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Food taboos and associated factors among pregnant women in Haramaya Demographic Surveillance System, Haramaya District, Oromia Regional State, Eastern Ethiopia

MPH Thesis

By

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October, 2020

Harar, Ethiopia

Food taboos and associated factors among pregnant women in Haramaya Demographic Surveillance System, Haramaya District, Oromia Regional State, Eastern Ethiopia

A Thesis submitted to School of Public Health
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By
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APPROVAL SHEET

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The author was born in Fagitalekoma District, Awi zone, Amhara Regional State, on 16th April, 1990. She attended her primary school at Addis Kidam Primary and Junior Secondary School and then joined Dangila Senior Secondary and Preparatory School until May 2008. Then, she joined Bahir Dar College of Health Science in October 2008 and graduated in 2012. Then she started working as Midwife at Dinkara Health Center in Awi Zone. She joined Haramaya University Department of Midwifery to further upgrade her professional career to Bachelor Degree in 2013 and graduated in BSc in Midwifery in 2017. Since then she has been working as senior professional midwife in Hiwot Fana Specialized University Hospital, Haramaya University, Harar, Ethiopia. She has been pursuing her postgraduate program in MPH with concentration of public health nutrition at Haramaya University School of Public Health since August 2019.

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ACRONYMS

AED	Academy for Educational Development
ANC	Antenatal Care
AOR	Adjusted Odd Ratio
CI	Confidence Interval
CSA	Central Statistics Agency
DSS	Demographic Surveillance System
EDHS	Ethiopian Demographic Health Survey
FCS	Food Consumption Score
HDSS	Haramaya Demographic Surveillance System
HEW	Health Extension Worker
IHRERC	Institutional Health Research Ethics Review Committee
NGO	Non-governmental Organization
SNNPR	Southern Nations, Nationalities, and Peoples' Region
SPSS	Statistical Package for Social Science
USAID	United States Agency for International Development
WFP	World Food Program
WHO	World Health Organization

ABSTRACT

Background: Cultural practices and beliefs may influence the dietary patterns and intakes of pregnant women. Some of these may result in restriction of essential foods and drinks. Nutritional counselling during pregnancy should consider such practices in order to make sure that women get adequate nutrition without restriction. However, the prevalence of food taboos and its associated factors in the eastern Ethiopia was not well known.

Objective: To assess magnitude of food taboos and its associated factors among pregnant women in, Haramaya Demographic Surveillance System, Haramaya District, Oromia Regional State, Eastern Ethiopia.

Methods: A community based cross-sectional study was conducted among 422 pregnant women randomly selected from the ongoing Haramaya Demographic Surveillance System. Data were collected through face-to-face interview using structured questionnaire adapted from previous studies. Data were entered into EpiData version 3.1 and exported to SPSS 23 for analysis. Descriptive, binary and multiple logistic regression analysis were carried out. Statistical association was declared using adjusted odds ratio (AOR) at 95% confidence interval (CI) and p-value < 0.05.

Results: Food taboo among pregnant women was 48% (95% CI: 43, 52%). Fear of delivering big baby, fear of prolonged labor, belief of harming baby, fear of causing foetal deformity and cultural prohibitions were the major perceived reasons for food taboo. Food taboo among pregnant is associated with women who heard about food taboo (AOR, 3.58, 95% CI: 1.89, 6.83), women who had friends avoiding food (AOR, 1.91, 95% CI:1.22,2.99), with monthly income below 840 Birr (AOR, 1.73, 95%CI: 1.10, 2.73), women attended formal education (AOR, 1.95, 95%CI: 1.18, 3.23), and women who had attended immunization service (AOR, 0.35, 95% CI: 0.21, 0.58).

Conclusions: Almost five in ten women in the study area experienced had food taboo. Food taboo during pregnancy is associated with women with no formal education, being in low monthly income, heard about food taboo and had immunization service. Concerned stakeholders should focus on awareness creation to minimize the effect of perceived reasons of food taboo.

Keywords: Food Taboo, Factors, Pregnant Women, Haramaya, Ethiopia

CHAPTER ONE
INTRODUCTION

1.1 Background

Nutrition has never been as high on the international public health agenda as it is today. The adoption of the Sustainable Development Goals (SDGs) and the United Nations' proclamation of a Decade of Action on Nutrition (2016–2025), signal that strong action is required relating to food and nutrition (WHO, 2016). Improving nutritional status of the woman before and during pregnancy can reduce the risk of adverse birth outcomes, such as low birth weight and pre-term birth. Targeted approaches to address maternal nutrition and appropriate weight gain during pregnancy are essential to improve maternal, infant and child nutritional status, as well as associated health and nutrition outcomes (USAID, 2014, 2018). Maximum misconceptions about nutrition revolves around pregnancy, which affects a vital period of lifecycle (Patil et al., 2010).

Food taboos and habits can persist for a very long time and can be (and have been) made use of in identifying cultural and historical relationships between human populations. Declaring certain foods taboo because they are thought to make a person sick, is the basis for the many food taboos affecting pregnant women. Most taboos are actually meant to protect the health of the pregnant woman and her offspring and thought to ease the process of birth-giving (Meyer-Rochow, 2009). Maternal nutrition is a modifiable risk factor of public health, which can be integrated into efforts to prevent adverse birth outcomes such as fetal growth retardation; low birth weight; poor pregnancy outcome; premature birth, and other micronutrients deficiency disorders (Abu-Saad & Fraser, 2010; Muthayya, 2009). An adequate supply of nutrients is required to maintain the delicate balance between the needs of the mother and those of the foetus, and inadequate supply will cause a state of biological competition, which puts the health of the women and or the foetus at serious risk (King, 2003).

In Ethiopia, nutrition associated maternal health problems are common. One of the main maternal health problem associated with nutrition is iron deficiency anaemia. According to the Ethiopian DHSs report, the prevalence of anaemia has shown sluggish decline for the last two decays from 27% in 2005 (CSA, 2006), 17% in 2011(CSA, 2012) to 24% in 2016 (CSA, 2017). These data suggest that anaemia is a moderate public health problem (CSA, 2017), which might

be exacerbated by food taboo. However, prohibition of food during pregnancy in the study area is not well addressed. Maintaining well nutritional status of pregnant women and keeping their health are important by assessing the gap about food taboo.

1.2. Statement of the problem

Pre-pregnancy, maternal and infant nutritional status varies across population groups according to demographic and socioeconomic factors. Poor maternal nutritional conditions at the earliest stages of the life-course, during fetal development and early life, can induce both short-term and longer lasting effects (WHO, 2016). More than a third of child deaths and 11% of the total disease burden worldwide are due to maternal and child under nutrition and more than 3.5 million women and children under age five in developing countries die each year due to the underlying cause of under nutrition and Ethiopia is one of the developing country with high burden of maternal and child under nutrition (Robert, 2008). Women with food taboos during pregnancy have an increased likelihood of developing a range of negative pregnancy outcomes. Food taboo substantially impacts the intake of vital nutrients required for optimal maternal health and foetal development (Zepro, 2015).

Maternal dietary habits, poor dietary pattern such as food taboo and poor nutritional status of women during pregnancy is one of the major causes of anaemia in pregnancy. Food taboos might as one of the factors contributing to maternal under nutrition in pregnancy (Anderson, 2001). The common reason for food taboo is that the community believe vegetables/fruits cause abortion and results in a fairer skin child (Patil et al., 2010). This corresponds with a vicious cycle of poor maternal nutrition, leading to poor pregnancy outcome and poor future health of the baby. Research evidence has shown that sociocultural factors and family pressure has a significant effect on food taboo, which linked with morning sickness (McNamara & Wood, 2019). Although adequate maternal nutrition during the first 1000 days is essential for improving a child health and nutritional outcome (USAID, 2014, 2018), several food taboo during pregnancy might have a negative effect on maternal nutritional intake.

The importance of good nutrition in the early development of children has been recognized for many decades. While it has been generally accepted that a pregnant woman would prioritize the needs of the foetus and sacrifice her own nutrient reserves to ensure its optimum development, it is also known that poor nutritional conditions before and during pregnancy can induce short-term and lasting changes in the size, composition and metabolic responsiveness

of the offspring (WHO, 2016). Likewise, evidence from a systematic review has shown that avoiding those food staff from their diet during pregnancy will have long term impact to the mother and foetus, such as underweight during delivery of the infant and easily susceptible to disease during child hood (Gebremariam, 2017).

Women's nutrient needs increase during pregnancy and lactation, all women need more food, varied diet, and micronutrient supplements, adequate energy intake and a diversified diet that includes fruit, vegetables, and animal products throughout the life cycle help ensure that women enter pregnancy and lactation without deficiencies and obtain adequate nutrients during periods of heightened demand (USAID & AED, 2004). Educational initiatives and micronutrient supplementations can improve maternal nutritional status to achieve fetal and post-natal growth and development (Hambidge & Krebs, 2018). Likewise, maternal undernutrition before conception and/or at the time of early pregnancy can alter fetal physiology in late gestation, and influence postnatal function. Maternal nutrition influences nutrients transfer to the foetus, which caused restricted fetal growth and development (Kind et al., 2006).

Pregnancy-related food taboo and myths might be contributing to the burden of maternal nutritional deficiency disorders such as anaemia and others in Ethiopia (Mohammed et al., 2019). Adequate and balanced diet is recommended for pregnant and lactating women. Most of Ethiopian women have multiple and complex problems related to nutrition. Malnutrition has been jeopardized by socio-cultural restriction of foods during pregnancy. Some pocket studies have reported the level of food taboo in different part of Ethiopia. Although food taboos are reported to be common in some parts of the world and its effect on maternal and fetal nutrition are recognized and reported, there is limited research in Ethiopia in general and eastern Ethiopia in particular. This study is therefore planned to assess the magnitude of food taboos and factors associated with the practice among pregnant women in Haramaya DSS, Eastern Ethiopia.

1.3. Significance of the study

This study to assess the magnitude of food taboos and associated factors among pregnant women. The finding of this may contribute some importance for health care providers, which help them to identify factors about food taboo and nutrition counseling should be given for pregnant women to increase positive pregnancy outcomes. The finding and the recommendation will contribute to program managers as well as local non-governmental organizations and also Haramaya district designing to plan to improve nutritional status of pregnant women. In addition, the finding of this study may be used as a baseline data for those who are interested to carrying out further studies.

1.4 Study Objectives

1.4.1 General objective

To assess the magnitude of food taboos and associated factors among pregnant women in Haramaya Demographic Surveillance System, Haramaya District, Oromia Regional State, Eastern Ethiopia from July 21st to 31st, 2020

1.4.2 Specific objectives

1. To determine the magnitude of food taboos among pregnant women
2. To identify factors associated with food taboos among pregnant women

CHAPTER TWO

LITERATURE REVIEW

2.1 Magnitude of Food Taboos

A systemic review on studies in developing countries like Ethiopia has revealed that pregnant women are influenced by food taboos based on cultural perceptions, behavioural and religious belief, with the fear of increasing body weight of the foetus which can result in obstructed labor, abortion, discoloration and ulcer of the of the skin, gastritis, vomiting, sinful act which can result either the mother facing problems during child birth or the child was born with ill health (Gebremariam, 2017). A cross-sectional study in India (Tamlindu) in 2016 among 650 pregnant women has revealed that 89% of them believed that there is an effect of food on pregnancy and lactation. Despite of high literacy rate (75%), there are certain strong, food beliefs regarding pregnancy and lactation which have been practiced by pregnant women and lactating mothers which were affecting their food intake (Banu et al., 2016). Another study conducted in India among 44 pregnant women in 2019 has reported that food taboos were present regarding consumption of various fruits, vegetables, and some animal source foods during pregnancy. These were followed mainly to prevent miscarriage, promote easy delivery, and prevent fetal malformations (Chakrabarti & Chakrabarti, 2019).

In addition, another study conducted in India among 339 pregnant women has revealed that 63.7% of them had some food taboos on vegetables/fruits (Patil et al., 2010). A cross sectional study conducted in Bangladesh among 43 study participants in 2013 has indicated that women were avoiding pineapple and green papaya because it can cause miscarriage (Kindred, 2013). Similarly, a study conducted in Indonesia has reported that foods that were mostly considered taboos for pregnant women were shrimp, pineapple, cabbage, cold water, and instant noodles (Diana et al., 2018).

A study conducted in Nigeria in 2016 among 149 pregnant women has reported that 37% of the pregnant women avoided some foods items in pregnancy. Some respondent believed eating grass-cutter meat makes a child sluggish and labour difficult respectively while starting eggs early for a child could predispose them to stealing later in life (Ekwochi et al., 2016). Another study in Nigeria has reported that 15% of the pregnant women adhere to traditional beliefs and food taboo; 38% of the women were malnourished (Maduforo, 2011). A cross-sectional study conducted in five communities in the Kat River Valley, South Africa in 2019 among 318

pregnant women has shown that 37% of the pregnant women reported one or more food practices shaped by local cultural taboos or beliefs (Chakona & Shackleton, 2019). A cross-sectional study conducted in Sudan in 2017 among 600 pregnant women has shown that 33% of them had food taboo (kheiri et al., 2017).

A cross sectional study conducted in Awabel District Amhara Regional State Ethiopia in 2018 among 307 pregnant women (Zepro, 2015) has reported that 27% of pregnant women encountered food taboos (Getnet et al., 2018). Another cross-sectional study conducted in Hadiya Zone Southern Nation, Nationality and People, Southern Ethiopia among 295 pregnant women has indicated that 27% of them avoided at least one type of food (Demissie et al., 1998). Likewise, a study conducted in Ethiopia among 592 pregnant women has shown that 18.2% of them avoided one or more food items due pregnancy (Mohammed et al., 2019).

A cross-sectional study conducted in Sendafa Beke Town, Oromia Regional State, Ethiopia in 2019 among pregnant women has indicated that 55.3% of them had encountered taboo or restriction for at least one food item (Wondimu, 2019). Another cross-section study in Arisi Zone of Oromia Regional State, Ethiopia among 38 key informants has revealed that there was a food taboo on the consumption of meat, fish, fruits, and some vegetables during pregnancy remained as low as the pre-pregnancy state (Zerfu et al., 2016). Likewise, a cross-sectional study conducted in Shashemene District, Oromia Regional State, Ethiopia in 2015 among 295 pregnant women has shown that 49.8% of the pregnant women encountered food taboos (Zepro, 2015).

A cross-sectional study conducted in Dale Woreda, Sidama Zone, Southern Nations, Nationalities, and Peoples' Region among 605 pregnant women has shown that, 67.9% of pregnant women were avoiding at least one food during their pregnancy period. Since food aversions, cravings and pica practicing are closely linked to meal pattern of pregnant woman (Sidama) (Yoseph, 2015). Another study conducted in Shalla, Arisi Oromia, Ethiopia among 347 pregnant women reported that 41.7% of women had pica experiences to some foods during their pregnancy (Obse et al., 2013).

2.2 Common Food Items

A study conducted in India among 44 pregnant women in 2019 has reported that food taboos were present regarding consumption of various fruits (banana, papaya, jackfruit, coconut), vegetables (dark green leafy vegetables), meat, fish, and eggs during pregnancy. These were followed mainly to prevent miscarriage, promote easy delivery, and prevent fetal malformations (Chakrabarti & Chakrabarti, 2019). Likewise, another study conducted in India has reported that some vegetables/fruits such as papaya (87%), mango (15.5%), pineapple (7.9%), banana (5.1%) and grape (4.6%) should be avoided during (Patil et al., 2010).

A cross-sectional study conducted in Bangladesh among 43 in 2013 has indicated that women were avoiding pineapple and green papaya because it can cause miscarriage (Kindred, 2013). Similarly, a study conducted in Indonesia has reported that foods that were mostly considered taboos for pregnant women were shrimp, pineapple, cabbage, cold water, and instant noodles. On the other hand, food suggestions for pregnant women were rice, corn rice, tuna, tilapia fish, milkfish, egg, moringa leaves, apples, and coconut water (Diana et al., 2018).

In a study conducted in Nigeria in 2016 among 149 pregnant women has reported snail and grass-cutter meat were the commonly avoided food in pregnancy while egg were commonly avoided in children under-two years old. Some respondent believed eating snail and grass-cutter meat makes a child sluggish and labour difficult respectively while starting egg early for a child could predispose them to stealing later in life (Ekwochi et al., 2016). Another study in Nigeria has reported that 15% of the pregnant women adhere to traditional beliefs and food taboo; 38% of the women were malnourished (Maduforo, 2011).

A cross-sectional study conducted in five communities in South Africa in 2019 among 318 pregnant women has shown that the most commonly avoided foods were meat products, fish, potatoes, fruits, beans, eggs, butternut and pumpkin, which are rich in essential micronutrients, protein and carbohydrates (Chakona & Shackleton, 2019). A systematic review from studies in African countries has indicated that the most common foods prohibited or tabooed are animal products like milk, meat, and eggs. Others were honey, sugarcane, leaf vegetables like cabbage (Gebremariam, 2017). A cross-sectional study conducted in Sudan in 2017 among 600 pregnant women has shown that the most frequently mentioned restricted food items are honey, citrus, and eggs (Kheiri et al., 2017).

A cross-sectional study conducted in Awabel district Amhara Regional State, Ethiopia in 2018 among 307 pregnant women has reported that avoided food items by pregnant mothers were linseed, coffee, tea, cabbage, porridge, wheat bread, banana, groundnut, salty diet, nug, sugarcane, pumpkin, and coca drinks (Getnet et al., 2018). Another cross sectional study conducted in Hadiya Zone, Southern Nation, Nationality and Peoples' Regional State, Ethiopia among 295 pregnant women has indicated that milk and cheese were regarded as taboo foods by nearly half of the women (44.4%) followed by linseed (16%) and fatty meat (11.1%) (Demissie et al., 1998). Likewise, another cross-sectional study conducted in Ethiopia among 592 pregnant women has shown that the food items most avoided were green chili pepper, organ meat, and dark green leafy vegetables like spinach, lettuce, kale, and broccoli (Mohammed et al., 2019).

A cross-sectional study conducted in Sendafa Beke Town, Oromia Regional State, Ethiopia in 2019 among pregnant women has indicated that, milk and milk products (26.9%), eggs (20.2%), linseed (17.9%), fatty meats (15.1%), fruits (9.5%), honey (6.7%) and vegetables (3.6%) were commonly restricted food items (Wondimu, 2019). Another cross-section study in Arisi Zone of Oromia Regional State, Ethiopia has revealed that the consumption of meat, fish, fruits, and some vegetables during pregnancy remained as low as the pre-pregnancy state. The most common taboos were related to the consumption of green leafy vegetables, yogurt, cheese, sugar cane, and green pepper (Zerfu et al., 2016). Likewise, a cross sectional study conducted in Shashemene District, Oromia Regional State, Ethiopia in 2015 among 295 pregnant women has shown that food items avoided were, linseed, honey, milk, fatty meat, eggs, fruits and vegetables (Zepro, 2015).

2.3 Factors Associated with Food Taboos

Studies conducted on food taboos during pregnancy and lactation in three villages on Yasawa Island in Fiji, found that food taboos we are culturally transmitted prohibitions, the violation of which is perceived to carry social or supernatural sanctions (Henrich & Henrich, 2010). In addition, a cross sectional study conducted Bangladesh in 2013 has indicated that women's social status, and cultural customs are the hindering factors for food taboo during pregnancy (Kindred, 2013).

A cross-sectional study conducted in five communities in the South Africa in 2019 has shown that most foods were avoided for reasons associated with pregnancy outcome, labour and to avoid an undesirable body form for the baby (Chakona & Shackleton, 2019). A study conducted in Nigeria has reported that factors associated with food taboos were teenage, primigravidity, low body mass index, had no formal education, and low monthly family income (Oni & Tukur, 2012). Nevertheless, a study conducted in Nigeria in 2016 among 149 pregnant women has reported that food taboos had no relationship with maternal educational attainment, parity, and occupation (Ekwochi et al., 2016).

A cross-sectional study conducted in Sudan in 2017 among 600 pregnant women has shown that pregnant women's superstitious belief towards food taboo was associated with living in rural areas, having lower education, younger age, and having inadequate antenatal care. In addition, having belief of harmed the fetus, fear of miscarriage, pre-eclampsia and prolonged labor are some of the common raised reasons for food prohibition (Kheiri et al., 2017).

A cross-sectional study conducted in Awabel District Amhara Regional State Ethiopia in 2018 among 307 pregnant women has reported that reasons mentioned for avoidance of this food items were plastered on the fetal head, making fatty baby which is difficult for delivery, fear of abortion, and fetal abnormality. Age of the mother (AOR= 2.97 (1.71-5.16), income (AOR= 0.28 (0.11-0.72), and previous antenatal care (AOR= 2.33 (1.89-5.47) were significantly associated with food taboo (Getnet et al., 2018).

Another study conducted in Ethiopia among 592 pregnant women has shown that traditionally held beliefs and misconceptions were the common reasons for pregnancy related food taboos (Mohammed et al., 2019). Another cross-sectional study conducted in Hadiya Zone Southern Nation, Nationality and Peoples Regional State, Ethiopia among 295 pregnant women has indicated that reasons for avoiding foods include fear of difficult delivery (51%), discoloration of the foetus (20%) and fear of abortion (9.7%). Among the few socioeconomic variables studied, education and income were found to influence food taboos (Demissie et al., 1998).

A cross-sectional study conducted in Sendafa Beke, Oromia Regional State, in 2019 has indicated that the common reasons mentioned for avoidance of the food item were fear of fat baby, fear of abnormality baby, fear of abortion, plastered on fetal head and food flavour (Wondimu, 2019).

Another cross-section study conducted in Arisi Zone of Oromia Regional State, Ethiopia has revealed that the frequency and extent of the practice varied by older maternal age, family composition, literacy level, from rural villages, and those with no formal education were more likely to practice the taboos than younger and educated ones (Zerfu et al., 2016).

A cross-sectional study in Shashemene District, Oromia Regional State, Ethiopia in 2015 among 295 pregnant women has shown that the most mentioned for avoidance of food items are plastered on the fetal head, makes fatty baby and difficult delivery, fear of abortion, evil eye, and fetal abnormality. Pregnant women who had no previous antenatal care were more likely to have food taboo than women who had previous antenatal care (AOR, 3.1, 95% CI: 1.2, 8.2). Likewise, women who had fasting during pregnancy were more likely to avoid some foods than women who were not fasting during pregnancy (AOR, 3.1, 95% CI: 1.5, 6.5). In addition, women who had changes on food habit were more likely avoid some food items during pregnancy (AOR, 10.5, 95% CI: 3.2, 34.5). Educational status showed a significant association with belief of balanced diet (Zepro, 2015).

Generally, there is very limited number of published studies on food taboos among pregnant women from different settings. We could not find a research evidence on the details about the factors and perceived reasons (myths) are related to communities' or women's attitude or culturally defined contexts. Nevertheless, more research is need to assess the level of food taboo during pregnancy and associated factors. Therefore, this study is designed to assess the level of food taboo and its associated factors in the eastern Ethiopia.

2.5 Conceptual Framework

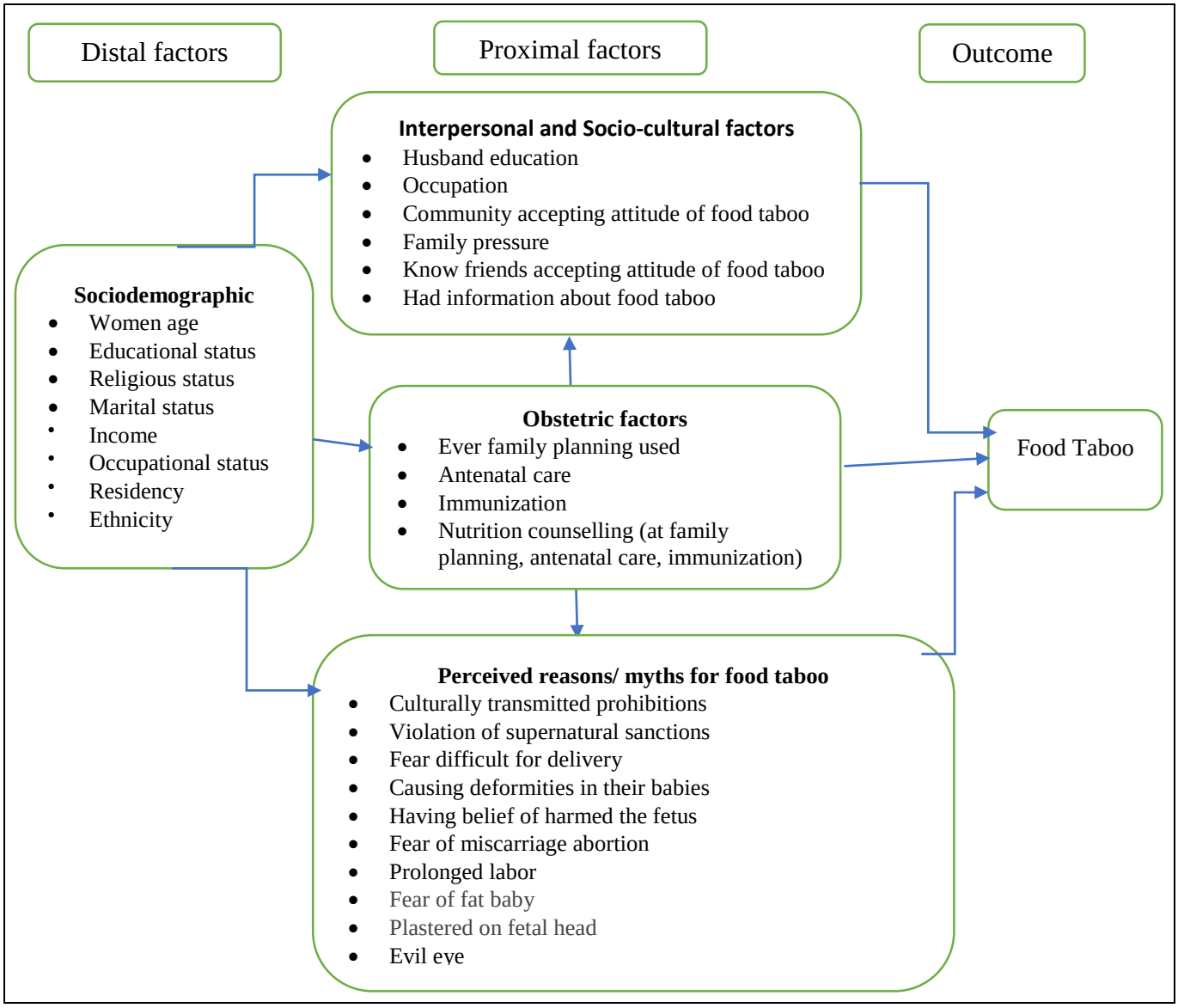


Figure 1: Conceptual framework to illustrate the relationship between independent with dependent variable (developed through review of literature)

CHAPTER THREE

MATERIALS AND METHODS

3.1. Study area and period

Haramaya District is located 500km way from Addis Ababa, capital city of Ethiopia and 22 km from Harar. The altitude of the district ranges from 1400 to 2340 meters above sea level. It is named after the administrative Center, Haramaya town. It is bordered on the south by Kurfa Chele, on the west by Kersa on the north by Dire Dawa on the east by Kombolcha and on the southeast by the Harari Region (Wikipedia, 2019). Haramaya District has 36 rural Kebeles (smallest administrative unit in Ethiopia) and three urban Kebeles. The 2007 national census reported a total population for this woreda of 271,018, of whom 138,282 were men and 132,736 were women. The study was conducted in 12 rural Kebeles in the Haramaya DSS, found in Haramaya District, East Hararghe Zone, Oromia Regional State in the Eastern Ethiopia from July 21st to 31st, 2020.

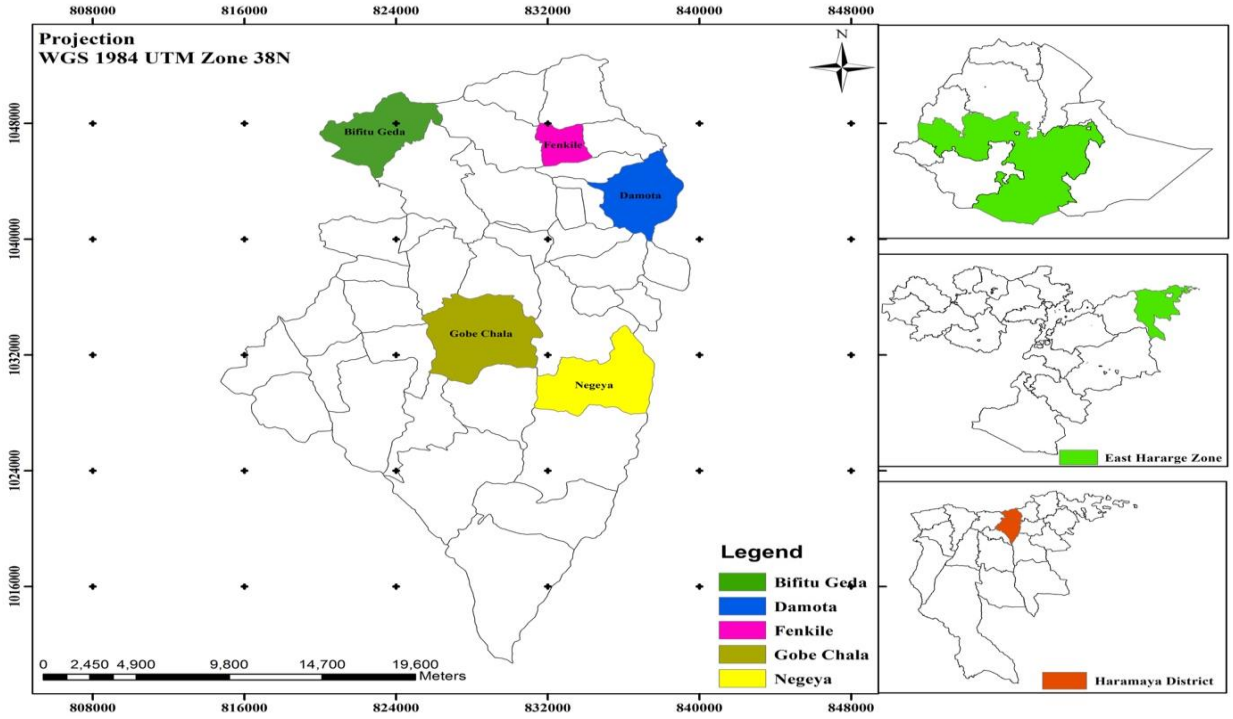


FIGURE 2. GEOGRAPHIC LOCATION OF STUDY AREA

3.2 Study design

A community-based cross-sectional study was conducted using quantitative approach.

3.3 Source population

All pregnant women who have lived in Haramaya District.

3.4 Study population

Pregnant women who have lived in Haramaya DSS during the study period. A pregnant woman at household level was a study unit for this study.

3.5. Inclusion and exclusion criteria

3.5.1. Inclusion criteria

Pregnant women who have lived in the District and under the DSS follow up.

3.5.2 Exclusion criteria

Seriously ill pregnant woman during data collection and unable to communicate.

3.6. Sample size and sampling technique

3.6.1. Sample size

Sample size was calculated using single proportion formula by considering 95% significance level, marginal error of 5%, and a food taboo 49.8% among pregnant women in Shashemene District (Zepro, 2015) for the first study objective.

$$n= (Z\alpha/_2)^2 * p*q/d^2 = \frac{(Z_{\alpha/2})^2\ p\ (1-p)}{d^2}$$

$$n = (1.96)^2\ (0.498)\ (0.502) / (0.05)^2$$

$$n= 383.99$$

Considering of additional 10% for non-response rate, and then, the calculated sample size by objective one was (383.99+38) = 422

Where:

n- Is the minimum required sample size

p- An estimate of the proportion of food taboo in the pregnant women

d- Margin of error for sample size

Z- The standard normal value at 95% significance level (Z=1.96)

For objective 2, different factors associated with food taboos were considered to calculate the sample size using double population proportion formula. Sample was calculated with a 95% confidence interval, margin of error of 5% and power of 80% using Open-Epi cal.

TABLE 1: Sample size determination used parameters for objective 2

Variable	exposed	non-exposed	AOR	n	Source
Previous antenatal care	224	76	2.3	280	(Getnet et al., 2018)
Previous antenatal care	151	88	3.1	142	(Biza Zepro, 2015)

Then, the largest sample size from both objectives (n=422) was used.

3.7 Sampling procedure

Pregnancy status has been registered by the DSS since its inception. In 2019, there were total of 1,712 pregnancy women in the DSS. Of which 994 women who were newly registered by the DSS who were eligible for the study. Location of the pregnant woman was obtained from the DSS household registry number and updated in collaboration with the health extension workers (HEW) and DSS site supervisor, accordingly. All (n=12) Kebeles in the DSS were included in this study. Proportional to size allocation was performed to the 12 included Kebeles using a formula (ni) = nf * nj/N).

Where,

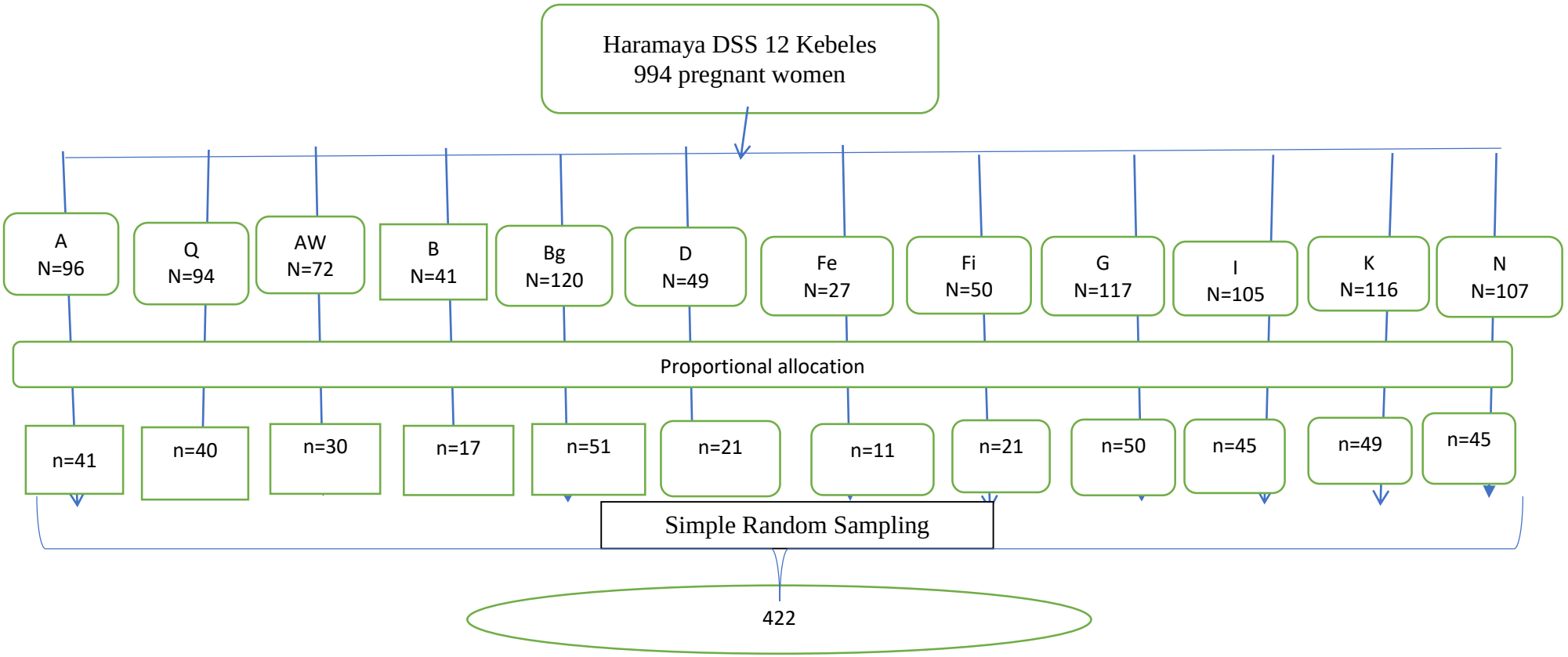
Ni = sample size for the Kebeles

Nf = final sample size

Nj = total observed pregnant women in each Kebeles

N=Total observed pregnancy in 12 Kebeles

The details of sampling procedure is illustrated using a flow diagram (**Figure 3**). Sampling frame was constructed for each selected Kebeles using the DSS pregnant women's household registration number. Eventually study participants were recruited using simple random sampling method. Lottery method was applied to recruit each study participants at their place of residence (Kebele).



Symbols used for Kebeles: A= Amuma**; Q=** Qerensa Dereba; AW= Adele Walta; B=Bachaqe; Bg= Biftu Geda; D=Damota; Fe= Fendisha; Fi=Finqille; G= Gobe Challa; I= Ifa Oromia; K= Kuro; N= Nageya

FIGURE 3:SAMPLING PROCEDURE FOR FOOD TABOO AND ITS ASSOCIATED FACTOR AMONG PREGNANT WOMEN IN HARAMAYA DSS, EASTERN ETHIOPIA 2020

3.8 Data collection and measurements

3.8.1 Data collection tools

Data were collected by structured questionnaire adapted from different literature (Zepro, 2015; Daba et al., 2013; Demissie et al., 1998; Getnet et al., 2018; Wondimu, 2019; Zerfu et al., 2016). The questionnaire was initially prepared in English then translated to Afan Oromo by an individual who have very good command of both languages. It was back translated by another individual with good command of both languages. The data collection tool was comprised of the socio demographic condition, maternal health services related factors, and family planning and nutritional counselling information. Food taboo was measured based on the study participants self-report.

3.8.2 Data collectors and data collection procedures

The data were collected by five DSS data collectors and supervised by two supervisors. Before data collection, one days training was given for both the data collectors and supervisors. The data collectors were recruited considering their experience on the DSS. Data were collected through face-to-face interview at the women's house in a quiet and private place.

3.9 Data quality control

Pre-test was carried prior to the actual data collection period on 5% (21) of the sample in Harar to ensure clarity, wordings, logical sequence and skip patterns. Data collectors and supervisors were trained on the study instrument and data collection procedure. The principal investigator and the supervisors checked submitted filled questionnaire for completeness, code and clean to assure the quality of findings. Incomplete, inconsistent and unclearly filled questionnaires were given back to data collector and get completed.

3.10. Variables

3.10.1. Dependent Variable

- Pregnancy-related food taboo among pregnant women

3.10.2. Independent Variable

Demographic factors: age, educational status, religious status, marital status, income, occupational status

Obstetric history (gravida, parity) factors; ever family planning used, nutritional counselling, antenatal care, immunization service use

Misconceptions/myths; Culturally transmitted prohibitions, violation of supernatural sanctions, Thought to ease the process of birth-giving, causing difficult for delivery, causing deformities in their baby, having belief of harmed the fetus, fear of miscarriage abortion prolonged labor, fear of fat baby, plastered on fetal head, and evil eye was considered as community/women misconceptions/myth related independent variables.

Other socio-cultural factors; belief, family pressure, accepting attitude of food restrictions were assessed as sociocultural independent variables.

3.11. Operational definition

- Food taboo: was considered when a pregnant woman reported at least one food item restriction or avoidance (Meyer-Rochow, 2009). By adapting this definition, pregnancy-related food restriction among pregnant woman due to cultural restriction among edible food items which was a common diet for women before and after pregnancy, safe for their health, and acceptable by the community culture and religion.

- The Food Consumption Score (FCS) is a composite score based on dietary diversity, food frequency, and relative nutritional importance of different food groups. FCS was calculated using the standard criteria (WFP, 2008).

$$\textbf{FCS}=(a_i\text{staple}*X_i\text{staple})+(a_i\text{pulse}*X_i\text{pulse})+(a_i\text{veg}*X_i\text{veg})+(a_i\text{fruit}*X_i\text{fruit})+(a_i\text{animal}*X_i\text{animal})+(a_i\text{sugar}*X_i\text{sugar})+(a_i\text{dairy}*X_i\text{dairy})+(a_i\text{oil}X_i\text{oil})$$

Where,

FCS: Food consumption score

Xi: Frequencies of food consumption = number of days for which each food group was consumed during the past 7 days (7 days was designated as the maximum value of the sum of the frequencies of the different food items belonging to the same food group)

ai: Weight of each food group

(See Annex-I)

3.12. Data processing and analysis

The data were coded, edited accordingly and entered into EpiData version 3.1. Then it was exported to SPSS 23 for analysis. Descriptive analysis was used to determine the proportions and other summary statistics. Then, information was presented using simple frequencies, summary measures, tables and figures. Binary logistic regression was carried out to identify the associated factors with food taboo among pregnant women. Those variables having p-value less than 0.25 were entered into the multiple logistic regression mode in order to control for possible confounders.

Multicollinearity was checked the presence of correlation between independent variables. Model fitness was checked by using Hosmer- Leme Show goodness of fit. Adjusted odds ratios (AOR) with 95% CI was estimated to identify the factors associated with food taboo among pregnant women using multiple logistic regression analysis. Level of significant association was declared at p-value <0.05.

Likewise, food consumption score (FCS) was calculated as composite variables using a standard method, which was adopted from the World Food Program (WFP) technical guide. The pregnant women's household food consumption frequency was multiplied by the food group standard weight. Then summary of the nine food groups was used to estimate the FCS. Eventually, the pregnant women's household FCS was categorised into poor, borderline and acceptable level of food consumption (WFP, 2008).

3.13. Ethical considerations

Ethical clearance was obtained from the Institutional Health Research Ethics Review Committee (IHRERC) College of Health and Medical Sciences, Haramaya University. A formal letter of permission and support was submitted to Haramaya District Health Office and Haramaya DSS. All the study participants were informed about the purpose of the study, their right to refuse and informed voluntary consent was obtained from all study participants prior to data collection. The respondents were informed that the information obtained from them was treated with complete confidentiality and do not cause any harm on them. Personal privacy and cultural norms were respected. The respondents had the right not to participate in study or withdraw from the study at any time.

3.14 Dissemination of results

The results of this study will be presented to the community of Haramaya University on open defence of public health researches. It will also be communicated to Haramaya district and non-governmental organizations (NGOs) working on maternal and child health and other concerned bodies. Further efforts will be made to publish the findings on national or international peer reviewed journal. The thesis will made available in the Haramaya University library.

Chapter Four

Results

4.1. Sociodemographic characteristics

From a total of 422 pregnant women approached, 416 (98.6%) were included in the study. The mean age of the pregnant women was 28.6 (±9.7) years. More than three-fourth of study participants age ranged from 20 – 34 years. The median monthly household income was 840 Birr. Likewise, the mean family size of the women was 5.8(±5.2) members (Table 2).

TABLE 2: SOCIODEMOGRAPHIC CHARACTERISTICS OF PREGNANT WOMEN IN HARAMAYA DSS, 2020 (N=416)

Variables	Categories	n	%
Mean Age		28.6 (±9.7) years	
Age	<20	18	4.4
	20-34	325	79.1
	35-49	68	16.5
Marital status	Single	19	4.6
	Married	397	95.4
Religion	Muslim	413	99.3
	Orthodox	3	0.7
Residence	Rural	412	99.0
	Urban	4	1.0
Women education	Illiterate	292	70.2
	Read and write	11	2.6
	Grade 1-6	94	22.6
	Grade 7-12	19	4.6
Ethnicity	Oromo	411	98.8
	Others*	5	1.2
Women occupation	House wife	379	91.1
	Private business	37	8.9
Husband education	Illiterate	282	67.8
	Read and write	10	2.4
	Grade 1-6	79	19.0
	Grade 7-12	44	10.6
	12+	1	0.2
Husband occupation	Farmer	407	97.8
	Others*	9	2.2
Family size	≤5	216	52.4
	≥6	196	47.6
Estimated monthly	≤840	211	50.8
Income	≥841	204	49.2

Other* *husband occupation: Private employee (7), government employee (1), and NGOs employee (1), Ethnicity (2 Amhara & 3 Somali)*

4.2 Obstetric history of the pregnant women

Approximately half (47.1%, n=196) of the pregnant women had antenatal (ANC) follow up. Of these, 76.6% (151) of the women received nutritional counselling during ANC visit (Table 3).

TABLE 3: OBSTETRIC AND OR REPRODUCTIVE HISTORY OF THE PREGNANT WOMEN IN HARAMAYA HDSS, 2020 (N=416)

Variable	Categories	n	%
ANC follow	Yes	196	47.1
	No	220	52.9
Number of ANC	One time	78	40.2
	Two times	74	38.1
	Three times	36	18.6
	Four Time	6	3.1
Nutrition counseling at ANC	Yes	151	76.6
	No	45	22.8
Family planning (FP) service	Yes	104	25.0
	No	312	75.0
Nutrition counseling at FP	Yes	79	75.2
	No	25	24.8
Immunizations service	Yes	189	45.4
	No	227	54.6
Nutrition counseling at immunization	Yes	110	57.6
	No	79	42.4

4.3 Food consumption

4.3.1 Food access and diet frequency

Majority of the pregnant women (80.5%, n=335) obtained food from their farm. Likewise, 92.1% (383) of them access from market. Approximately two-third (64%, n=264) of the pregnant women had dietary pattern of more than three and more times per day (**Figure 4**).

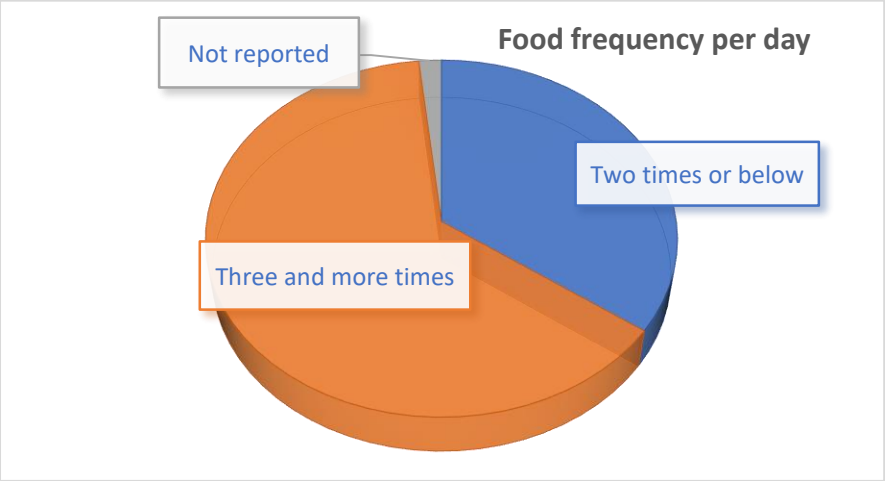


FIGURE 4: FOOD FREQUENCY EAT PER DAY BY PREGNANT WOMEN AT HARAMAYA DSS, 2020 (N=416)

4.3.2 Food consumption for last 24 hours

Cereals and tubers (88.5%), dark green vegetables (85.1%), and oil (91.3%) were the most consumed food groups in the households. However, pulse and legumes (31.3%), fruit (16.1%) and meat and fish (16.3%) were the least consumed foods for past 24 hour's diet (Figure 5).

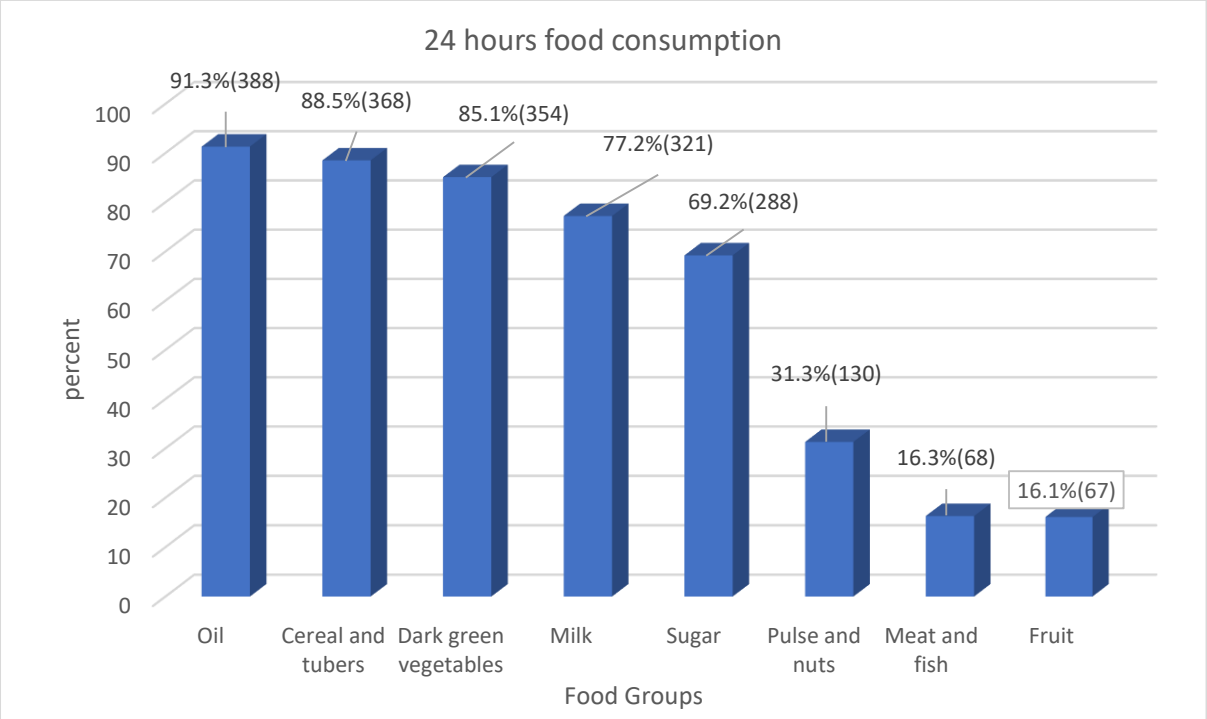


FIGURE 5: FOOD CONSUMPTION FOR LAST 24 HOURS IN HARAMAYA DSS, 2020 (N=416)

4.3.3 Food consumption score for the past 7 days

Thirteen percent of the households of the pregnant women had poor food consumption score (FCS). Likewise, 45% of the pregnant women's household had borderline FCS (**Figure 6**).

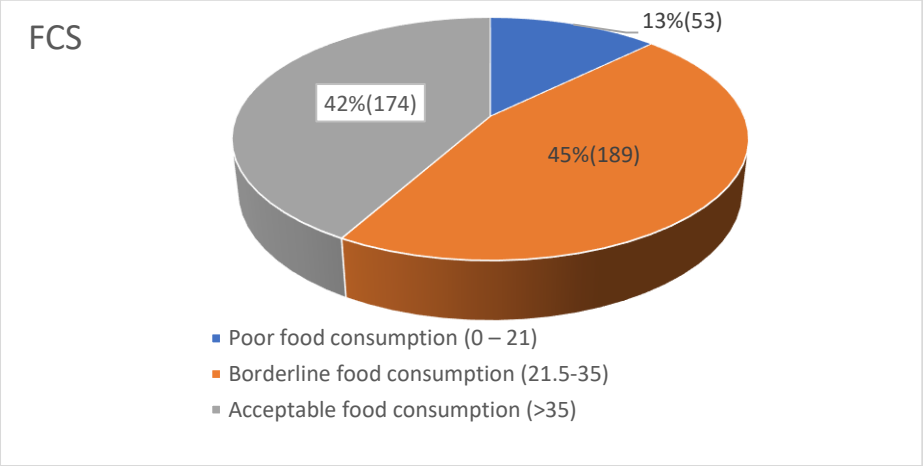


FIGURE 6: FOOD CONSUMPTION SCORE OF PREGNANT WOMEN IN HARAMAYA HDSS, 2020 (N=416)

4.4 Food Taboos among pregnant

The prevalence food taboos during their pregnancy was 48% (95% CI: 43, 52%) (**Figure 7**).

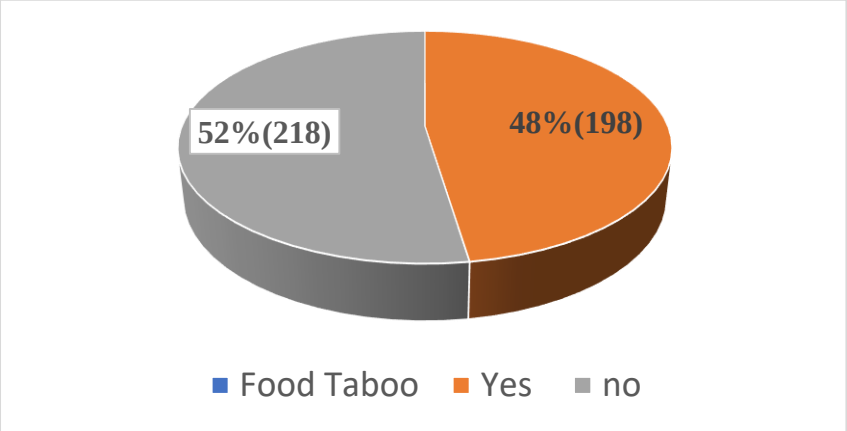


FIGURE 7: FOOD TABOO AMONG PREGNANT WOMEN IN HARAMAYA DSS, 2020 (N=416)

Two-third (66.85, n=278) of pregnant women had heard about food taboos, mainly from other pregnant women (50.7%, n=141), followed by health personnel (30.2%, n=84). Of these, half of them (50.5%, n=210) knew a food item that should be avoided during pregnancy (**Table 4**).

TABLE 4: FOOD TABOO AMONG PREGNANT WOMEN IN HARAMAYA DSS, 2020 (N=416)

Variable	Categories	n	%
Ever heard about food taboo	Yes	278	66.8
	No	138	33.2
Source of information about food taboo*	TV/Radio	19	6.8
	Health personnel	84	30.2
	Health extension workers	56	20.1
	Neighbors	141	50.7
	Family (mother-in-law)	70	25.2
Know any food tabooed in pregnancy	Yes	210	50.5
	No	206	49.5
Source of information about tabooed food *	From ancestors (generation)	62	14.9
	From peers	99	23.8
	From community	107	25.7
	From mother-in-law	3	0.7
Know community member had food taboo attitude	Yes	208	50.0
	No	203	48.8
	Not reported	5	1.2
Know friends who avoid some foods	Yes	163	39.2
	No	239	57.5
	Not reported	14	3.4
Time of foods avoided*	Pre-pregnancy	4	1.0
	early pregnancy	64	15.4
	mid pregnancy	212	51.0
	late pregnancy	178	42.8
Perceived incidents if eat tabooed foods in pregnancy*	Abortion	22	5.3
	Big baby	165	39.7
	Bad luck	134	32.2

** Multiple responses were possible*

4.4.1 Food items avoided by pregnant women

Pregnant women reported food items that avoided during their pregnancy period. Meat, salt, egg, cabbage, milk, and oil were some of the frequently reported food items (**Figure 8**).

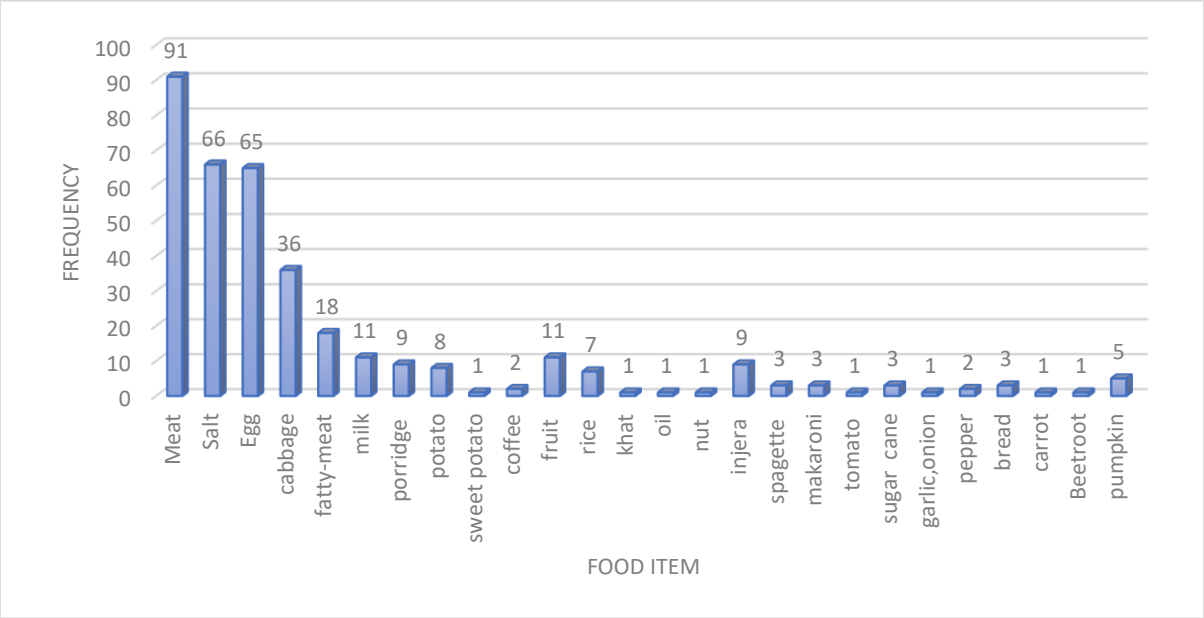


FIGURE 8: SOME OF REPORTED TABOOED FOOD ITEMS BY PREGNANT WOMEN AT HARAMAYA DSS, 2020 (MULTIPLE RESPONSES WERE POSSIBLE)

4.4.2 Perceived reason for having food taboo in the community

The community in this study area have several reasons to avoid or restrict food during pregnancy. The main perceived reasons of the community were fear of making the baby big that may cause difficulty during delivery; fear of increasing blood pressure; fear of fetal body deformities and adhere to cultural prohibitions (**Figure 9**).

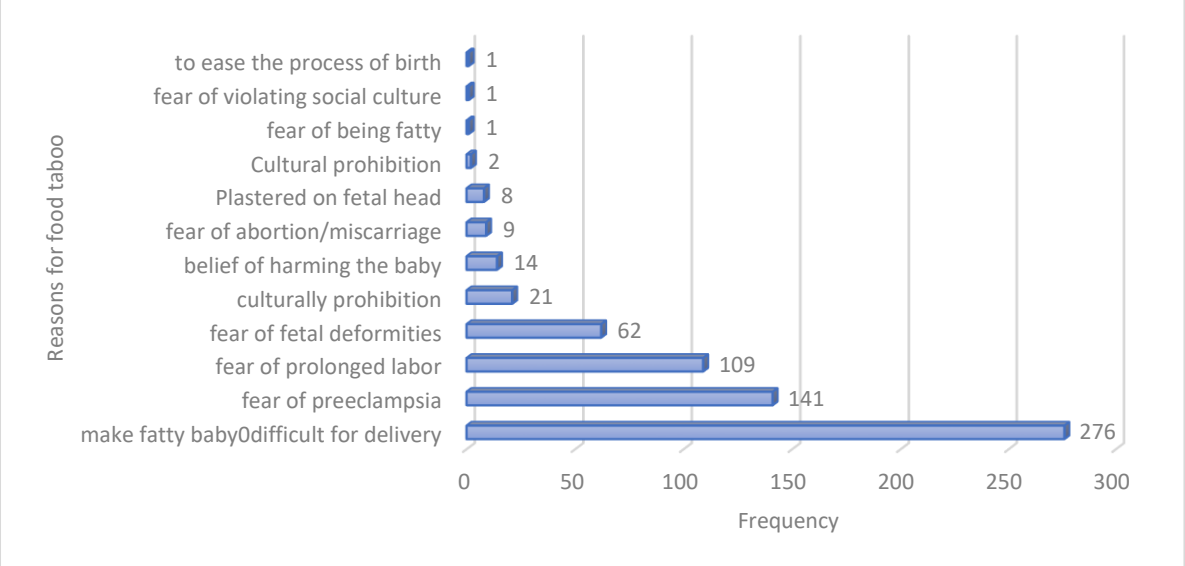


FIGURE 9: COMMUNITIES' PERCEIVED REASONS FOR FOOD TABOO AT HARAMAYA DSS, 2020 (MULTIPLE RESPONSES WERE POSSIBLE)

Furthermore, the table here below demonstrate the match of the communities' perceived reason and tabooed food is presented in detail (Annex II).

4.5 Food aversion and Food Craving

Almost half (48.3%, n=201) of the pregnant women had food aversion (strongly dislike some food items). Approximately one-third (32.9%, n=137) of women strongly dislike fatty meat. Women's experience of food craving occurred at any stage of pregnancy. Twelve percent to of pregnant women ate the averted food item. On the other hand, the prevalence of food carving during pregnancy was 42.8% (178). Bread (68.5%, n=122) was the most craved food item by pregnant women. One-third (34.5%, n=61) of pregnant women did not eat the food that they have craved during their pregnancy period. Likewise, approximately a quarter (23.3%, n=97) of pregnant women had ever craved non-food substance. Of these, soil (67%) was mainly craved non-food substance (**Table 6**).

TABLE 5: FOOD AVERSION, CRAVING, AND PICA EXPERIENCE OF PREGNANT WOMEN IN DSS, 2020 (N=416)

Variables	Categories	n	%
Food aversion (strong dislike)	Yes	201	48.3
	No	215	51.7
Food aversion experienced time*	1st trimester	75	18.0
	2nd trimester	91	21.9
	3rd trimester	73	17.5
Having food aversion now	Yes	60	14.4
	No	356	85.6
Ate averted (strongly disliked) food	Yes	50	12.0
	No	366	88.0
Food craving (strongly liked)	Yes	178	42.8
	No	238	57.2
Women attracted*	Flavor of the food	51	28.7
	Taste of food	56	31.5
	Personal interest	98	55.1
	Other	6	1.4
Ate craved food	Yes	117	65.7
	No	61	34.5
Craving nonfood substance (pica)	Yes	97	23.3
	No	319	76.7
Type of craved non-food substance*	Leftover food	16	16.5
	Clay (soft stone)	9	9.3
	Soil	65	67.0
	Ash	7	7.2
Eaten craved nonfood substances	Yes	30	26.5
	No	83	73.5

**multiple responses were possible*

Furthermore, fatty meat, honey, egg and salt were another most averted food item by pregnant women. Likewise, porridge, injera sugar cane and oil are other some food items averted by pregnant women (**Figure 10**).

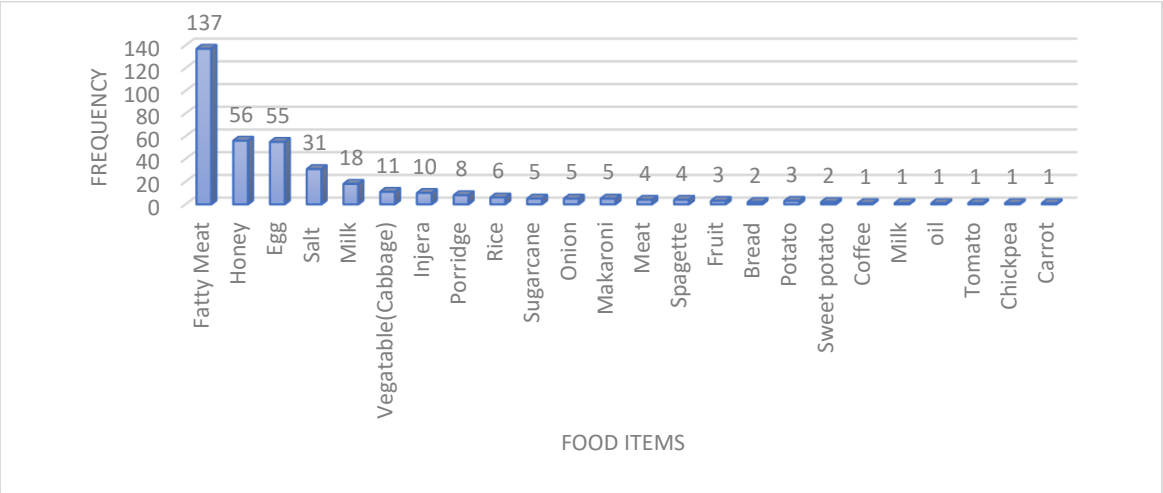


FIGURE 10: SOME REPORTED AVERTED FOOD BY THE PREGNANT WOMEN AT HARAMAYA DSS, 2020 (MULTIPLE RESPONSES WERE POSSIBLE)

4.6 Factors associated with food taboo during pregnancy

A total of twenty independent variables were included in the binary logistic regression. Then one independent variable (husband occupational status) was excluded due to low cell count. Nine independent variables which have p values of less than 0.25 were included into the multiple logistic regression. Of these, four variables have shown significant association. Women who have ever heard about food taboo were 3.58 times more likely to report food taboo than women who had no heard about food taboo (AOR,3.58, 95% CI:1.89,6.83). Likewise, those women who had friends had avoided food during pregnancy were 1.91 time more likely to avoid foods during their pregnancy than their counter parts (AOR, 1.91, 95%CI: 1.22, 2.99). Those women who had attended formal education were 1.95 times more likely to report food taboo than women with no formal education (AOR, 1.95, 95% CI: 1.18, 3.23). Furthermore, women's monthly income the median (<840 Birr) and below were 1.73 times more likely to report food taboo than their counter parts (AOR, 1.73, 95CI: 1.10, 2.73). On the other hand, the odds of women who had history of attending immunization services were 65% less likely experienced food taboo than women who had no previous history of attended immunization service (AOR,0.35, 95% CI: 021, 0.58) (**Table 7**).

TABLE 6: FACTORS ASSOCIATED WITH FOOD TABOO AMONG PREGNANT WOMEN IN HARAMAYA DSS, 2020 (N=416)

Variables		Food Taboo		COR 95%CI	AOR 95%CI
	Categories	Yes (%)	No (%)		
Age (years)	<20	4(22.2)	14(77.8)	0.43(0.13,1.46)	0.31(0.08,1.15)
	20-34	164(50.5)	161(49.5)	1.55(0.91,2.63)	1.26(0.70,2.27)
	35-49	27(39.7)	41(60.3)	1.00	1.00
Women's education	No formal education	138(45.5)	165(54.5)	1.00	1.00
status	Formal education	60(53.1)	53(46.9)	1.35(0.88,2.09)*	**1.95(1.18,3.23)***
Women's occupation	House wife	181(47.8)	198(52.2)	1.00	1.00
	Private business	17(45.9)	20(54.1)	0.93(0.47,1.83)	
Husband education	No formal education	138(47.3)	154(52.7)	1.00	
status	Formal education	60(48.4)	64(51.6)	1.05(0.69,1.59)	
Family size	≤5	100(46.3)	116(53.7)	0.88(0.60,1.30)	
	≥6	97(49.5)	99(50.5)	1.00	
Monthly income	≤840	107(50.7)	104(49.3)	1.30(0.89,1.92)*	**1.73(1.10,2.72)***
	≥841	90(44.1)	114(55.9)	1.00	1.00
ANC follow	Yes	101(51.5)	95(48.5)	1.35(0.92,1.98)	
	No	97(44.1)	122(55.5)	1.00	
Number of ANC	Once	47(60.3)	31(39.7)	1.00	
	Twice	35(47.3)	39(52.7)	0.59(0.31,1.13)	
	Three times	15(41.7)	21(58.3)	0.47(0.21,1.05)	
	Four times	3(50.0)	3(50.0)	0.66(0.13,3.48)	
Nut counseling at	Yes	77(51.0)	74(49.0)	0.95(0.49,1.85)	
ANC	No	24(52.2)	22(47.8)	1.00	
FP service used	Yes	39(37.5)	65(62.5)	0.58(0.37,0.91)*	0.65(0.37,1.14)
	No	159(51.0)	153(49.0)	1.00	1.00
Nut counseling at FP	Yes	29(36.7)	50(63.3)	1.00	
	No	10(38.5)	16(61.5)	1.08(0.43,2.69)	
Immunizations	Yes	73(38.6)	116(61.4)	0.51(0.35,0.76)*	**0.35(0.21,0.58)***
service	No	125(55.1)	102(44.9)	1.00	1.00
Nut counseling at	Yes	43(39.1)	67(60.9)	0.98(0.55,1.77)	
immunization	No	32(39.5)	49(60.5)	1.00	
Heard about Food	Yes	155(55.8)	123(44.2)	2.78(1.81,4.28)*	**3.59(1.89,6.83)***
taboo	No	43(31.2)	95(68.8)	1.00	1.00
Knew a food item to	Yes	114(54.3)	96(45.7)	1.73(1.17,2.54)*	1.18(0.64,2.18)
be avoided	No	84(40.8)	122(59.2)	1.00	1.00
Community have	Yes	102(49.0)	106(51.0)	1.12(0.76,1.65)	
food taboo	No	96(46.2)	112(53.8)	1.00	
Knew a friend who	Yes	97(59.5)	66(40.5)	2.21(1.48,3.30)*	**1.91(1.22,2.99)***
avoided food	No	101(39.9)	152(60.1)	1.00	1.00

*NB: *COR: p<0.25, and *AOR: p<0.05*

Chapter Five

Discussion

This study determined the prevalence of food taboo and its associated factors among pregnant women in the Haramaya DSS. Almost half of the pregnant women (47.6%) avoided food during their pregnancy period. Food taboo is associated with women who heard about food taboo, women who had friends avoiding food, household monthly income, women attended formal education, and women who had attended immunization service. Fear of delivering big baby, belief of harming the baby, and cultural prohibition were some of the most frequently reported perceived reason food taboo by the pregnant women.

In this study, 47.6% of pregnant women avoided some food items. Our finding is similar with study conducted in Shashemene District, Southern Ethiopia which reported 49.8% of the pregnant women encountered food taboos (Zepro, 2015). It is almost similar with a study conducted in Shalla, Arisi, Ethiopia, which indicted 42% of the women had avoided some food items during their pregnancy period (Obse et al., 2013). In addition, our finding is consistent with a study conducted in Sudan which has reported that 44% of women had food taboo during pregnancy (Tahir et al., 2018).

This study finding is much higher than a study conducted in Awabel District, Ethiopia has shown that 27% of pregnant women encountered food taboo (Getnet et al., 2018). Likewise, it is higher than a study conducted in Addis Ababa, Ethiopia reported that 18.2% of pregnant women had food taboo (Mohammed et al., 2019). Furthermore, this study is consistent with a finding from a systematic review conducted on studies in Ethiopia (Gebremariam, 2017). Food taboo during pregnancy is seemed to be deep rooted and long-time tradition in Ethiopia as evidenced by a study in 1998 has reported that 27% of the pregnant women avoided food as a result of food taboo (Demissie et al., 1998). This finding is a bit higher than a studying conducted in Nigeria which has indicated that 37% of women had food taboo (Ekwochi et al., 2016), and 13% at Oyo State, Nigeria (Oni & Tukur, 2012). Likewise, 37% of women practiced food taboo in South Africa (Chakona & Shackleton, 2019), and 33% of pregnant women in Sudan had food taboo (Kheiri et al., 2017). This difference might be due to the study settings, where almost all respondents in our study were rural residents with no formal education. Which affect their awareness level and access to information to minimize misconceptions.

Nevertheless, our finding is lower as compared with a studies conducted in Ethiopia, in Sendafa, which has reported that 55% of women had food taboo during their pregnancy period (Wondimu, 2019), and in Dale District, Sidama, 68% of women had food taboo (Yoseph, 2015). Likewise, the present study finding is lower compared to a study conducted in Ghana, which has reported that, 60% of women had knowledge about food taboos and 57% of then had foods prohibited (Gadegbeku et al., 2019). On the other hand, this study is quite lower as compared with a study conducted in Malaysia, reported that 70.2% of the pregnant women avoided at least one food item due to food taboos (Mohamad & Ling, 2016). This study, four in ten women reported that they had acceptable level of food consumption during their pregnancy period. This is consistent a study conducted in Nigeria indicated that majority of the women had adequate consumption of oil, meat/fish and others (EA, 2016).

One of the most frequently mentioned reason for food taboo were fear of delivering big baby, prolonged labor, cause being very fat, plastered on the fetal head and cultural prohibitions. This is quite similar with a study conducted another part of Ethiopia (Afar) revealed that women restricted from some food items to avoid difficulty to deliver the fetus (Gebremariam, 2017), and study conducted other part of Ethiopia reported that, the reasons for avoiding foods include fear of difficult delivery, discoloration of the fetus and fear of abortion (Demissie et al., 1998). It is also consistent with a study conducted in Sendafa, Ethiopia, reported that women had avoided food due to fear of having big baby (Wondimu, 2019). In addition, pregnant women in the present study raised similar reason for food taboo with a study conducted in Sudan (kheiri et al., 2017), and South Africa, have shown that most foods were avoided for reasons associated with pregnancy outcome, labour and to avoid an undesirable body form for the baby (Chakona & Shackleton, 2019).

Similarly, this study finding is consistent with a study conducted in Ghana reported that, cultural, religious, health, magical thinking, ethics, sympathy and compassion were given to explain the prevalence and adherence to food taboos (Gadegbeku et al., 2019). Moreover, a study conducted in Malaysia revealed that the most common reason for avoiding foods were fear of abortion, fear of excessive bleeding during labor, baby born with deformities, difficult labor (Mohamad & Ling, 2016).

In this study pregnant women had food taboo on meat, salt, milk, egg, porridge, sugar cane, fruits and vegetables and others. This is somehow consistent with another study conducted in

Ethiopia showed that, women avoided green chili or pepper, organ meat, and dark green leafy vegetables (Mohammed et al., 2019). This study is consistent with a study in Ghana reported that, women had avoided meat products and fruits (Otoo et al., 2015). On the other hand, this study finding indicated that pregnant women avoided their staple foods and fruits (mango, banana, papaya). However, food items are not exactly same, women in Malaysia had also avoided fruits like pineapple and sugar cane drink were regarded as taboo foods by more than half of the subjects, hot foods, carbonated drinks, and cold foods (Mohamad & Ling, 2016).

In the present study, women attended formal education, heard about food taboo, and income were positively and significantly associated with food taboo. This is consistent with a study conducted in Ethiopia (Hadiya) reported that among the few socioeconomic variables studied, education and income were found to influence food taboos (Demissie et al., 1998). In addition, this study finding is consistent with another study in Ethiopia indicated that monthly income has associated with food taboo (Getnet et al., 2018). Likewise, this study is consistent with a study conducted in Ghana has shown that income were associated factors for prevalence of food taboo (Gadegbeku et al., 2019).

In this study, women had no formal were significantly associated with food taboo. This study finding is consistent with a studies conducted in Arisi, Ethiopia (Zerfu et al., 2016), in Shashemene, Ethiopia (Zepro, 2015), studies in Nigeria (Ekwochi et al., 2016; Oni & Tukur, 2012), in Ghana (Gadegbeku et al., 2019) and in India (Banu et al., 2016), which have reported that women's education was one of a significantly associated factors with food taboo. In this study, women had heard about food taboo have shown significantly associated with food restriction. This sis consistent with a study conducted in Southern Africa (Chakona & Shackleton, 2019). Therefore, pregnant women's experience of food taboo and its associated factors are avoidable through sustainable awareness creation. Sustainable information dissemination to the community will correct food restriction as a result of cultural prohibitions or myths.

Communities' and pregnant women having accepting attitude toward food taboo may affect the nutritional status of pregnant women and foetus in the womb. This study determined the extent of food taboo and associated factors, which will be used as evidence to inform local planners, health office and other concerned stakeholders. Although the attributes of food taboo to maternal malnutrition and birth outcome has not been addressed on this study, its potential

effect is understandable. Therefore, further research should be conducted on the effect of food taboo on maternal and fetal nutritional status and birth outcome that, will help clinicians and public health programmers to make informed decision.

Strength and Weakness of the study

Strength of the study

Being community-based, covered all the 12 Kebeles in the DSS, used ongoing DSS site and probability sampling for representativeness of the study to be inferred can be considered as strength of the study.

Weakness of the study

As a result of homogeneity within the population (in terms of Ethnicity, region, and residence), this study could not appreciate the influence of socio-demographic factors affecting food taboo. The cross-section study design may not strongly address the cause-effect relationship between independent variables and food taboo among pregnant women. Social desirability bias may be one of the factor that limits women's disclosure of food taboo due to cultural prohibition (myths).

Chapter Six

Conclusions and Recommendations

6.1 Conclusions

Approximately half of respondents reported avoiding some food (taboo) during their pregnancy period. Meat, salt, sugarcane, porridge, honey and several fruits and vegetables were some of the most avoided food items by pregnant women in the study area. Pregnancy-related food taboo is associated with women who had heard about food taboo, had friends with food taboo, had formal education, and women with low monthly income are more likely to experience food taboo. Food taboo experience is less among women who had attended immunization service. In addition, pregnant women and surrounding community have believed that eating tabooed food may cause prolonged labor, make the baby big (fatty) that cause difficult to deliver, being plastered on the head, belief of harming the baby, cultural prohibition and fear of pre-eclampsia.

6.2 Recommendations

Based on the finding of the study, concerned stakeholders should give attention to myths and pregnancy-related food taboos.

To Health sectors: The Woreda Health office should deliver behavioural change communication regarding misconceptions or myths about food taboo/restriction

To Community: The community leaders should have to work to reduce pregnancy-related food taboos.

To pregnant women: pregnant women should take any food available in their house, and should adhere to health professional's recommendation.

To Haramaya DSS office: The DSS office should design a sustainable awareness creation means to avoid old-fashioned food taboo.

To Researchers: Further research which is examine the effect of food taboo on maternal and fetal nutrition and feto-maternal outcomes should conducted.

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Annex-I: Food Consumption score (FCS) standard guide

	Food item	food group	Weight	Justification
1	Maize , maize porridge, rice, sorghum, millet pasta, bread and other cereals	Cereals and Tubers	2	Energy dense, protein content lower and poorer quality (PER less) than legumes, micro-nutrients (bound by phytates)
2	Cassava, potatoes and sweet potatoes			
3	Beans. Peas, groundnuts and cashew nuts	Pulses	3	Energy dense, high amounts of protein but of lower quality (PER less) than meats, micronutrients (inhibited by phytates), low fat.
4	Vegetables and leaves	Vegetables	1	Low energy, low protein, no fat, micro-nutrients
5	Fruits	Fruits	1	Low energy, low protein, no fat, micro-nutrients
6	Beef, goat, poultry, pork, eggs and fish	Meat and fish	4	Highest quality protein, easily absorbable micronutrients (no phytates), energy dense, fat. Even when consumed in small quantities, improvements to the quality of diet are large.
7	Milk yogurt and other diary	Milk	4	Highest quality protein, micro-nutrients, vitamin A, energy. However, milk could be consumed only in very small amounts and should then be treated as condiment and therefore reclassification in such cases is needed.
8	Sugar and sugar products	Sugar	0.5	Empty calories. Usually consumed in small quantities
9	Oils, fats and butter	Oil	0.5	Energy dense but usually no other micronutrients. Usually consumed in small quantities
10	Condiments	Condiments	0	

The typical thresholds are:

Threshold	Profile	Thresholds with oil and sugar eaten on a daily basis (~7 days per week)
0 – 21	Poor food consumption	0-28
21.5-35	Borderline food consumption	28.5 - 42
>35	Acceptable food consumption	>42

Annex -II: Match of tabooed food and perceived consequences among pregnant women at Haramaya DSS, June, 2020

	To Ease Birth Process	Belief of Harming The Baby	Cultural Prohibition	Culturally Prohibition	Fear of Miscarriage	Fear of Being Fatty	Fear of Fetal Deformities	Fear of Preeclampsia	Fear of Prolonged Labor	Fear of Violating Social Culture	Make Fatty Baby Difficult For Delivery	Plastered on Fetal Head	Total
Banana	0	0	0	0	0	0	0	0	0	2	0	0	2
Cabbage	0	0	0	0	0	0	0	4		25	0	0	29
Cabbage	0	0	0	0	0	0	0	0	0	1	0	0	1
Chickpea	0	0	0	0	0	0	0	0	0	1	0	0	1
Coffee	1	0	1	0	0	0	0	2	0	0	0	0	4
Egg	2	1	3	1	0	55	4	7	0	41	0	1	115
Egg, Fruit	0	0	0	0	0	0	0	0	0	1	0	0	1
Fatty-Meat	1	0	2	0	1	0	1	1	0	7	1	0	14
Fish	0	0	0	0	0	0	0	0	0	2	0	0	2
Fruit	2	0	0	0	0	0	1	9	0	67	1	0	80
Fruit (Mango, Banana, Papaya)	0	0	0	0	0	0	0	2	0	16	0	0	9
Honey	0	0	0	1	0	0	11	6	0	1	0	0	19
Lentil	0	0	0	0	0	0	0	1	0	0	0	0	1
Meat	1	0	3	2	0	5	65	7	0	67	1	1	152
Milk	0	1	4	2	0	0	5	0	0	13	0	0	25
Oil	0	0	1	0	0	0	0	1	0	0	0	0	2
Onion	0	0	0	0	0	0	0	0	0	1	0	0	1
Papaya	0	0	1	0	0	0	0	0	0	0	0	0	1
Porridge	2	0	0	1	0	0	11	21	0	7	0	1	43
Potato	1	0	1	0	0	0	8	4	0	5	1	1	21
Pumpkin	0	0	0	0	0	0	0	3	0	3	0	0	6
Salt	2	0	2	1	0	0	21	29	1	7	1	0	64
Sugarcane	0	0	0	0	0	0	12	11	0	6	0	0	29
Vegetables	0	0	1	1	0	2	2	0	0	8	0	0	14
Yogurt	2	0	2	0	0	0	0	1	0	3	0	0	8

Multiple responses were possible

Annex-III: English Version of the questionnaire

Study Participant Information Sheet and Informed Consent

How are you! My name is _____; I am a data collector for the study that was done by Wbalem Amare who is studying her Master's in Public Health Nutrition in Haramaya University. I request you to give your attention to highlight you some information about the study.

Study title: Magnitude of Food Taboos and Associated factor among pregnant women in Haramaya District, Oromia Regional state, Eastern Ethiopia

Purpose/aim of the study: The findings of this study will provide pertinent information regarding Food Taboos and its associated factors among pregnant women Haramaya district and it will provide information about the problem to city health department. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfilment of a master's program in public health nutrition for the principal investigator.

Procedure and duration: I will interview you using a questionnaire to provide me with pertinent data that is helpful for the study. There are three sections of questions to answer where I will fill the questionnaire by interviewing you. The interview will take about 45 minutes, so I kindly request you to spare me this time for the interview.

Risk and benefit of the study: The risk of participating in this study is very minimal, but only takes your time. There would not be direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

Confidentiality: The information you provide for me was confidential. There was no information that will identify me in particular. The findings of the study was general for the study community and will not reflect anything particular of individual person. The questionnaire was coded to exclude showing names. No reference was made in oral or written reports that could link participants to the study.

Right of participants: Participation for this study is fully voluntary. You have the right to declare to participate or not in the study. If you decide to participate, you have the right to withdraw from the study at any time and this will not label you for any loss of benefits which you otherwise are entitled. You do not have to answer any question that you do not want to answer.

Contact address: For any confusion concerning the study you can contact us by the following address.

Principal investigator: Wbalem Amare mobile phone: +251912027834.

E-mail: wubemar21@gmail.com

Institutional Health Research Ethics Review Committee (IHRERC): Office phone: 025-466-20-11 or P.O.BOX: 235, Harar, Ethiopia

Declaration of informed voluntary consent

I have read/ was read to the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to withdraw from the study at any time or not to answer any question that I do not want. Therefore; I declare my voluntary consent to participate in this study with my initial (signature) as indicated below.

Are you willing to participate in this study?

1. Yes

2. No

Thank you for your cooperation!!!

ANNEX-IV: Participants Information Sheet and Informed Voluntary Consent Form for Guardians of Mother's Age Less than 18 Years

My name is_____ I am working as a data collector for the study being conducted in this health facility by **Wbalem Amare** who is studying for her master degree at Haramaya University, the College of Health and Medical Sciences. I kindly request you to give me your attention to explain you about the study and being selected as study participant.

The study title: Magnitude of Food Taboos and Associated factor among pregnant women in Haramaya District, Oromia Regional state, Eastern Ethiopia

Purpose of the study: The findings of this study will provide pertinent information regarding Food Taboos and its associated factors among pregnant women Haramaya district and it will provide information about the problem to city health department. Moreover, the aim of this study is to write a thesis as a partial requirement for the fulfillment of a master's program in public health nutrition in for the principal investigator.

Procedure and duration: I will interview you using a questionnaire to provide me with pertinent data that is helpful for the study. There are about 43 questions to answer where I will fill the questionnaire by interviewing your daughter/wife. The interview will take about 45 minutes, so I kindly request you to permit and spare me this time for interview.

Risk and Benefit: The risk of being participating in this study is very minimal, but only taking few minutes from their time. There would not be any direct payment for participating in this study. But the findings from this research may reveal important information for the local health planners.

Confidentiality: The information they will provided me was kept confidential. There was no information that will identify me in particular. The findings of the study was general for the study community and will not reflect anything particular of individual person. The questionnaire was coded to exclude showing names. No reference was made in oral or written report that could link participants to the study.

Right: Participation for the study is fully voluntary. They have the right to participate or not to participate in the study. If they decide to stop, they have the right to withdraw from the study at any time and this will not label them for any loss of the benefits which they otherwise are entitled. Mothers or Guardians have the right not to answer for any questions that they do not want to answer.

Contact address

If there are any questions or enquiries any time about the study or the procedure, please contact:
Principal investigator: Wbalem Amare, mobile phone: +251912027834.
E-mail: wubemar21@gmail.com
IRERC Office phone: 0254662011, and P.O. Box: 235, Harar, Ethiopia

Declaration of informed Voluntary Consent

I have read or it was read for me the participant information sheet. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the rights of participating and the contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that my wife/ my daughter has the right to withdraw from the study at any time or not answer any question that they do not want. Therefore, I declare my voluntary consent on behalf of my wife/ my daughter to participate in this study with my initial signature as indicated below.

Are you willing to participate her in this study?

1. Yes
2. No

Thank you for your cooperation!!!

Annex-V: English version questionnaire

Questionnaire code: _____

Part I: sociodemographic characteristics of pregnant women

S no.	Questions	Response	Skip
101	Age	_____ (completed years)	
102	Marital status	1. Single 2. Married 3. Divorced 4. widowed	
103	Religion	1. Muslim 2. Orthodox 3. Catholic 4. Protestant 5. Others (specify--------)	
104	Residence	1. Rural 2. Urban	
105	Address	Kebele_____	
106	Educational status	1. Illiterate 2. Able to read and write 3. 1-6grade 4. 7-12 grade 5. 12+	
107	Ethnicity	1 Oromo 2 Amhara 3 Somali 4 Tigrai 5 other	
108	Estimated monthly household income (ETB)	_____(ETB)	
109	Occupational status	1. Housewife 2. Private business 3. Government employee 4. NGOs employee 5. Others (specify)---------	
110	Husband educational status	1. Illiterate 2. Able to read and write 3. 1-6grade 4. 7-12 grade 5. 12+	
111	Husband occupational status	1. Farmer 2. Private business 3. Government employee 4. NGOs employee 5. Others (specify)---------	
112	Total number of family members		

Part II: Obstetric and or reproductive history of the pregnant women

S no.	Questions	Response	Skip
201	Gravida (# of pregnancy)	…….	
202	Para (# of delivery)	……	
203	Have you had ANC follow up in the index (current) pregnancy?	1. Yes 2. No	***No, skip to 206***
204	If yes for 203, number of ANC Visit's?	----------	
205	If yes for 203, have you received a nutrition counseling during ANC visit?	1. Yes 2. No	
206	Have you used Family planning (FP) methods before this pregnancy?	1. Yes 2. No	No skip to 208
207	If yes for 206, have you received a nutrition counseling at FP clinic or provider?	1. Yes 2. No	
208	Have you attended immunization program?	1. Yes 2. No	No skip to 301
209	If yes for 208, have you received a nutritional counseling during immunization?	1. Yes 2. No	

Part III: questions related to food insecurity

	Questions	Response	Skip
	Remembering your experience of last 30 days/four weeks answer the following (Fill the box based on the given alternatives)	1=Never in last 30 days (NO) 2=Rarely (1-2 times in 30 days), 3= Sometimes (3-10 times 4= Often(more than 10 times)	
301	Did you worry that your household would not have enough food?	……	
302	Were you or any household member were not able to eat the kinds of foods you would have preferred to eat because of lack of resources?	……	
303	Did you or any household member had to eat a limited variety of foods because of lack of resources?	……	
304	Did you or any household member had to eat some foods that you really did not want to eat because of lack of resources?	……	
305	Did you or any household member had to eat a smaller meal than you felt you needed because there was not enough food?	……	
306	Did you or any household member had to eat fewer meals in a day because there was not enough food?	……	
307	Was there ever no food to eat of any kind in your house, because of lack of resources to get food?	……	
308	Did you or any household member went to sleep at night hungry because there was not enough food?	……	
309	Did you or any household member went a whole day and night without eating anything at all because there was not enough food?"	1. Yes 2. No	
310	Where do you get different food staff ***(multiple responses are possible)***	1. From the farm 2. From market	
311	How many times eat per day	----------	
312	Have you ate different food group per day	1. Yes 2. No	
313	What type of food group? ***(****Multiple responses are possible and Remembering your experience of last 24 hours and 7 days you consumed the foods, how frequently did you*	24 Hr. recall	

	consume the following food items typical in a day? (0=if not consumed and if yes enter= number if consumed)		Times/24 Hours	
		1. Cereal & Tuber……...1.Yes …..0. No		
		2. Pulse/Nut……..…..1.Yes …..0. No		
		3. DGL Vegetable……. …..1.Yes …..0. No		
		4. Fruit……1.Yes …..0. No		
		5. Organ meat & Fish……1.Yes …..0. No		
		6. Milk……1.Yes …..0. No		
		7. Sugar……1.Yes …..0. No		
		8. Oil……1.Yes …..0. No		

Part IV: Household food consumption score

400	"In the past 7 days, how often have you eaten	0 Never	1 <1/week	2 1-2/week	3 often 3-6/week	4 Always Every day
401	Any food made from grains—injera, teff, millet, sorghum, maize, rice, wheat, bread, biscuits, or any other grain product—or any food made from tubers—potatoes, sweet potatoes, carrots, or other foods made from roots or tubers?					
402	Any pulses (beans, lentils, peas)?					
403	Any vegetables?					
404	Any fruits?					
405	Any meat: beef, lamb, goat, fish, chicken, liver, kidney, or other organ meats?					
406	Any eggs					
407	Any dairy products—milk, cheese, yogurt (not including butter)?					
408	Any sugar or honey?					
409	Any oil, fat, or butter?					

Part V: Food taboo related questions

S. no	Questions	Response	Skip
501	Have you ever heard about food taboo?	1. Yes 2. No	No skip to 503
502	If yes for 501, what was the source of information? ***(multiple responses are possible)***	1. TV/Radio 2. Health personnel 3. Health extension workers 4. Neighbors 5. Family (mother-in-law or mother)	
503	Do you know any food that should be avoided in pregnancy?	1 Yes 2 No	
504	Did you avoid any foods because of your pregnancy?	1 Yes 2 No	
505	If 'yes' for Q504, which food have you avoided? (**list as much as you can)**	---------- ---------- ----------	

506	Where did you get the information about foods to be avoided in pregnancy	1 From ancestors(generation) 2 From peers 3 From community 4 From mother-in-law 5 Others(specify)-------	
507	Do you have a community member who had food taboo or restriction attitude?	1. Yes 2. No	
508	Do you know other friends of you (someone you know) who avoid some foods in pregnancy	1. Yes 2. No	
509	Which food items are restricted during pregnancy? ***(multiple responses are possible)***	1. Fruits (banana, papaya, coconut) 2. Vegetables (DGL vegetables, cabbage, pepper, and broccoli) 3. Meat product, 4. Fish 5. Eggs 6. Milk and cheese, yogurt, cheese 7. Potatoes, beans, butternut and pumpkin 8. Honey, citrus, linseed, coffee, tea, porridge, wheat bread, groundnut, salty diet, sugarcane Others/specify…….	
510	Why should these foods be avoided? ***(multiple responses are possible)***	1. Culturally transmitted prohibitions 2. Violation of which is perceived to carry social or supernatural sanctions, 3. Thought to ease the process of birth-giving 4. Social status, cultural customs 5. Causing ear/mouth deformities in their babies/ fetal abnormality 6. Having belief of harmed the fetus, 7. Fear of miscarriage/abortion, 8. Fear of preeclampsia 9. Prolonged labor 10. History of disease and dietary knowledge 11. Plastered on the fetal head, 12. Fear making fatty baby and difficult for delivery 13. Evil eye	
NB	MATCH List of food items are restricted during pregnancy? ***(multiple responses are possible)*** Q #509	Why should these foods be avoided? ***(multiple responses are possible)*** Q510	
511	When do you think these foods should be avoided/restricted in pregnancy? ***(multiple responses are possible)***	1. Pre-pregnancy 2. During early pregnancy 3. During mid pregnancy 4. During late pregnancy	
512	Have you eaten any tabooed food?	1. Yes 2. No	

513	What would happen if you eat (somebody) tabooed foods in pregnancy?	1) Abortion 2) Big baby 3) Bad luck 5. Other (specify)……	

Part VI: Food aversion, craving and pica in pregnancy

S.no	Questions	Response	Skip
601	Did you have food aversion (strong dislike) in this pregnancy	1. Yes 2. No	
602	If Yes to Q601, which foods ***(multiple responses are possible)***	1. Egg 2. Milk 3. Fatty meat 4. Honey 5. Fruit 6. Vegetables **7.** Others (specify) _____	
603	If Yes to 601 when?	1. 1st trimester (early pregnancy) 2. 2nd trimester (mid pregnancy) 3. 3rd trimester(late pregnancy)	
604	Do you have food aversion now?	1 Yes 2 No	
605	Did you eat food you have averted (strongly disliked)	1. Yes 2. No	
606	Did you have craving (strongly liked) for some food	Yes No	No skip 610
607	If yes to Q606 what type of food you have craved? more than one answer is possible ***(multiple responses are possible)***	1. Egg 2. Meat 3. Injera 4. Bread 5. Alcohol 6. Others (_____)	
608	If yes to Q606 which aspect of the food attracts you the most? ***(multiple responses are possible)***	1. Flavor of the food 2. Taste of food 3. Personal interest 4. Other (_____)	
609	Did you ate craved food?	1. Yes 2. No	
610	Have you ever experienced pica (craving nonfood substance)	1. Yes 2. No	No skip 612
611	If to Yes to Q610 what type of substance? ***(multiple responses are possible)***	1. Leftover food 2. Clay (soft stone) 3. Soil 4. Ash 5. Other (_____)	
612	Have you eaten craved nonfood substances?	1. Yes 2. No	

613: Do you have any comment or suggestion or any question?

_____

Thank you!

Annex-VI: Afan Oromo Version Participant Information Sheet and Informed Consent Form

Odeefannoo hirmaattota qorannoof kennamuu fi uunkaa walii galtee

Maqaan koo_____ jedhama Aanaa Haramaayaa kana keessatti qorannoo **Addee Wbalem Amare** , digrii lammaaffaaf yunivarsiitii Haramaayaa, kolleejjii Saayinsii Fayyaatti barachaa jiruuf odeefannoo qu'annoo funaanaan jira. Waa'ee qorannoo kanaa fi akkaataa qorannoo kanatti akka hirmaattan ittin filatamtan akkan isiniif ibsuuf yeroo muraasa akka naaf kennitan isin gaafadha.

1. **Mata duree Qorannichaa**

Nyaataa haadhoolii ulfaaf dhorkamanii fi wantoota sababa isaa taán ilaalchisee Aanaa Haramaya kessaatti qorannoo gaggeefamuu dha.

2. **Kaayyoo Qorannichaa**

Sababni guddaan qorannoon Kun barbaachiseef abbaan qorannichaa qorannoo digrii lammaffaa argachuuf isaan barbaachisu guutuufi dha. Dabalataanis, bu'aan qorannoo kanaa galtee hoggantoota fayyaa fi deeggartoota fayyaa biroof kan fayyaduudha.

3. **Adeemsaa fi turtii qorannichaa**

Qoranichi haawwan da'umsa boodaa irratti kan geggeeffamu ta'ee,waliigala gaafilee kanan of harkaa qabu ta'ee gaafilee kana haati ulfaa kan deebistu ta'a. Walumaagalatti qoranichi haadha tokkoof naannoo daqiiqaa **45** ni fudhata. Kanaaf qorannoo kana ilaalchisee gaaffiin akkaan isin gaafadhuu fi odeefanno barbaachisu akka naaf kennitan[obsaan isin gaafadha.

4. **Faayidaa fi miidhaa qoranichaa**

Sababa qorannoo kanarratti hirmaattaniif rakkoon guddaa isin irra gahu hin jiru, yeroo keessan muraasa isin irraa fudhachuu keenyaan alatti. Faayidaa kallattiin sababa hirmaannaa keessaniin argattan hin jiru.Garuu odeeffannoon isin kennitan bu'aan qorannaa isaa karoorsitoota fayyaa sadarkaa gaditti jiraniif galtee guddaa dha.

5. **Iccitii eeguu**

Ragaan isin nuuf kennitan iccitiin qabama. Kallattiin wanti addatti isin calaqqisu/ibsu asirratti barreeffamu hin jiru.bu'aan qorannoo kanaa ummata naanoo kanaa malee addatti hirmaattota kan calaqqisu miti. Deebiin keessan yommuu galmeeffamu maqaa keessan hin dabalatu, afaaniinis tahe barreeffamaan hirmaattota addatti qorannoo kanaan walitti kan hidhu hin jiru.

6. **Mirga Hirmaataa**

Hirmaannaan fedhii keessan irratti kan hundaa'e dha. Qorannoo kana irratti hirmaachuuf murteessuu yookiin dhiisuu dandeessu. Hirmaachuuf murteessitan illee yeroo barbaaddan qorannoo kana addaan kuttanii bahuuf mirga guutuu qabdu. Sababa kanaan faayidaa isin argachuu qabdan kan dhabdan hin jiru. Gaafii isini deebisuu hin barbaanne yoo jiraate deebisuuf dirqama hin qabdan.

7. Teessoo

Gaafii ykn qeeqa qo'annoo kana ilaallatu kamiiyyuu, teessoo armaan gadiitiin gaafachuu fi quunnamuu ni dandeessu

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Waajjira dhimma naamusaa qo'annaa fayyaa dhaabbatichaa (IHRERC)

Lakkofsa bilbilaa: 0254662011 ykn L.S.P: 235, Harar,Itiopia

8. Ibsa fedhiin qorannoo irratti hirmaachuu mirkaneessuu

Ibsa hirmaattota qorannoof kennamuu dubbiseera/ naa dubbifameera. Faayidaan qorannoo kanaa sirriitti naaf galee jira, akkaataa, rakkoo fi faayidaa akkasumas waa'ee iccitii eeguu, mirgaa hirmaataan qabu, akkasumas walquunnamtii kamuu barbaachiseef teessoon natti himameera. Waan naa hin galle gaafachuuf carraan naa kennameera.wayita kam iyyuu qorannoo kana addaan kutee bahuu akkan dandahu, akkasumas gaaffiin debisuu hin barbaanne deebisuuf akkaan hin dirqamne. Kanaafuu qorannoo kanatti fedhiin kan hirmaadhu ta'uu mallattoo koon nan mirkaneessa.

Maqaa hirmaataa _____Mallattoo_____Guyyaa _____

Maqaa funaana ragaa _____Mallattoo _____Guyyaa _____

Annex VII: Afan Oromo Version of the questionnaire

Participants Information Sheet and Informed VoluntaryConsent Form for Guardians of Mother's Age Less Than 18 Years Uunkaa Hayyama Guddiftuu (abbaa manaa)

Maqaan koo_____ jedhama. Qorannoo Addee Wbalem Amare kan jedhamtu maastarii ykn digirii isaa 2ffaaf yunivarsiitii Haramaayaa, kolleejjii Saayinsii Fayyaatti fi Meedikaalaatti barachaa jiruuf ragaa funaanaan jira. Kanaaf waa'ee qorannoo godhamu akka beektanii fi qoranicha geggeessuf akka naaf heyyamtan isin gaafadha.

1. **Mata duree Qorannichaa**

   Nyaataa haadhoolii ulfaaf dhorkamanii fi wantoota sababa isaa taán ilaalchisee Aanaa Haramaya kessaatti qorannoo gaggeefamuu dha

2. **Kaayyoo qorannichaa**

Kaayyoon guddaan qorannoon Kun barbaachiseef abbaan qoranichaa qorannoo digrii lammaffaa argachuuf isaan barbaachisu guutuufi dha. Dabalataanis, bu'aan qorannoo kanaa galtee hoggantoota fayyaa fi deeggartoota fayyaa biroof Kan fayyaduu fi rakkoowwan Tajaajila qusannaa maatii da'umsa boodaa dubartoonni yeroon itti fayyadaman fooyyessuufi.

3. **Adeemsaa fi turtii qorannichaa**

Gaafilee qophooftee of harkaa qabu kan baay'ee barbaachisoo ta'aniif haadholii Ulfaaf ni dhihaata.Walumaa galatti gaafilee mucaa teessan/haadha mana kee gaafadha.Isinis deebii ishi tartiibuma gaafii kootiin naaf deebifti. Gaaffi fi deebiin koo gara naannoo daqiiqaa **45** qofa fudhata, yeroo keessan akka na waliin dabarsitan kabajaan isin gaafadha.

4. **Faayidaa fi miidhaa qorannichaa**

Sababa qorannoo kanatti hirmaattaniif rakkoon guddaa isaan irra gahu hin jiru, yeroo isaanii qofa muraasa fudhachuun alatti. Faayiidaa kallattiin sababa hirmaannaa isaanitiin argattan hin jiru. Garuu odeeffannoon isaan kennan faayidaan bu'aa qorannaa isaa karoorsitoota fayyaa sadarkaa gaditti jiraniif galtee guddaa dha.

5. **Iccitii Hirmaata eeguu**

Ragaan isaan nuuf Kennan iccitiin qabama. Kallattiin wanti addatti isaan calaqqisu/ibsu, barreeffamu hin jiru.bu'aan qorannoo kanaa ummata naanoo kanaa malee addatti hirmaattota qofa kan calaqqisu miti. Deebiin isaanii yommuu galmaa'u maqaa isaanii hin dabalatu, afaaniinis ta'ee barreeffamaan hirmaattota addatti qorannoo kana walitti kan hidhu hin jiru.

6. **Mirga Hirmaataa**

Haati qorannoo kana irratti hirmachuu fi hirmaachu dhisuun mirgaa nama dhunfaa irratti hunda'a.Qorannoo kana irratti hirmaachuuf murteessuu yookiin dhiisuu ni danda'u.

Hirmaachuuf murteessan illee yeroo barbaadanitti qorannicha addaan kutanii bahuuf mirga guutuu qabu. Sababa kanaan faayidaa isaan argachuu qaban kan dhabaniif tokko illee hin jiru.Gaafii isaan deebisuu hin barbaanne illee yoo jiraate deebisuuf hin dirqaman.

7. Teessoo Abbaa qorannoo

Gaafii ykn qeeqa qo'annoo kana ilaallatu kamiiyyuu, teessoo armaan gadiitiin gaafachuu fi quunnamuu ni dandeessu

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8. Ibsa fedhii hirmaataa qoranoo ta'uu kan mirkaneessuu

Ibsa hayyama dubbiseera/naa dubbifameera. Faayidaan qorannoo kanaa sirriiti naaf galee jira, akkaataa, rakkoo fi faayidaa, waa'ee iccitii eeguu, mirgaa hirmaataan qabu, akkasumas walquunnamtii kamuu barbaachiseef teessoon natti himameera. Waan isaaniif hin galle gaafachuuf carraa akka qaban beekera.yeroo kamitiyyuu qoranicha adda kutanii bahuus akka danda'an beekera.Akkasumas gaaffii debisuu hin barbaanne dhiisuu akka danda'an hubadheera.Kanaaf odeeffannoo kana bu'ura godhachuun qorannoon kuni Buufata fayyaa/hospitala kana keessatti akka geggeeffamu hayyameen jira.

Annex VIII: Afan Oromo Version Questionnaire

Koodii gaffii: _____

Kutaa I: Gaffilee hawaas-dinagdeen wal qabatan hoaadholii ulfaa

Lakk.	Gaffii	Deebii	Ibsa
101	Umrii	_____ (completed years)	
102	Haala Gaaílaa	1. Kan hin heerumne 2. Kan heerumte 3. Kan hikkate 4. Kan irra du'e	
103	Amaanta	1. Muslima 2. Ortodoksii 3. katoolikii 4. Pirotestantii 5. Kan biroo (ibsi--------)	
104	Iddoo jireenya	1. Baadiyaa 2. Magaala	
105	Iddoo jireenya	aradda--------	
106	Sadarkaa barnoota	1. Baressu fi duubisuu kan hin dandeenyee 2. Baressu fi duubisuu kan danda'u 3. Kutaa 1-6 4. Kutaa 7-12 5. 12+	
107	Sabni kee malii?	1. Oromoo 2. Amara 3. Somali 4. Tigre 5. kan biro	
108	Gaaliin batii(ji'a) kee meeqa?	_____(qarshii Itoophiyaatin)	
109	Hojiin kee maalii	1. Haadhaa mana 2. Daldala dhunfaa 3. Hojjeetaa Mootumaa 4. Hojjeeta Miti motumma 5. Kan biroo(ibsi)---------	
110	Sadarka barnoota abbaa man keetii maalii?	1. Baressu fi duubisuu kan hin dandeenyee 2. Baressu fi duubisuu kan danda'ú 3. Kutaa 1-6 4. Kutaa 7-12 5. 12+	
111	Hojiin abbaa mana kee malii	1. Qotee bulaa 2. Daldala dhunfaa 3. Hojii motumma 4. Hojii miti motumma 5. Kan biroo (ibsi)---------	
112	Bayinni maatii keessanni meeqa?		

Kutaa II:gaffiilee haala ulfaa fi daúmsaan wal qabatan

lakk.	Gaffiilee	Deebii	Ibsa
201	Bayina ulfaa kee meeqa ?		
202	Meeqa dhaltee (desse)?		

203	Hordofii da'umsaa duraa ulfaa duraanii fi amma kana irratti goodhate beektaa?	1. Eeyyee 2. Lakkii	lakkii 206
204	Yoo deebiin kee gaffii 203 eeyyee tahe, yeroo meeqa hordoofii goodhatee?	……..	
205	Yoo deebiin kee gaffii 203 eeyyee tahe gorsaa sirna nyaataa argate jirta?	1. eeyyee 2. lakkii	
206	Qusanna maatii fayyadamtee ni beektaa?	1. Eeyyee 2. Lakkii	Lakkii 208
207	Yoo deebiin kee gaffii 206 eeyyee tahe gorsaa sirna nyaataa argate jirta?	1. Eeyyee 2. Lakkii	
208	Talaalii godhatee ni beektaa?	1. Eeyyee 2. Lakkii	Lakkii 301
209	Yoo deebiin kee gaffii 208 eeyyee tahe gorsaa sirna nyaataa argate jirta	1. Eeyyee 2. Lakkii	

Kutaa III: Gaaffilee haala gahumsa nyaata fi qabxiilee nyaata nyaatani

	Gaffiilee	Deebii	
Gosoota nyaata guyyoota 30'n dabran ykn torbe afran dabre yaadachuun gaaffilee armaan gadii deebisi; Filannoo irratti hunda'un sanduqa arman gadii guuti		1=Gonkuma hin nyaanne guyyoota 30'n dabreef 2=murasa(yeroo 1-2 guyyoota 30'n dabreef) 3= dabre dabre (yeroo 3-10 times 4= baramadha(yeroo 10 oli)	
301	Mani kee/keessan nyaata gaha hin qabu jette ni dhiphata?	……	
302	Nyaata ati ykn maatiin kee fedhaan sababa bajeeta/qabeenyaf kan nyaachuu dhistan jira?	……	
303	Nyaata ati ykn maatiin kee sababa bajeeta/qabeenyaf kan gosa murasa qofa nyaattan jira?	……	
304	Nyaata ati ykn maatiin kee sababa bajeeta/qabeenyaf kan hanga tokkoo osoo hin fedhin nyaattan jira?	……	
305	Nyaata ati ykn maatiin kee fedhii osoo hin guutaatin xiqqoo nyaattan sababa nyaatni hin jireef qabdu?	……	
306	Nyaata ati ykn maatiin kee xiqqoo nyaattan sababa nyaatni hin jireef qabdu ?	……	
307	Nyaata ati ykn maatiin kee goonkuma sababa bajeetaf/qabeenyaf hin nyaatne jira?	……	
308	Ati ykn maatiin kee osoo hin nyaatin guyyan belooftani raftan sababa nyaatni hin jireef qabdu?	……	
309	Ati ykn maatiin kee osoo hin nyaatin guyyan oltani fi bultan sababa nyaatni hin jireef qabdu?	1. Eeyyee 2. Lakkii	
310	Gosoota nyaata fayyadamtu eessaa irraa argata ***(deebiin tokkoo ol ni dandaáma)***	1. Ooyruu 2. Magaala irraa	
311	Guyyaatti yeroo meeqa nyaattu?	----------	
312	Guyyaatti nyaata gartu garagara ni nyaattu?	1. Eeyyee 2. Lakkii	
313	Gartu nyaata isa kami? deebiin tokkoo ol ni danda'ama akkasumas nyaata sa'a 24 dabre yaadadhu, yeroo meeqa guyyaa keessatti akka nyaatte (0= yoo goonkuma hin nyaanne fi yoo nyaatte jiratte lakkoofsa galchi)	Sa'a 24 yaadadhu (yeroo/ 24 sa'a)	
	Miidhaan nyaataf tahu (midhaan calla fi misinga fi kkk)…..1.Eeyyee….2. Lakkii		
	midhan zayita……1.Eeyyee……2. Lakkii		
	kudura ……. …….1.Eeyyee ……2. Lakkii		

	Firii……1.Eeyyee ……2. Lakkii		
	foonii fi qurxummii……. 1.Eeyyee 2. Lakkii		
	Aanaan……1.Eeyyee ……2. Lakkii		
	Shukkara……..1.Eeyyee …..2. Lakkii		
	zayita…….. ……..1. Eeyyee …..2. Lakkii		
	kan biroo---------		

Part IV: Household food consumption score

400	Guyyoota torbaan darbee kana keessaa yeroo meeqaf nyaatota kana nyaatte	0 gonkumaa	Guyyaa <1	Guyyaa 1-2	Guyyaa 3-6	Guyyaa hundaayyuu
401	Nyaatota kamiiyyu kan midhaan calla irra qophaawan-biddenaf, xaafii, daguussa, bishingaa, boqqollo, ruuza, qamadii? Nyaatota biqiltoota hiddi isaani nyaatamu, irraa qophawaan-dinnicha, mixaaxis, karrooti ykn kanbiro?					
402	Nyaatota midhaan dheedhi irra qophawan kamiiyyu (ataraa baqeela dangullee)?					
403	Nyaata kuuduraale kamiiyyu ?					
404	Nyaata muduraale kamiiyyu?					
405	Nyaata foonii kimiiyyu, dibichaa, jabbii, re'ee, qurxummi Nyaatota qaamota foonni kannen akka kale, onnee ykn tiruu irra argaman kimiiyyu?					
406	Nyaata killiee kamiiyuu					
407	Nyaatota aannairra aragman kamiiyyu-annan, baadu, itittu (dhadha hin dabalatuu)?					
408	Nyaatotami'aawan kannen akka sukkara ykn damma kamiiyyu?					
409	Nyaatota qibaatii kamiiyu, zeeytaa,faati ykn dhadhaa?					

kutaa V: gosoota nyaata yeroo ulfaa dhorkamagn

Lakk	Gaffii	Deebii	Ibsa
501	Waée nyaataa yeroo ulfaa dhorkamanii dhagesse beekta?	1. Eeyyee 2. Lakkii	**Lakkii 503**
502	Yoo deebiin kee gaaffii 501 eeyyee tahee,maddi odeffannoo kee malii? ***(deebiin tokkoo ol ni danda'áma)***	1. Televiziin/Radiyoo 2. Ogeessa fayyaa 3. Ekteshinii fayyaa 4. ollaa 5. maatii	
503	Nyaata yeroo ulfaa hin nyaatamne ni beekta?	1. Eeyyee 2. Lakkii	
504	Nyaatoota tokkoo tokkoo sababa ulfaa taateef dhiiste jirta	1. Eeyyee 2. Lakkii	

505	Deebiin kee gaffii 504 eyyee yoo tahee gosa nyaata kamtu hin nyaatamne?(taressi hanga dandesse)	---------- ---------- ----------	
506	Wa'ée nyaata yeroo ulfaa dhorkamu raga eessaa argate	1. Warra durii irraa(abbootii) 2. Hiriya 3. Hawaasaa 4. Haadhaa seeraa 5. Kan biroo(ibsi)-------	
507	Hawaasa keessaa jiratu keessaa ilaalchi nyaata yeroo ulfaa dhorkamu jira?	1. Eeyyee 2. Lakkii	
508	Hiriyoota kee keessaa nyaata yeroo ulfa kan hin nyaatin ni beekta	1. Eeyyee 2. Lakkii	
509	Gosa nyaataa kamtuu yeroo ulfaa dhorkama? ***(deebiin tokkoo ol ni danda'áma)***	1. fiirii (muuzii, papaya) 2. kudura fi mudura (rafuu, qaccee, kurumba(rafuu mara), talba,fi rafuu darara) 3. foonii, 4. qurxummii 5. killee 6. aanaan ,baaduu fi itittuu 7. dinnicha (mosee), baqeela, and dubbaa 8. daamaa, tiringoo, talbaa, buna, shayii, marqaa, daboo qammadii, pimento, loozii, nugii, nyaataa soogidaa, shankora fi 9. kan biroo(ibsi)-------	
510	Sababni nyaataa yeroo ulfaa dhorkamani malii? ***(deebiin tokkoo ol ni danda'áma)***	1. Aadaa 2. Hawaasa fi amaantaan wal dhorkamuf, 3. Dhaluuf salphaa wan tahuuf 4. Hawaasa keessaatti dhorka wan taheef 5. Daímma dhalattu irratti miidha garagara wan gessisuf 6. Haala jireenya hawaasati, 7. Ilmoo nama irra baasaa , 8. Dhiigaa danfa namati fida 9. Cinninsun nama irra tura 10. Dhukkuba fi beekumsa dhabuu 11. Maataa ilmoo irratti wan laxafamuf , 12. Ilmoo namati guddisa, 13. Buda	
NB	**MATCH the tabooed food with respondents' reason on Questions #509 to 510**		
	Gosa nyaataa kamtuu yeroo ulfaa dhorkama? ***(deebiin tokkoo ol ni danda'áma)***	Sababni nyaataa yeroo ulfaa dhorkamani malii?***(deebiin tokkoo ol ni danda'áma)***	
511	Nyaatni yeroo ulfaa yoom dhorkama? ***(deebiin tokkoo ol ni danda'áma)***	1. Osoo hin ulfaín 2. Bati afran duraa 3. Jiá afurii hanga torba 4. Jiá torba booda	
512	Nyaata yeroo ulfaa nyaata dhorkamu nyaate beekta ?	1. Eeyyee 2. Lakkii	

513	Nyaatoota dhorkaman kana yoo nyaatan mal tahu dandaá jettani yaadu?	1. Ulfa namarra deebisa 2. Ilmoo namatti guddisa 3. Carra bada nama qunnama 4. Kan (ibsi)……	

Kutaa VI: nyaataa yeroo ulfaa jibbaman ,jallatan and wantoota nyaata hin tane kan jallatan

Lakk	Gaffii	Deebii	Ibsa
601	Yeroo ulfaa kee nyaata jibbitee qabda	1. Eeyyee 2. Lakkii	
602	Deebiin kee gaffii 601 eeyyee yoo tahee ,nyaata kan haalan jibbita	1. killee 2. Aanaan 3. Foon choomaa 4. Daamaa 5. fiirii 6. kudura **7.** kan biro(ibsi) _____	
603	Deebiin kee gaffii 601 eeyyee yoo tahee, jiá meeqaffa irratti nyaata jibbita	1. afran duraa 2. jiá 4 hanga 7 3. jiá torba booda	
604	Nyaata yeroo ulfaa jibbitu amma nyaate jirta	1. Eeyyee 2. Lakkii	
605	Nyaata yeroo ulfa jibbitu nyaate beekta	1. Eeyyee 2. Lakkii	
606	Nyaata yeroo ulfaa haalaan fetuu qabda	1. Eeyyee 2. Lakkii	Lakkii 610
607	Deebiin kee gaffii 606 eeyyee yoo tahee nyaataa kam haala feetaa (deebiin tokkoo ol ni dandaáma)	1. killee 2. foon 3. bideena 4. daboo 5. dhugatii (Farsoo) 6. kan biroo (_____)	
608	Deebiin kee gaffii 606 eeyyee yoo tahee sababni gosa nyaataa kana haala feetuf malii	1. Foolii nyaataa 2. Dhandhama nyaataa 3. Feedhii dhunfaa 4. Gorsa nama biroo 5. Kan biroo (_____)	
609	Nyaata haalan feetuu nyaate ni beekta?	1. Eeyyee 2. Lakkii	
610	Nyaataan ala wan haalan feetuu ni qabda ?	1. Eeyyee 2. Lakkii	**Lakkii 612**
611	Deebiin kee gaffii 610 eeyyee wantoota kam haalan feeta?	1. haftee nyaata 2. biyyee cirracha 3. biyyee 4. daaraa 5. Kan biroo(_____)	
612	Wantoota nyaata ala tahan feetee ni beekta ?	1. Eeyyee 2. Lakkii	

613: Gaaffii ,yaada ykn dhaamsa ni qabdaa?

Galatooma!

Annex-IX: Principal investigator's Curriculum Vitae

Personal Information

Name: **Wbalem Amare Kebede**
Sex: **Female**
Year of birth: **16/4/1992**
Place of birth: **Addis Kidame**
Marital Status: **Married**
Mobile phone: **+251-912-027834**
Email: wubemar21@gmail.com

Educational Background

A. Tertiary Education

Name of Institution	**Program**	**Degree Award**	**Award Year**
Haramaya University Harar, Ethiopia	Public Health Nutrition	MPH in Nutrition Student (2018-2020)	Expected 2020
Haramaya University Harar, Ethiopia	Midwifery	BSc. In Midwifery (2013-2017)	2017
Bahir Dar Health Science College, Bahir Dar Ethiopia	Midwifery	Diploma Level IV (2011-2012)	2012

SECONDARY EDUCTION

- **Dangila** Senior Secondary School (DSSS)

PRIMARY EDUCATION

- **Addis Kidame** Primary and Junior Secondary School

WORK EXPERIANCE

- **Senior Professional Midwife**: Hiwot Fana Specialized University Hospital from 2013-present
- **Teaching Assistant**: Bahir Dar Poly Technic College in 2013: only for 4 months
- **Junior Midwife**: Dinkara Health Center, Banja Woreda, Awi Zone: 2012-2013 (1 year)

RESEARCH EXPERIENCE AND PUBLICATION

- BSc Thesis**: Blood donation interest and associated factors among family members who accompanied laboring mothers at Hiwot Fana Specialized hospital**
  - Advisor: Kasiye Shiferaw (MSc. In Clinical Midwifery and PhD Candidate in 2017/18)
- MPH Thesis: **Food taboos and associated factors among pregnant women in Haramaya District, Oromia Regional State, Eastern Ethiopia**

  Advisros:
  Kedir Teji (PhD, Associate Professor) and Abera Kenay (PhD, Assistant Professor in Maternal and child health)

TRAINING CERTIFICATES

- Trained on Long Acting Contraceptive or Family planning methods Counselling, Insertion and Removal Skills
- Trained on HIV Counselling and Testing (HCT)
- Trained on Basic Emergency Obstetric Care (BEMOC)
- Trained on Prevention of Mother to Child Transmission (PMTCT) of HIV
- Trained on Infection prevention and patient safety
- Trained on Newborn care
- Trained on Research methodology and database management
-

SKILL AND COMPETENCY

1. Midwifery skills: Such as Obstetric care, Conducting Labour, Managing PPH, Gynaecologic Care, HIV Counselling and testing, FP counselling, Insertion and Removal, Newborn care, Resuscitation and other related care in the Profession of Midwifery

2. Language Skill

Language	Speaking	Writing	Listening	Reading
Ahmaric	Excellent	Excellent	Excellent	Excellent
English	Excellent	Excellent	Excellent	Excellent

2. Computer skill: Basic computer skills (Microsoft offices), EpiData, SPSS

3. Hobbies

- Reading academic and other health related books
- Watching Movie, and reading religious book

REFRENCE

1. Sr. Seble Mengistu (BSc Midwifery, MSc in Maternity & Neonatal Health, Head, Obstetric Ward), Hiwot Fana Specialized University Hospital: +251-910-072855/930-495516
2. Sr. Meseret Wolde (BSc Midwifery, Senior Midwife, Former Head, Obstetric Ward), Hiwot Fana Specialized University Hospital, Harar, Ethiopia: +251-901-367639
3. Kedir Teji (PhD, Associate Professor) Haramaya University, School of Public Health: kedir.t.roba@gmail.com
4. Abera Kenay (PhD, Assistant Professor), Haramaya University, School of Public Health: +251-912-048026