ (ይጥቀሱ)……	
105	ስራዎት ምንድን ነው?	1. ግብርና 2. የ መንግስት ተቀጣሪ 3. ነጋዴ 4. የ ውጭድርጅት ተቀጣሪ 5. ሌላ ካለ ይጥቀሱ……	
106	የ ቤተሰብ ብዛት ስንት ነው?	……	
107	ከአምስት አመት እድሜበታች የ ሆኑ ስንት ልጆች አልዎት?	----------	
108	በወር ምን ያህል ገቢ ያገኛሉ?	…… ብር	

2. ስለ ወሊድ ያለውን ሚጃ በተመለከተ

201	ከዚህ በፊት ስንት ልጆች ወልደዋል?------	1. በህይወት ያሉ ----- 2. ከተወለዱ በኋላ የ ሞቱ ---	
202	ከዚህ በፊት ሞቶ የ ተወለደ ወይምውርጃ አጋጥሞት ነበር?	1. አዎ 2. አይ ----------→	ተ.ቁ 204
203	አዎ ካሉ፤ ስንት ነበር?	--------- ውርጃ/ሞቶ-የ ተወለደ	
204	ያሜጨረሻ ልጅዎት እድሜስንት ነው(በወራት)	------	
205	ለሜጨረሻ ግዜ የ ወር-አበባ ያዩት ሜቼ ነው?	1. -----/-----/------- (ቀን/ወር/ዓም) 2. አላውቀውም/አላስታውስም	
206	አሁን የ ስንት ወር እርጉዝ ነዎት?	1. -------- ወር 2. አላውቀውም/አላስታውስም	
207	እርግዝናዎት የ ታቀደ ነበር?	1. አዎ 2. አይ	
208	ለዚህ እርግዝናዎት የ ቅድመወሊድ ምርመራ ጀምረዋል.	1. አዎ 2. አይ	

በዘጠነኛ ወር እርግዝና ወቅት ላይ የሚደረግ ማከይቅ			
209	ምርመራውን የጀመርሽውሜ ነበር?	--------ቀን፣ --------ወር	
210	ምንያህል ግዜ ለቅድመወሊድ ምርመራ ወደ ጤፍ ድርጅት ሄደሻል?(በቁጥር)	--------	
211	የቅድመወሊድ ምርመራ ለማድረግ ስትሄጅ ከባለቤትሽ ጋር ነበር የወሰናችሁት?	1. አዎ 2. አይ ----------→	
212	ካልሆነ፤ ማነ ውየ ሜጩፈሻውን ውሳኔ የወሰነ ው?	1. እኔ ነኝ 2. ባለቤቴ ነው 3. ዘመድ ነው 4. ጓደኛ 5. ሌላ ካለ ይጥቀሱ -----	

PHASE II - INTERVIEW OF PREGNANT WOMEN, WITHIN FIVE DAYS AFTER DELIVERY			
3. የእናቶችን የጤፍ አጠቃቀምና የባሎችን በቅድመወሊድ ጤፍ አገልግሎተ ውስጥ ማሳተፍን በተመለከተ			
301	በቅድመወሊድ ምርመራ ግዜ ስለ ወሊድና ከወሊድ በኋላ ስላለው የጤፍ አገልግሎት በተመለከተ በቂ ሚጃ አግኝተሻል?	1. አዎ 2. አይ	
302	በቅድመወሊድ ምርመራሽ ግዜ ባለቤትሽ አብሮሽ ወደ ጤፍ ድርጅት ሄዶ ያውቃል?	1. አዎ 2. አይ ---→	ተ.ቁ 307
303	አዎ ካሉ፤ ባለቤትሽ ከአንቺ ጋር በጤፍ ድርጅት ውስጥ በማ ኘት የሚሰጠውን የጤፍ ትምህርት ወይምሚጃ ተከታትሎ ያውቃል?	1. አዎ 2. አይ ------ →	ተ.ቁ 308
304	ለጥያቄ ቁጥር 302 አይ ካሉ፤ ማከንያቱን ምንድን ነው?	-------	
305	ለጥያቄ ቁጥር 303 አይ ካሉ፤ ማከንያቱን ምንድን ነው?	-------	
306	በቀጠሮ ቀን ሳያቃርጡ የቅድመወሊድ ምርመራውን ተከታትለው ነበር? (አይ፣ ካሉ፤ ያለደረጉበት ምክንያት ምን ነበር?)	1. አዎ 2. አይ	

4. በወሊድ አገልግሎት ውስጥ የባሎችን ተሳተፎ በተመለከተ			
401	የሜጩፈሻ ልጅሽን ሜቼ ነው የወለድሽው?	ቀን----- ወር ----- ዓ.ም.-----	
402	የሜጩፈሻ ልጅሽን የት ነው የወለድሽው?	1. በጤፍ ድርጅት ውስጥ 2. በቤት ውስጥ----------→ 3. ሌላ ካለ ይጥቀሱ …….	404
403	ማ ው ያዋለደሽ/የህክምና እርዳታ የሰጠሽ/?	1. ነርስ 2. ጤፍ ሜካንን 3. አዋላጅ-ነርስ 4. ዶክተር	
404	ቤት ውስጥ ከሆነ፤ ለምን?	----------	
405	የወለድሽበትን ቦታ ከባለቤትሽ ጋር አንድለይ ነው በጋራ የወሰናችሁት?	1. አዎ ----------→ 2. አይ 3. አላስታውስም	ተ.ቁ 406
406	ካልሆነ፤ ማነ ነው ለሜጩፈሻ ግዜ የወሰነ ው?	1. ሜስት 2. ባል/ባለቤቴ ነው 3. ሌላ ካለ ይጥቀሱ -------	
407	በጤፍ ድርጅት ውስጥ ከወለድሽ፤ ባለቤተሽ በምጥና በወሊድ ግዜ በጤፍ ድርጅት ውስጥ አብሮሽ ነበር?	1. አዎ 2. አይ ----------→	ተ.ቁ 409

408	አዎ ካሉ፤ ባለቤተሽ ሞዞለጃ ክፍል ውስጥ ተገኝቶ ወሊድሽን ተከታትሎነበር?	1. አዎ 2. አይ ----------→	ተ.ቁ 410
409	ለጥያቄ 407 “አይ” ካሉ፤ ለምንድን ነው?	----------	
410	ለጥያቄ 408 “አይ” ካሉ፤ ለምንድን ነው?	----------	
411	በምጥና በወሊድሽ ሰዓት ከአንቺ ጋር አብሮሽ ወደ ጤፍ ድርጅት ሄዶ ነበረውማን ነው?	1. የባለቤቴ ዘመዱቼ 2. የጎረቤት ሰዎች 3. ሌሎች ዘመዶች 4. ሌሎች ከሆኑ ይጥቀሱ ……	

PHASE III - INTERVIEW OF PREGNANT WOMEN, AT PNC PERIODS (AT 6TH WEEKS AFTER DELIVERY)

5. ባሎች ከወሊድ በኋላ በሚሰጡዩ ጤፍ አገልግሎት ውስጥ ያላቸውን ተሳትፎ በተመለከተ

501	ከወሊድ በኋላ የሚሰጡን የጤፍ አገልግሎት ተከታትለሽ ነበር?	1. አዎ 2. አይ ----------→	ተ.ቁ 511
502	አዎ ካሉ፤ ሙቼ ነበር የጀሙት (የመጀመሪያ ቀን ወይምገዜ ወደ ጤፍ ድርጅት በሜድ አገልገሎቱን ያገኙት)?	ቀን----- ወር -- ዓ.ም ---------	
503	ከወሊድ በኋላ የሚሰጡን የጤፍ አገልግሎት ለምን ያህልገዜ አግኝተዋል?	1. 4 ግዜ 2. 3 ግዜ 3. 2 ግዜ 4. 1 ግዜ	
504	ከወሊድ በኋላ ምን ምን የጤፍ አገልግሎት አግኝተዋል?	1. ለህጻኑ ክትባት 2. ለእናት የሚሰጥ ክትባት 3. ከወሊድ በኃላ የመውሰድ የወለድ-መቆጣጠሪያ መድሀኒት 4. አጠቃላይ የጤፍ ምክር 5. ምንምየለም	
505	ከወሊድ በኋላ የጤፍ አገልግሎቱን ለማግኘት ወደ ጤፍ ድርጅቱ ሲሄዱ ባለቤትዎ አብረውሄደውነበር?	1. አዎ 2. አይ ----------›	ተ.ቁ 507
506	አዎ ካሉ፤ የሚሰጡን የጤፍ ትምህረት/ሚጃ ከእረስዎ ጋር ሆነ ውተከታትለውነበር?	1. አዎ ----------› 2. አይ	ተ.ቁ 508
507	ለጥያቄ 505 “አይ” ካሉ፤ ለምንድን ነው?	----------	
508	ለጥያቄ 506 “አይ” ካሉ፤ ለምንድን ነው?	----------	
509	ከወሊድ በኋላ ያለውን የጤፍ አገልግሎት ለማግኘት ከባለቤትዎ ጋር በአንድነት ነበር የወሰናቸሁት?	1. አዎ ----------› 2. አይ	**ጥያቄዎን ጨርሰዋል**
510	ካልሆነ ፤ ማን ነበር ለሜጩፈሻ ግዜ የወሰነው?	1. እኔ ነኝ 2. ባለቤቴ ነው 3. ዘመድ ነው 4. ጓደኛ 5. ሌላ ካለ ይጥቀሱ ----	
511	ከወሊድ በኋላ የሚሰጡን የጤፍ አገልግሎት ያልተከታተሉበት ምክንያት ምንድን ነበር?	----------	

አመሰግናለሁ!

Annex-2: Focus Group Guide for men

Project Topic: Husbands' involvement and its influence on women's utilization of maternal health services in Sidama-Zone, SNNPR, Ethiopia

Woreda…… Kebele…… Village……
Date of discussion…… Number of participants …… Place: ……..
Time: started at …….. End at …….
Name of 'FGD'-chairperson ……..… Name of reporter ……..…

Introduction –Welcome

Hello, my name is _____; I am from the research team of SPH, AAU which is currently carrying out a survey on husbands' involvement in maternal health services in Sidama zone, in scientifically sampled kebeles. We wants to know how women are working together with their male partners in maternal health services, so as to improve utilization of maternal health services by the pregnant mothers in the Woreda and zone. The information got from this study will be used in planning and designing intervention to encourage male involvement in maternal health. I am requesting you to participate in this research by giving us the information that we need. You are free to withdraw from the study at any time. And your withdrawal will not affect your right to access to information and health services in the kebele. But, I am urging you to take part to the end to make the study successful.

Confidentiality: To establish secured safeguards of the confidentiality of research data, the PI will use codes during data collection period instead of using names. The original data will be locked in cabinets until the data analysis carryout and no person shall access except the PI and the advisor for data checking and cleaning purpose. The use of information for any purpose other than that to which participants consented is unethical to the participants. The information you provide is not disclosed in the way it identified your personal characteristics and privacy. After the research defense and final work is approved by the school of public health and academic commission and university senate, the original data questionnaire will be burned in secure manner.

Benefits: The research does not have a short term financial, health care and capacity building benefit to the research participant as an individual or as a group but in the long run it will help the concerned organization and policy makers to have a policy consideration and direction and formulation of strategy and design of husbands' involvement in maternal health services based on the recommendations and the findings.

Risks: The proposed research does not have any inhumane treatment of research participants and any physical harm, social discrimination, psychological trauma and economic loss.

If you want more information and check about this project you can contact the following people:

Addis Ababa University College of Health Sciences IRB Secretary Office Tel. 0115512876
School of Public Health: Office phone: +251-11-515 77 01; P.O.Box: 6850
Principal Investigator name and address: Wondwossen T/silasie, Tel: 0911424432;
E-mail: wondeti@yahoo.com; ***Primary supervisor name and address:*** Wakgari Deressa, tel No. +251-911-483714, E-mail: deressaw@gmail.com

I have read this form, or it has been read to me in the language I comprehend and understood the condition stated above, therefore, I am willing and confirm my participation by signing the consent.

Witness's signature …… Participant's signature …….
(Research Assistant) (Thumb print)

Research……. Date……/…...2013

Introduction of moderators and observers

Objectives of the focus group

Hello!... We are going to talk about topics related to maternal health services. The purpose of this discussion is for you to share your ideas and experiences with us so that we can understand your views that will help in improving the maternal health services for women as well as increase male involvement in maternal health.

Participation

There are no rights or wrong answers to the questions that we will be asking you. Please feel free to answer exactly as you feel.

Benefit: The research does not have a short term financial, health care and capacity building benefit to the research participant as an individual or as a group but in the long run it will help the concerned organization and policy makers to have a policy consideration and direction and formulation of strategy and design of husbands' involvement in maternal health services based on the recommendations and the findings.

Risk: The proposed research does not have any inhumane treatment of research participants and any physical harm, social discrimination, psychological trauma and economic loss.

Confidentiality and respect for others: anything you say here will be kept confidential. We will never mention your name outside this room. If you do not want to answer particular questions, that is okay. If you need to leave at any time, that is fine. I request you to allow us tape to record the proceedings/ and note taking of this meeting.

Introduction of particulars (name, work, etc)

1. What do you know about ANC, delivery and postnatal care services?

   Probes:

   - ☞ Who is the intended user?
   - ☞ Who should attend?
   - ☞ What are the services offered?

2. Do men in this area accompany their wife for ANC, labour and delivery, and postnatal care?

   Probes: -What are the benefits of men attending these with their spouses?

   - ✓ To the mother?
   - ✓ To unborn baby and the newborn?
   - ✓ To the father?

3. What could be the reasons that prevent men to accompany the wife for ANC, labour and delivery and postnatal care?

   Probes:

   - ☞ Culture issues? Any social and economic issue?
   - ☞ Health unit related factors?
   - ☞ Knowledge gaps of what is done at the health facilities?

4. What do you suggest that the health service managers and the health workers need to do to encourage male involvement in maternal health care services?
5. What about you as the men and community members?

   Probe: what are you going to do to improve male involvement in maternal health services?
6. Why is it that some pregnant women do not attend ANC, postnatal care services and delivery in health facilities?

   Probes:

   - ☞ Any influence from the husbands?
   - ☞ Any power /social economic issues?
   - ☞ Any community issues?
   - ☞ Any health facility issues?

7. What should be done to improve health facility deliveries and attendance of PNC services?

   Probes:

   - ☞ Any issues on male involvement?
   - ☞ Any health facility issues?
   - ☞ Any community issues?

Thank you very much for your time and information

Do you have any questions or comments on the above issues we have been discussing?
(Answer any questions raised and thank the participants before closure of the session)

FGD guide for men Amharic version

በአዲስ አበባ ዩንቨርሲቲ ጡት ሳይንስ ኮሌጅ የህብረተሰብ ጡት ትምህርት ቤት

በደቡብ ክልል፣ ሲዳማዞን የሚኙ ነፍሰ-ጡር ሴቶችና እናቶች፤ የቅድመወሊድ፣ በወሊድና ከወሊድ በኋላ ያላቸውን የጡት አገልግሎት አጠቃቀም፤ እና ባሎች በአገልግሎት ውስጥ ያላቸውን ተሳትፎ በተመለከተ ለማጥናት ለወንዶች የተዘጋጀ ማጠይቅ ነው።

ሚጃ ማነጫቅፅ

ጡት ይስጥልኝ !እንደምን አደሩ/ዋሉ፡ ። ከእኔ ጋር ለመወያያት ፍቃደኛ በመሆኖ አመሰግናለሁ። ።

እኔ ---------- ስሆን በአከባቢያቹህ በመኙ ነፍሰ-ጡር ሴቶችና እናቶች ላይ ስለቅደመወሊድ እና ከወሊድ በኋላ ስላለው የጡት አገልግሎት አጠቃቀም፤ እና በጡት አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ለማጥናት የማጠይ የጥናት ቡድን አባል ነኝ። ። ጥናቱ የሶስተኛ ዲግሪ ትምህርት አካል ሆኖ በአዲስ አበባ ዩኒቨርስቲ ተመሪ የሚከናወን ነው። ።

<u>የዛሬዉ ጉብኝቴ ዋና አላማ</u>የነፍሰ-ጡር ሴቶችንና እናቶች የጡት አገልግሎት አጠቃቀምእና በጡት አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ከእርሶ ሚጀ ለመጠሰድ ነው። ። በዚህ ጥናት ለመሳተፍ ፍቃደኛ ከሆኑ ከ30-45 ዳቂቃ የሚወስድ ቃለ-ማጠይቅ አደርጎለታለሁ። ። በጥናቱ ተሳትፎዎ ወቅት የጡት ችግር ቢኖርብዎት አስፈላጊዉን የጡት ሚጃ በማጠት ህክምና እንዲያገኙ ይማከራሉ። ። ሆኖም ተሳትፎዎን አስመልክቶ የሚደረግሎት የገንዘብ ክፍያ እይኖርም ። ሚጃ በምሰበስብበት ማጠይቅ ላይ ስሞ አይማዝገብም እንዲሁም ከማንኛዉምአይነት የጥናቱ ግኝት ጋር ተያይዞ አይቀርብም ። ።

በማጠይቁ ጊዜ ለመጻለስ የሚፈልጉት ጥያቄ ካለ ያለመጻለስ መብት ያሎት ሲሆን ጥናቱንምበፈለጉት ጊዜ ማቋረጥ ይችላሉ። ። ሆኖምየሚሰጡን እዉተኛ የተሟላ መልስና በጥናቱ ላይ የሚያደርጉት ተሳትፎ በአከባቢዉ ያለዉን የነፍሰጡር እናቶችን የጡት አጠቃቀምእና የወንዶችን ተሳትፎ ለማሻሻል የራሱየሆነ አስተዋጽኦ ስለሚኖረዉሎ ተሳትፎዎን አጥብቀን እንሻለን። ። በጥናቱ ላይ የሚሆሮት ተሳትፎ ሙሉ በሙሉ በእርሶ ፍላጎትና ምርጫላይ የተመሰረተነዉ። ። በጥናቱ አለመሳተፍ ቢሮጡመንግስታዊ ወይምመንግሰተዊ ካልሆኑ ድርጅቶች የሚያገኙትን ማንኛዉም የጡት ክብካቤ አይከለከሉም ። ሌላም ማንኛዉም አይነት ተጽእኖ አይደርስቦትም ። የሚጠቅም ማንኛዉም ጥቅም አይኖርም ። ጥናቱ በሚከናወንበት ጊዜ ምንም አይነት ሀሳብ ቢገባዎት ጥናቱን አሰቁሚኝ ሊጠይቁኝ ይችላሉ። ። በዛሬዉጉብኝቴ ላይ ግልጽ ያልሆነ ልዎት ነገር ካለ ይግለጹልኝና ላብራራልዎት እችላለሁ። ።

ከዚህምበተጨማሪ ባስፈለግዎት ጊዜ የዚህን ጥናት ዋና ተመራማሪ በ +251911424432 ደዉለዉሚጃ ማስየቅ ይችላሉ። ።

Addis Ababa University College of Health Sciences IRB Secretary Office Tel. 0115512876; School of Public Health: Office phone: +251-11-515 77 01; P.O.Box: 6850;

የጥናቱ ተመራማሪ፡ ወንድወሰን ተ/ስላሴ ስልክ: 0911424432; ኢሜል: wondeti@yahoo.com;

የጥናቱ ሱፐርቫይዘር: ዶ/ር ዋቅጋሪ ደሬሳ ስልክ: +251-911-483714; ኢሜል: deressaw@gmail.com

ወረዳ ……. ቀበሌ ……. ሰፈር ……..

ውይይቱ የተደረገበት ቀን …… የተሳታፊውቁጥር ……. ቦታ …….

ውይይቱ፡ -የተጀመረበት ሰዓት …….. ያበቃበት ሰዓት ……..

የአወያዩ ስም…… የፀሐፊውስም……

መግቢያ፤

1. በቅድመወሊድ፣ በወሊድ ግዜ እና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት በተመለከተ የምታውቁትን ብትነግሩኝ?
   Probe:
   - ✓ ማነው የአገልግሎቱ ተጠቃሚ
   - ✓ አገልግሎቱን ማግኘት ያለበት ማነው?
   - ✓ የሚሰጡት የጡት አገልግሎቶች ምንድን ናቸው?
2. ባካባቢያቹህ፤ ሴቶች ለቅድመወሊድ ምርመራ፣ ለወሊድ እና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ለማግኘት ወደ ጡት ድርጅት ሲሄዱ፤ ባሎቻቸውአብረውይሄዳሉን?

   Probe:
   - ✓ ወንዶቹ ከሚሰቶቻቸውጋር አገልግሎቱ ወደሚሰጥበት ጡት ድርጅት ቢሄዱ ምን ጥቅምያገኛሉ?
     - ▪ ለእናቶች ያለውጥቅምምንድን ነው?
     - ▪ ለፅንሱና አዲስ ለሚወለደውሕፃን ያለውጥቅምምንድን ነው?
     - ▪ ለአባትየ ውያለውጥቅምምንድን ነው?
3. ሴቶች ለቅድመወሊድ ምርመራ፣ ለወሊድ እና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ለማግኘት ወደ ጡት ድርጅት ሲሄዱ፤ ባሎቻቸውአብረዋቸውየ ማይሄዱበት ምክንያት ምንድን ነው?

   Probe:
   - ✓ ከባህል ጋር የተያያዘ ጉዳይ አለን?
   - ✓ ከማህበራዊና ኢኮኖሚዊ ጉዳዮች ጋር የተያያዘ ነገር አለን?
   - ✓ ከጡት ድርጅቱ ጋር የተያያዘ ነገር አለን?
   - ✓ በጡት ድርጅቱ ውስጥ የሚሰጡውን አገልግሎት ካለማወቅ ጋር የተያያዘ ጉዳይ አለን?
4. ወንዶች በእናቶች የጡት አገልግሎት ውስጥ እንዲሳተፉ ለማረታታት የጡት ድርጅት ሐላፊዎችን እና የጡት ባለሞያ ዎች ማድረግ የሚገባቸውን በተመለከተ የምትሰጡት አስተያየት ወይምሐሳብ ካለ ቢጡቅሱ?
5. እናንተሰ የማህበረሰቡአባልና በፆታምእንደወንድነ ታቸሁ፤ ምን ማድረግ ይገባችኋል

   Probe:
   - ✓ በእናቶች የጡት አገልግሎት ውስጥ የወንዶችን ተሳትፎ ለማሻሻል ወይም ለማሳደግ ምን ማድረግ ይጠበቅባችኋል

6. ለምንድን ነውአንዳንድ ነፍሰጡር ሴቶች/እናቶች በጡት ድርጅት ውስጥ የሚሰጡውን የቅድመወሊድ ምርመራ፣ የወሊድና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት በተገቢውሁኔታ የ ማይከታተሉት

   Probe:
   - ✓ ከወንዶች/ከባሎች ወገን ያለውን ተፅኖ በተመለከተ
   - ✓ የውሳኔ ሰጪ ትሀይል አለመኖር (በማነኛውምማህበራዊና ኢኮኖሚያዊ ጉዳዮች ላይ)
   - ✓ ከማህበረሰቡጉዳይ ጋር በተያያዘ
   - ✓ ከጡት ድርጅቶች ጋር በተያያዘ
7. እናቶች በጡት ድርጅት ውስጥእንዲወልዱና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ተጠቃሚ ት ለማሻሻል ምን ማድረግ ይገባል ይላሉ

   Probe:
   - ✓ ወንዶችን ከማህተፍ ጋር በተያያዘ
   - ✓ ከጡት ድርጅቶች አገልግሎት አሰጣጥ ጋር በተያያዘ
   - ✓ ከማህበረሰቡ ጋር በተያያዘ

     - ❖ ለሰጣችሁን ሚጃ እነዲሁምግዚየ ችሁን ስለሰጣችሁን በጣምእናመሰግናለን!
     - ❖ በተነሱት ጉዳዮች ዙሪየ ጥየቄ ወይምአስተያየት ካላችሁ ማከየቅ ትችላላችሁ፡ ፡
     - ❖ ውይይቱን ከማዘጋትህ/ሽ በፊት ለተነሱት ጥያቄዎች ሜልስ ይስቱ፡ ፡

Annex-4: Focus Group Guide for women

Project Topic: Husbands' involvement and itds influence on women's utilization of maternal health services in Sidama-Zone, SNNPR, Ethiopia

Woreda…… Kebele…… Village……
Date of discussion…… Number of participants …… Place: ……..
Time: started at …….. End at …….
Name of 'FGD'-chairperson ……..… Name of reporter ……..…

Introduction –Welcome

Hello, my name is _____; I am from the research team of SPH, AAU which is currently carrying out a survey on husbands' involvement in maternal health services in Sidama zone, in scientifically sampled kebeles. We wants to know how women are working together with their male partners in maternal health services, so as to improve utilization of maternal health services by the pregnant mothers in the Woreda and zone. The information got from this study will be used in planning and designing intervention to encourage male involvement in maternal health. I am requesting you to participate in this research by giving us the information that we need. You are free to withdraw from the study at any time. And your withdrawal will not affect your right to access to information and health services in the kebele. But, I am urging you to take part to the end to make the study successful.

Confidentiality: To establish secured safeguards of the confidentiality of research data, the PI will use codes during data collection period instead of using names. The original data will be locked in cabinets until the data analysis carryout and no person shall access except the PI and the advisor for data checking and cleaning purpose. The use of information for any purpose other than that to which participants consented is unethical to the participants. The information you provide is not disclosed in the way it identified your personal characteristics and privacy. After the research defense and final work is approved by the school of public health and academic commission and university senate, the original data questionnaire will be burned in secure manner.

Benefits and Risks: The research does not have a short term financial, health care and capacity building benefit to the research participant as an individual or as a group but in the long run it will help the concerned organization and policy makers to have a policy consideration and direction and formulation of strategy and design of husbands' involvement in maternal health services based on the recommendations and the findings. The proposed research does not have any inhumane treatment of research participants and any physical harm, social discrimination, psychological trauma and economic loss.

If you want more information and check about this project you can contact the following people:

Addis Ababa University College of Health Sciences IRB Secretary Office Tel. 0115512876
School of Public Health: Office phone: +251-11-515 77 01; P.O.Box: 6850
Principal Investigator name and address: *Wondwossen T/silasie, Tel: 0911424432;*
E-mail: wondeti@yahoo.com;
Primary supervisor name and address: Wakgari Deressa' tel No. +251-911-483714, E-mail: deressaw@gmail.com

Witness's signature …… Participant's signature …….
(Research Assistant) (Thumb print)

Research……. Date……/…...2013

Introduction of moderators and observers

Objectives of the focus group

We are going to talk about topics related to maternal health services. The purpose of this discussion is for you to share your ideas and experiences with us so that we can understand your views that will help in improving the maternal health services for women as well as increase male involvement in maternal health.

Participation

There are no rights or wrong answers to the questions that we will be asking you. Please feel free to answer exactly as you feel.

Benefit and the risk: The research does not have a short term financial, health care and capacity building benefit to the research participant as an individual or as a group but in the long run it will help the concerned organization and policy makers to have a policy consideration and direction and formulation of strategy and design of husbands' involvement in maternal health services based on the recommendations and the findings. The proposed research does not have any inhumane treatment of research participants and any physical harm, social discrimination, psychological trauma and economic loss.

Confidentiality and respect for others: anything you say here will be kept confidential. We will never mention your name outside this room. If you do not want to answer particular questions, that is okay. If you need to leave at any time, that is fine. I request you to allow us tape to record the proceedings/ and note taking of this meeting.

Introduction of particulars (name, work, etc)

1. What do you know about ANC, delivery and postnatal care services?

Probes:

- ☞ Who is the intended user?
- ☞ Who should attend?
- ☞ What are the services offered?

2. Do you think it is important for your partner/husband to attend ANC, delivery and postnatal care services?

Probes:

- ☞ Any benefits to your social/psychological well being during pregnancy and delivery?
- ☞ What services directly benefit men?
- ☞ Would their involvement affect ANC, delivery and postnatal care?

3. Do men in this area accompany their wife for ANC, labour and delivery and postnatal?

Probes:

- ☞ What are the benefits of men attending these with their spouses?
- ✓ To the mother?
- ✓ To unborn baby and the newborn?
- ✓ To the father?

4. What could be the reasons that prevent men to accompany the wife for ANC, labour and delivery and postnatal?

Probes:

- ☞ Culture issues? Any social & economic issue?
- ☞ Health unit related factors?
- ☞ Knowledge gaps of what is done at the health facilities?

5. What do you suggest that the health service managers and the health workers need to do to encourage male involvement in maternal health care services?

6. Why is it that some pregnant women do not attend ANC; postnatal care services and delivery in health facilities?

Probes:

- ☞ Any influence from the husbands?
- ☞ Any power /social economic issues?
- ☞ Any community issues?
- ☞ Any health facility issues?

7. What should be done to improve health facility deliveries and attendance of postnatal care services?

Probes:

- ☞ Any issues on male involvement?
- ☞ Any health facility issues?
- ☞ Any community issues?

Thank you very much for your time and information

FGD guide for Women Amharic version

በአዲስ አበባ ዩንቨርሲቲ ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና ትምህርት ቤት

በደቡብ ክልል፣ ሲዳማዞን የሚኙ ነፍሰ-ጡር ሴቶችና እናቶች፤ የቅድመወሊድ፣ በወሊድና ከወሊድ በኋላ ያላቸውን የጤና አገልግሎት አጠቃቀም፤ እና ባሎች በአገልግሎት ውስጥ ያላቸውን ተሳትፎ በተመለከተ ለማጥናት ለወንዶች የተዘጋጀ ማጠይቅ ነው።

ሚጃ ማነጫቅፅ

ጤና ይስጥልኝ !እንደምን አደሩ/ዋሉ። ። ከእኔጋር ለመወያየት ፍቃደኛ በመሆኖ አመሰግናለሁ። ።

እኔ ---------- ስሆን በአከባቢያቹህ በሚኙ ነፍሰ-ጡር ሴቶችና እናቶች ላይ ስለቅደመወሊድ እና ከወሊድ በኋላ ስላለው የጤና አገልግሎት አጠቃቀም፤ እና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ለማጥናት የማጠይ የጥናት ቡድን አባል ነኝ። ። ጥናቱ የሶስተኛ ዲግሪ ትምህርት አካል ሆኖ በአዲስ አበባ ዩኒቨርስቲ ተሚሪ የሚከናወን ነው። ።

<u>የዛሬዉጉብኝቴ ዋና አላማ</u>የነፍሰ-ጡር ሴቶችንና እናቶች የጤና አገልግሎት አጠቃቀምእና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ከእርሶ ሚጀ ለመሰድ ነው። በዚህ ጥናት ለመሳተፍ ፍቃደኛ ከሆኑ ከ30-45 ዳቂቃ የሚወስድ ቃለ-ማጠይቅ አደርጎለታለሁ። ። በጥናቱ ተሳትፎዎ ወቅት የጤና ችግር ቢኖርብዎት አስፈላጊዉን የጤና ሚጃ በማጠት ህክምና እንዲያገኙ ይመክራሉ። ። ሆኖም ተሳትፎዎን አስመልክቶ የሚደረግሎት የገንዘብ ክፍያ እይኖርም ። ሚጃ በምሰበስብበት ማጠይቅ ላይ ስሞ አይጣገብም እንዲሁም ከማንኛዉምአይነት የጥናቱ ግኝት ጋር ተያይዞ አይቀርብም ።

በማጠይቁ ጊዜ ለመመለስ የሚፈልጉት ጥያቄ ካለ ያለመመለስ መብት ያሎት ሲሆን ጥናቱንምበፈለጉት ጊዜ ማቋረጥ ይችላሉ። ። ሆኖምየሚሰጡን እዉነተኛ የተሟላ መልስና በጥናቱ ላይ የሚደርጉት ተሳትፎ በአከባቢዉ ያለዉን የነፍሰጡር እናቶችን የጤና አጠቃቀምእና የወንዶችን ተሳትፎ ለማሻሻል የራሱየሆነ አስተዋጽኦ ስለሚኖረዉማሎ ተሳትፎዎን አጥብቀን እንሻለን። ። በጥናቱ ላይ የሚሆሮት ተሳትፎ ማሎ በማሎ በእርሶ ፍላጎትና ምርጫላይ የተመሰረተ ነው። ። በጥናቱ አለመሳተፍ ቢሮጡመንግስታዊ ወይምመንግሰተዊ ካልሆኑ ድርጅቶች የሚያገኙትን ማንኛዉም የጤና ክብካቤ አይከለከሉም ። ሌላም ማንኛዉም አይነት ተጽእኖ አይደርስቦትም ። የሚጠቅም ማንኛዉም ጥቅም አይኖርም ። ጥናቱ በሚከናወንበት ጊዜ ምንም አይነት ሀሳብ ቢገባዎት ጥናቱን አሰቁሚኝ ሊጠይቁኝ ይችላሉ። ። በዛሬዉጉብኝቴ ላይ ግልጽ ያልሆነ ልዎት ነገር ካለ ይግለጹልኝና ላብራራልዎት እችላለሁ። ።

ከዚህምበተጨማሪ ባስፈለግዎት ጊዜ የዚህን ጥናት ዋና ተሙራሚ በ +251911424432 ደዉለዉሚጃ ማስየቅ ይችላሉ። ።

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የ ጥናቱ ሱፐርቫይዘር: ዶ/ር ዋቅጋሪ ደሬሳ ስልክ: +251-911-483714; ኢሜል: deressaw@gmail.com

ወረዳ ……. ቀበሌ ……. ሰፈር ……..

ውይይቱ የተደረገበት ቀን …… የተሳታፊውቁጥር ……. ቦታ …….

ውይይቱ፡ -የተጀሚበት ሰዓት …….. ያበቃበት ሰዓት ……..

የአወያዩ ስም…… የፀሐፊውስም……

1. በቅድሚወሊድ፣ በወሊድ ግዜ እና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት በተመለከተ የምታውቁትን ብትነግሩኝ?
   Probe:
   - ✓ ማን ነው የአገልግሎቱ ተጠቃሚ
   - ✓ አገልግሎቱን ማግኘት ያለበት ማን ነው?
   - ✓ የሚሰጡት የጡት አገልግሎቶች ምንድን ናቸው?

2. ባለቤተዎ፤ ለእርስዎ የሚሰጡውን የቅድሚወሊድ አገልግሎት፣ የወሊድና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ከእርስዎ ጋር አብረው ቢከታተሉ ይጠቅማቹዋል ብለው ያስባሉ

   Probe:
   - ✓ በእርግዝና ና በወሊድ ግዜ ለሟረው የሚበራዊና አዕምሮአዊ ጤንነት ያለውን ጥቅም በተመለከተ?
   - ✓ በቀጥታ ለወንዶች ጥቅም የሚሰጡአገልግሎቶች ምንድን ናቸው
   - ✓ የወንዶች ተሳትፎ፤ በቅድሚወሊድ፣ በወሊድና ከወሊድ በኋላ በሚሰጠው የጡት አገልግሎት ላይ ተፅዕኖ ይኖረዋል

3. ሴቶች ለቅድሚወሊድ ምርመራ፣ ለወሊድ እና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ለማግኘት ወደ ጡት ድርጅት ሲሄዱ፤ ባሎቻቸውአብረዋቸውየ ሚሄዱበት ምክንያት ምንድን ነው?

   Probe:
   - ✓ ከባህል ጋር የተያያዘ ጉዳይ አለን?
   - ✓ ከሚበራዊና ኢኮኖሚዊ ጉዳዮች ጋር የተያያዘ ነገር አለን?
   - ✓ ከጡት ድርጅቱ ጋር የተያያዘ ነገር አለን?
   - ✓ በጡት ድርጅቱ ውስጥ የሚሰጡውን አገልግሎት ካለማወቅ ጋር የተያያዘ ጉዳይ አለን?

4. ወንዶች በእናቶች የጡት አገልግሎት ውስጥ እንዲሳተፉ ለማበረታታት የጡት ድርጅት ሐላፊዎችን እና የጡት ባለሞያ ዎች ማድረግ የሚገባቸውን በተመለከተ የምትሰጡት አስተያየት ወይምሐሳብ ካለ ቢጠቅሱ?

5. እናንተሰ የሚበረሰቡአባልና በፆታምእንደወንድነ ታችሁ፤ ምን ማድረግ ይገባችኋል

   Probe:
   - ✓ በእናቶች የጡት አገልግሎት ውስጥ የወንዶችን ተሳትፎ ለማሻሻል ወይም ለማሳደግ ምን ማድረግ ይጠበቅባችኋል

6. ለምንድን ነውአንዳንድ ነፍሰጡር ሴቶች/እናቶች በጡት ድርጅት ውስጥ የሚሰጡውን የቅድሚወሊድ ምርመራ፣ የወሊድና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት በተገቢውሁኔታ የ ማይከታተሉት

   Probe:
   - ✓ ከወንዶች/ከባሎች ወገን ያለውን ተፅኖ በተመለከተ
   - ✓ የውሳኔ ሰጪነት ሀይል አለመኖር (በማኛውምሚበራዊና ኢኮኖሚያዊ ጉዳዮች ላይ)
   - ✓ ከሚበረሰቡጉዳይ ጋር በተያያዘ
   - ✓ ከጡት ድርጅቶች ጋር በተያያዘ

7. እናቶች በጡት ድርጅት ውስጥ እንዲወልዱና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ተጠቃሚ ት ለማሻሻል ምን ማድረግ ይገባል ይላሉ

   Probe:
   - ✓ ወንዶችን ከማህተፍ ጋር በተያያዘ
   - ✓ ከጡት ድርጅቶች አገልግሎት አሰጣጥ ጋር በተያያዘ
   - ✓ ከሚበረሰቡ ጋር በተያያዘ

     - ❖ ለሰጣችሁን ሚጃ እነ ዲሁምግዚየ ችሁን ስለሰጣችሁን በጣምእና ማሰግናለን!
     - ❖ በተነ ሱት ጉዳዮች ዙሪየ ጥየ ቄ ወይምአስተያየ ት ካላችሁ ማከየ ቅ ትችላላችሁ፡ ፡
     - ❖ ውይይቱን ከመዝጋትህ/ሽ በፊት ለተነ ሱት ጥያ ቄዎች መልስ ይስቱ፡ ፡

Key Informant Guide

Factors Affecting Male Involvement in Maternal Health Services and the influence on maternal health care in Sidama-Zone SNNPR, Ethiopia

Woreda…… Kebele…… Village……
Date of discussion…… Number of interviewer …… Place: ……..
Time: started at …….. End at …….

Introduction –Welcome

Hello, my name is _____; my friend name is_____; and we are from the research team of SPH, AAU which is currently carrying out a survey on male's/husbands' involvement in maternal health care service in Sidama zone, in scientifically sampled kebeles. We wants to know how women are working together with their male partners in maternal health services, so as to improve utilization of maternal health services by the pregnant mothers in the Woreda and zone.

The information got from this study will be used in planning and designing intervention to encourage male involvement in maternal health. I am requesting you to participate in this research by giving us the information that we need. You are free to withdraw from the study at any time. But, I am urging you to take part to the end to make the study successful.
I have been told of this study and I understand the objectives of the study as the eventual participation in this study is by choice not coercion. I have understood that I am allowed to withdraw from the study any time I feel like and my withdrawal will not affect my right to access to information and health services in the kebele.

……. ……
Witness's signature …… Participant's signature …….
(Research Assistant) (Thumb print)
Research……. Date……./…...2013

Introduction of moderators and observers

Objectives of the focus group
We are going to talk today about topics related to your maternal health services. The purpose of this discussion is for you to share your ideas and experiences with us so that we can understand your views that will help in improving the maternal health services for women as well as increase male involvement in maternal health.

Participation
There are no rights or wrong answers to the questions that we will be asking you. Please feel free to answer exactly as you feel. Confidentiality, respect for others. Anything you say here will be kept confidential. We will never mention your name outside this room. If you do not want to answer particular questions, that is okay. If you need to leave at any time, that is fine.
I request you to allow us tape the proceedings/ note taking of this meeting.

Introduction of particulars (name, work, etc)

1. What is your opinion about the level of men accompanying their wives for ANC, delivery and postnatal care services?
2. Do you think it is important for the husbands/partners to discuss with their wives and attend ANC, delivery and postnatal care?

Probes:

- ☞ What are the benefits of this action to the woman, unborn baby and the man?
- ☞ How does male involvement improve the quality ANC, delivery and postnatal care and utilization of these services by pregnant women and mothers?

3. Do men in this area accompany their wife for ANC, labour and delivery and postnatal care?

Probes:

- ☞ What are the benefits of men attending these with their spouses?
- ✓ To the mother?
- ✓ To unborn baby and the newborn?
- ✓ To the father?

4. What are the possible reasons why few men in the community discuss and make a joint decision with their wives on ANC, delivery and postnatal care?

Probes:

- ☞ Any health facility issues?
- ☞ Any culture issues?
- ☞ Any policy issues?
- ☞ Any social & economic issues?
- ☞ Any information gap?

5. In your opinion what should be done to improve male involvement in ANC, delivery and postnatal care services?

Probes:

- ☞ Any community issues?
- ☞ Any health facility issues?
- ☞ Any policy issues?

6. What about you as leaders and community members, what are you going to do to improve male involvement in maternal health services?

7. What should be done to improve utilization of ANC, delivery and postnatal care services?

Probes:

- ☞ Any issues of male involvement?
- ☞ Any health facility issues?
- ☞ Any community issues?

Do you have any questions or comments on the above issues we have been discussing?

Thank you very much for your time and information

(Answer any questions raised and thank the participants before closure of the session)

Key Informant Guide Amharic version

በአዲስ አበባ ዩንቨርሲቲ ጤና ሳይንስ ኮሌጅ የህብረተሰብ ጤና ትምህርት ቤት

በደቡብ ክልል፣ ሲዳማዞን የሚኙ ነፍሰ-ጡር ሴቶችና እናቶች፤ የቅድመወሊድ፣ በወሊድና ከወሊድ በኋላ ያላቸውን የጤና አገልግሎት አጠቃቀም፤ እና ባሎች በአገልግሎት ውስጥ ያላቸውን ተሳትፎ በተመለከተ ለማጥናት ለወንዶች የተዘጋጀ ማስይቅ ነው።

ሚጃ ማነጫቅፅ

ጤና ይስጥልኝ !እንደምን አደሩ/ዋሉ፡ ፡ ከእኔ ጋር ለመወያያት ፍቃደኛ በመሆኖ አመሰግናለሁ፡ ፡

እኔ ---------- ስሆን በአከባቢያቹህ በሚኙ ነፍሰ-ጡር ሴቶችና እናቶች ላይ ስለቅደመወሊድ እና ከወሊድ በኋላ ስላለው የጤና አገልግሎት አጠቃቀም፤ እና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ለማጥናት የማጣዪ የጥናት ቡድን አባል ነኝ፡ ፡ ጥናቱ የሶስተኛ ዲግሪ ትምህርት አካል ሆኖ በአዲስ አበባ ዩኒቨርስቲ ተሚሪ የሚከናወን ነዉ፡ ፡

<u>የዛሬዉ ጉብኝቴ ዋና አላማ</u>የነፍሰ-ጡር ሴቶችንና እናቶች የጤና አገልግሎት አጠቃቀምእና በጤና አገልግሎቱ ውስጥ ወንዶች ያላቸውን ተሳትፎ በተመለከተ ከእርሶ ሚጀ ለመሰድ ነዉ፡ ፡ በዚህ ጥናት ለመሳተፍ ፍቃደኛ ከሆኑ ከ30-45 ዳቂቃ የሚወስድ ቃለ-ምጠይቅ አደርጎለታለሁ፡ ፡ በጥናቱ ተሳትፎዎ ወቅት የጤና ችግር ቢኖርብዎት አስፈላጊዉን የጤና ሚጃ በማጠት ህክምና እንዲያገኙ ይማራሉ፡ ፡ ሆኖም ተሳትፎዎን አስመልክቶ የሚደረግሎት የገንዘብ ክፍያ እይኖርም ፡ ሚጃ በምሰበስብበት ማጠይቅ ላይ ስሞ አይማዝገብም እንዲሁም ከማንኛዉምአይነት የጥናቱ ግኝት ጋር ተያይዞ አይቀርብም ፡

በማጠይቁ ጊዜ ለመጣለስ የሚፈልጉት ጥያቄ ካለ ያለመጣለስ ጣብት ያሎት ሲሆን ጥናቱንምበፈለጉት ጊዜ ማቋረጥ ይችላሉ፡ ፡ ሆኖምየሚሰጡን እዉነተኛ የተሟላ መልስና በጥናቱ ላይ የሚደርጉት ተሳትፎ በአከባቢዉ ያለዉን የነፍሰጡር እናቶችን የጤና አጠቃቀምእና የወንዶችን ተሳትፎ ለማሻሻል የራሱየሆነ አስተዋጽኦ ስለሚኖረዉሙሉ ተሳትፎዎን አጥብቀን እንሻለን፡ ፡ በጥናቱ ላይ የሚሮጮት ተሳትፎ ሙሉ በሙሉ በእርሶ ፍላጎትና ምርጫላይ የተመሰረተ ነዉ፡ ፡ በጥናቱ አለመሳተፍ ቢሚጡመንግስታዊ ወይምመንግሰተዊ ካልሆኑ ድርጅቶች የሚያገኙትን ማንኛዉም የጤና ክብካቤ አይከለከሉም ፡ ሌላም ማንኛዉም አይነት ተጽእኖ አይደርስቦትም ፡ የሚጠቅም ማንኛዉም ጥቅም አይኖርም ፡ ጥናቱ በሚከናወንበት ጊዜ ምንም አይነት ሀሳብ ቢገባዎት ጥናቱን አሰቁመዉኝ ሊጠይቁኝ ይችላሉ፡ ፡ በዛሬዉጉብኝቴ ላይ ግልጽ ያልሆነ ልዎት ነገር ካለ ይግለጹልኝና ላብራራልዎት እችላለሁ፡ ፡

ከዚህምበተጨማሪ ባስፈለግዎት ጊዜ የዚህን ጥናት ዋና ተሚራሚ በ +251911424432 ደዉለዉሚጃ ማስየቅ ይችላሉ፡ ፡

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ወረዳ ……. ቀበሌ ……. ሰፈር ……..

ውይይቱ የተደረገበት ቀን …… የተሳታፊውቁጥር ……. ቦታ …….

ውይይቱ፡ -የተጀሚበት ሰዓት …….. ያበቃበት ሰዓት ……..

የአወያዩ ስም…… የፀሐፊውስም……

1. በቅድመወሊድ፣ በወሊድግዜ እና ከወሊድ በኋላ የሚሰጡን የጤና አገልግሎት በተመለከተ የምታውቁትን ብትነግሩኝ?

Probe:

- ✓ ማን ነው የአገልግሎቱ ተጠቃሚ
- ✓ አገልግሎቱን ማግኘት ያለበት ማን ነው?
- ✓ የሚሰጡት የጡት አገልግሎቶች ምንድን ናቸው?

2. የቅድመወሊድ፣ የወሊድና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት በተመለከተ፤ ባሎች/ወንዶች ከሚሰቶቻቸውጋር መወያየ ታቸውና አብረውአገልግሎቱን ማከታተላቸውይጠቅማቸዋል ብለውያስባሉ

Probe: እንዲህ በማድረጋቸው፤ ለሴቶች፣ ለፅንሱ፣ ለወንዶች ምንድን ነው ጥቅሙ

- ✓ የወንዶች ተሳትፎ፤ የቅድመወሊድ፣ የወሊድና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ጥራትና የነፍሰጡር ሴቶችና እናቶችን የአገልግሎቱ ተጠቃሚ ት እንዴት ያያሽለዋል

3. ሴቶች ለቅድመወሊድ ምርመራ፣ ለወሊድ እና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ለማግኘት ወደ ጡት ድርጅት ሲሄዱ፤ ባሎቻቸውአብረዋቸውየ ማይሄዱበት ምክንያት ምንድን ነው?

Probe: ከባህል ጋር የተያያዘ ጉዳይ አለን?

- ✓ ከማህበራዊና ኢኮኖሚ ዊ ጉዳዮች ጋር የተያያዘ ነገር አለን?
- ✓ ከጡት ድርጅቱ ጋር የተያያዘ ነገር አለን?
- ✓ በጡት ድርጅቱ ውስጥ የሚሰጡውን አገልግሎት ካለማወቅ ጋር የተያያዘ ጉዳይ አለን?

4. በአካባቢያችሁ፤ ጥቂት ወንዶች ብቻ ከሚሰቶቻቸው ጋር የቅድመወሊድ፣ የወሊድና ከወሊድ በኋላ ስለሚሰጡየጡት አገልግሎት የሚወያዩትና በጋራ የሚወስኑበት ምክንያት ምንድን ነው

Probe:

- ✓ ከጡት ድርጅቱ ጋር በተያያዘ?
- ✓ ካለውባህል ጋር በተያያዘ?
- ✓ ከመሪያ ጋር በተያያዘ
- ✓ ከማህበራዊና ኢኮኖሚ ዊ ጉዳዮች ጋር በተያያዘ?
- ✓ ከሚጃ ክፍተት ጋር በተያያዘ

5. እናንተሰ የማህበረሰቡአባልና በፆታምእንደወንድነ ታችሁ፤ ምን ማድረግ ይገባችኋል

Probe:

- ✓ በእናቶች የጡት አገልግሎት ውስጥ የወንዶችን ተሳትፎ ለማሻሻል ወይም ለማሳደግ ምን ማድረግ ይጠበቅባችኋል

6. ለምንድን ነውአንዳንድ ነፍሰጡር ሴቶች/እናቶች በጡት ድርጅት ውስጥ የሚሰጡውን የቅድመወሊድ ምርመራ፣ የወሊድና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት በተገቢውሁኔታ የ ማይከታተሉት

Probe:

- ✓ ከወንዶች/ከባሎች ወገን ያለውን ተፅኖ በተመለከተ
- ✓ የውሳኔ ሰጪ ት ሀይል አለመኖር (በማንኛውምማህበራዊና ኢኮኖሚያዊ ጉዳዮች ላይ)
- ✓ ከማህበረሰቡጉዳይ ጋር በተያያዘ
- ✓ ከጡት ድርጅቶች ጋር በተያያዘ

7. እናቶች በጡት ድርጅት ውስጥእንዲወልዱና ከወሊድ በኋላ የሚሰጡውን የጡት አገልግሎት ተጠቃሚ ት ለማሻሻል ምን ማድረግ ይገባል ይላሉ

Probe: ወንዶችን ከማህተፍ ጋር በተያያዘ፣ ከጡት ድርጅቶች አገልግሎት አሰጣጥ ጋር በተያያዘ፣ ከማህበረሰቡ ጋር በተያያዘ

- ❖ *ለሰጣችሁን ሚጃ እነዲሁምግዚየ ችሁን ስለሰጣችሁን በጣምእናማሰግናለን!*
- ❖ *በተነ ሱት ጉዳዮች ዙሪየ ጥየ ቄ ወይምአስተያየ ት ካላችሁ ማከየ ቅ ትችላላችሁ፡ ፡*
- ❖ *ውይይቱን ከመዘጋትሀ/ሽ በፊት ለተነ ሱት ጥያ ቄዎች ማጠ ቃለ ይስቱ፡ ፡*

12. DEACLARATION FORM

LETTER FOR DECLARATION (Dissertation work)

I, the under signed, declared that this is my original work, has never been presented in this or any other University, and that all the resources and materials used for the thesis, have been fully acknowledged.

Name: Wondwosen T/silasie Kidane

Signature: _____

Place: School of Public Health_____

Date of submission: _____

This thesis has been submitted for examination with my approval as University Supervisor.

Name: Dr. Wakgari Deressa_____

Signature: _____

Date: _____