



ARSI UNIVERSITY

COLLEGE OF HEALTH SCIENCES

DEPARTEMENT OF MIDWIFERY

**MATERNAL HEALTH LITERACY AND ASSOCIATED FACTORS
AMONG PREGNANT WOMEN IN ASELLA TOWN OROMIA, ARSI
ETHIOPIA, 2024: A COMMUNITY-BASED CROSS SECTIONAL STUDY.**

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ABBREVIATIONS

ANC	Antenatal Care
AOR	Adjusted Odd Ratio
BPCR	Birth Preparedness and Complication Readiness
CBHI	Community Based Health Insurance
CI	Confidence Interval
COR	Crude Odd Ratio
CSA	Central Statistical Agency
EDHS	Ethiopian Demographic and Health Surveys
EPI	Expanded Program of Immunization
ETB	Ethiopian Birr
HC	Health Center
HEP	Health Extension Package
HL	Health Literacy
MHL	Maternal Health Literacy
MHH	Model House Hold
NGO	Non-Governmental Organization
SDG	Sustainable Developmental Health
SPSS	Statistical Package for Social Science
TT	Tolerance Test
VIF	Variance Inflation Factor
WHR	World Health Report
WHO	World Health Organizations

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Abstract

Background: Maternal health literacy is the ability of mothers to obtain, interpret, appraise, and apply women and child health information that contributes to a reduction in mortality among mothers and children. But little is known about the prevalence of maternal health literacy (MHL) and its contributing factors during pregnancy in Ethiopia, particularly in the study area.

Objective: To assess prevalence of maternal health literacy and associated factors among pregnant woman in Asella town, South East, Ethiopia, 2024.

Methods: A community-based cross-sectional study was conducted in Asella town from August 01, 2024, to September 30, 2024. Data were collected using an interviewer-administered valid and reliable structured questionnaire. The collected data were entered into Epidata version 4.6.0.2 and exported to SPSS version 26 for final analysis. Accordingly, a logistic regression was used to identify independent determinants of maternal health literacy among pregnant women. All variables with a p value < 0.25 in the binary logistic regression model were considered for multivariable analysis and a P -value < 0.05 at 95% CI was considered statistically significant.

Result: The overall prevalence of adequate maternal health literacy was 262 (62.4%), with a 95% confidence interval (CI) of (57.6, 66.9). Several factors were associated with MHL , including enrollment in Community-Based Health Insurance (CBHI) (Adjusted Odds Ratio [AOR] = 2.68; 95% CI: (1.39, 5.16) at P -value = 0.003), a travel distance of less than 30 minutes to a health facility (AOR = 1.87; 95% CI: (1.14, 3.09) at P -value = 0.013), and attaining secondary education (AOR = 6.75; 95% CI: (3.53, 12.92) at P -value = 0.001), or a college or university degree (AOR = 5.93; 95% CI: (2.56, 13.72) at P -value = 0.001).

Conclusion and Recommendation: The study shows that over half of pregnant women in Asella town have adequate Maternal Health Literacy. Education, pregnancy status, Community Based Health Insurance enrollment, Gravida and distance to health facility influence MHL. Targeted interventions are needed in order to address these issues like women's education, community enrollment, and health facility distance, through policies, mobile clinics, partnerships, and ongoing education.

Key word: -Maternal, health, literacy

1. INTRODUCTION

1.1. Background

Maternal health literacy (MHL) is the capacity of women to obtain, understand, assess, and utilize information regarding the health of themselves and their children(1–3). On the other hand, MHL also defined as a woman's cognitive and social abilities and motivation to access, assess, understand and use basic health information and services to make informed decisions that protect and promote their own and their children's health(4,5). It also includes capabilities such as the skill to read and comprehend physician's prescriptions and instructions, testimonials, booklets and drug brochures, as well as the ability to acquire health care(6).

MHL helps to achieve Sustainable Development Goal(SDG 3)(good health and well-being: lowering the maternal and child mortality ratio) and 2 (zero hunger: reducing underweight and stunting among young children)(7). MHL can influence women's motivation, comprehension, and use of knowledge in ways that support and protect their own and their children's health. MHL and cognitive skills are required to ensure a safe pregnancy and pregnancy outcomes. Another state that these include the ability to recognize risk factors, adopt healthier lifestyles, and provide better nourishment when pregnant(8,9)

MHL can be measured in four main domains namely: maternal health knowledge about pregnancy and danger signs, maternal health information search(access), maternal health information assessment, and maternal health decision-making power(10). Those domains deal with the ability to detect danger signs during pregnancy and childbirth, proper nutrition and lifestyle modification during pregnancy, better acclimatization to pregnancy changes, and Birth preparedness and complication readiness (BPCR) are all activities and skills in MHL that are required for healthy maternity(10). It also gives women the ability to obtain timely prenatal care, make informed decisions, and learn about accepting midwifery interventions during labor and delivery(9).

MHL is crucial since pregnancy may be a woman's first exposure to the healthcare system and her health condition. Furthermore, a mother's ability to understand health information has a direct impact on her unborn child before conception, during pregnancy, and in the early years of life(11). Higher MHL was found to be independently linked with higher childhood immunization rates in a

study conducted in India on health literacy programs aimed at enhancing vaccination coverage(12). It was suggested by another previous research carried out in Nigeria has found a relationship between MHL, pregnancy outcomes, and children's nutritional status(13,14).

Pregnancy is a crucial time for women to interact with the healthcare system, and their health and understanding of health information significantly impact their child's development. This study was aim to determine the factors influencing women's maternal and child health (MHL) and the levels of MHL in the community. By reviewing this study policymakers can develop more targeted policies to address MHL-related issues.

In conclusion, maternal health literacy is the ability of women to access, understand, and use health information related to pregnancy and childbirth. It includes skills like reading, comprehension, and critical thinking. High literacy improves health outcomes, but many women face challenges due to factors like education, socioeconomic status, cultural background, and healthcare access. Low literacy can lead to poor health behaviors and adverse outcomes. Addressing these factors is crucial for developing targeted interventions and educational programs.

1.2. Statement of the problem

The World Health Organization (WHO) 2017 report states that 94% of all maternal fatalities occur in lower-income countries, and that 810 women perish every day from preventable causes related to pregnancy and childbirth(15). Sub-Saharan Africa accounts for the bulk of maternal deaths, with 534 per 100,000. During the period 1990–2013, maternal mortality in Ethiopia decreased from 708 per 100,000 live births in 1990 to 497 per 100,000 in 2013(16). However, the maternal mortality ratio in Ethiopia has declined from 871 per 100,000 live births in 2000 to 412 per 100,000 live births in 2016. The UN Interagency Maternal Mortality Ratio estimate for 2020 puts the maternal mortality ratio of Ethiopia at 267/100,000 live births showing good progress in the reduction of maternal mortality though this is still far from the SDG target of 70(16,17). This has been linked mostly to poor MHL which has resulted in a lack of access to health care, a lack of knowledge of danger signs, a lack of birth preparedness and complication readiness plans, and unmet family planning needs among reproductive-aged women in the country(18).

Inadequate MHL is linked to a slew of unfavorable outcomes, including a high illness burden accompanied by greater healthcare expenses, high mortality, poorer use of preventative programs and higher use of medical services, negative health behaviors like drug and alcohol abuse, and unhealthy diet(19,20). Furthermore, pregnant women with low HL are unable to fully comprehend the range of services that a health system can provide for them and their families, and they become hesitant to seek help for problems they notice in themselves or their newborn infants, which causes treatment to be delayed or results in poor health outcomes(21).

Pregnant women with low health literacy were more likely than those with adequate health literacy to be exposed to drug addiction, failure of exclusive breastfeeding, poor birth preparedness, and complication readiness plans, and poor prenatal care participation(22–24). Women with good health literacy, on the other hand, had a lower risk of having preterm and low-birth-weight babies, lower rates of neonatal death, a higher likelihood of giving birth in a health facility, higher self-efficacy in breastfeeding, and better access to childhood vaccine information than those with ill health literacy(25,26)

Health-care guidelines tend to simplify health behavior with recommendations focusing on health education that is characterized by messages that health professionals need to convey to women. Implicit assumptions underlying this approach include that pregnant women will be motivated by

risk-related information to change their health behavior, which motivation is enough for health behavior change, multiple health behaviors can be addressed simultaneously, and changes will lead to improved outcomes, despite little being known about the timing of influence and relative importance of behaviors(27,28).

Identifying the prevalence and determinants of MHL among pregnant women will play a meaningful role in intervention to achieve the targets of the Sustainable Development Goal (SDG). The research on the extent and determinants of MHL among pregnant women were scanty in Ethiopia, particularly in Asella town. Therefore, the findings from this study may offer evidence to policymakers and relevant stakeholders to develop strategies and appropriate interventions to uptake MHL by solving identified determinants of MHL. Accordingly, this study aimed to assess the prevalence of MHL and its determinants among pregnant women living in Asella town, Ethiopia.

1.3. Significance of the study

This study aimed to assess the prevalence of MHL and associated factors among pregnant women in Asella town. So, the determination of these factors informs the intervention to initiate health promotion and education among pregnant women to prevent and control multidimensional complications of pregnant women and newborn children. The findings of this study serve as baseline data for further studies in similar areas. Since the study attempts to reveal the major factors, it will help governmental and nongovernmental organizations develop programs and set an appropriate plan to upgrade MHL on pregnant women used to overcome their maternal health problems.

Maternal health literacy is crucial for improving health outcomes, informed decision-making, addressing socioeconomic disparities, policy development, community engagement, and cultural considerations. It leads to better understanding of health information, improved prenatal care, nutrition, and healthcare access, reducing maternal and infant morbidity and mortality. Empowering women with knowledge enhance self-efficacy and promotes healthier behaviors. Understanding factors influencing maternal health literacy helps identify vulnerable populations and address disparities in education and healthcare access. Community engagement fosters collaboration among stakeholders, and cultural considerations lead to tailored interventions.

2. Literature review

2.1. The Magnitude of MHL

Study done 2007 in 5 cities and 5 villages of Boushehr, Mazandaran, Kermanshah, Ghazvin and Tehran provinces by a method of In a community-based household survey 1086 participants composed of 64% enrolled in the study, 41.1% of women were found with maternal literacy ($PV=0.0057$) (29). A study done in 2021, in Sanadaj, Iran, on 355 pregnant women the mean and standard deviation of health literacy and empowerment were 80.03 ± 12.79 (0–100) and 80.30 ± 8.14 (27–108), respectively (30).

Study done in 2022 in Kabul, Afghanistan on 200 pregnant women revealed that the MHL of Afghan women is inadequate (31). Study done in 2017 in the central Anatolia region of Turkey using a descriptive study on 2015 pregnant women revealed that 11.7% of pregnant women had inadequate, 44.4% had problematic-limited, 29.8% had adequate and 14.1% had excellent health literacy (32). Study done in 2014 at Shahid Beheshti Medical University in Tehran, Iran on the Evaluation of health literacy of 240 pregnant women in urban health centers findings revealed that 30% of participants had low, 24.6% had marginal and 45.4% had adequate health literacy (33).

Study done in 2022 in Vilnius on 205 pregnant women revealed that few women who participated in the survey had adequate health literacy 31% (34). Study done in 2012 in Isfahan, Iran by a cross-sectional survey of 354 participants revealed that, 79.6% of adults were found to have inadequate health literacy (35). Study done in 2017 in Bojnord, Iran, using descriptive-analytical and cross-sectional study 394 pregnant women revealed that the health literacy of 387 (98.2%) was at optimal level (36).

Study done in 2022 in Mansoura district, Egypt by cross-sectional study on 382 revealed that 79.8% of studied pregnant women had limited HL (34.5% insufficient HL and 45.3% problematic HL), and only 20.2% of them had sufficient HL (37).

Study done in 2010 in Tanzania and Huan using cross-sectional study on 438 pregnant women finding revealed that 42% of pregnant women, did not recognize any of the signs of risk during pregnancy and childbirth respectively (38,39).

Another study done in 2020 in Gurage Zone southern, Ethiopia conducted by facility based study on 635 pregnant women revealed that more than half, 336 (53.5%) (95%CI: 49.1, 58.1) of the study participants had a good MHL or above the mean score (40). Similarly, study done in 2022, in Illubabor zone of Oromia, Ethiopia, using facility based cross-sectional study on 411 pregnant women revealed that most of the women 293 (71.3%) had inadequate health literacy levels while 118 (28.7%) had adequate MHL (41).

2.2. Factors associated with MHL

2.2.1. Socio-economic and demographic factors related to MHL

Pregnant women's residence was the main determinant of MHL. A Study done in India in 2015 included 670 women from 60 villages revealed that in the rural site, the adjusted AOR was 1.57 (95% CI 1.11 to 2.21, $p=0.010$) for those with medium health literacy, and AOR=1.30 (95% CI 0.89 to 1.91, $p=0.172$) for those with high health literacy. In the urban site, the adjusted AOR was 1.10 (95% CI 0.65 to 1.88, $p=0.705$) for those with medium health literacy, and AOR=2.06 (95% CI 1.06 to 3.99, $p=0.032$) for those with high health literacy (12). Study done in 2015 in Mashhad, Iran using cross-sectional study on 120 pregnant women indicate that there was significant relationship between MHL living place (25).

Study done in 2023, in Turkey on 454 Pregnant women was revealed that pregnant women who had lived in a nuclear family and married before less than three years demonstrated higher total scores on the HLS (42). Similarly, study done in 2022 in Ilu Ababor Zone, Oromia, Ethiopia using facility based cross-sectional study on 411 pregnant women indicated that the rate of adequate MHL was 12.2 times higher among urban women than among rural ones (AOR=12.2 (5.34, 24.48)) (41).

Age of pregnant women was the major determinants of MHL, as study done in 2022 in Kabul, Afghanistan on 200 pregnant women revealed that is associated with age of 35-39 ($F=33, PV<0.0001$) (31). A study done in 2012 in Isfahan, Iran by A cross-sectional survey of 354 participants revealed MHL is associated with age of 35-39 of pregnant women ($P = 0.01$) (35). Study done in 2011 in Israeli on 1316 adolescents showed that MHL was significantly higher among girls ($\beta = 1.25, P < 0.001$) (43). Study done in 2017 in Bojnord, Iran, using descriptive-analytical and cross-sectional study 394 pregnant women revealed that there is significant relationship between health literacy and age of pregnant women ($P<0.05$) (36).

Household income was the main determinant of MHL of pregnant women, according to a study done in 2007 in 5 cities and 5 villages of Boushehr, Mazandaran, Kermanshah, Ghazvin and Tehran provinces by a method of in a community-based household survey 1086 participants composed of 64% of women enrolled into the study revealed that limited health literacy was also associated with lower economic status ($P=0.004$)(29). Study done in 2022 in Kabul, Afghanistan on 200 pregnant women revealed that is associated with income($F=5.46, PV<0.005$)(31). Study done in 2012 in Isfahan, Iran by a cross-sectional survey of 354 participants revealed MHL is directly associated with house hold income($P = 0.01$)(35).

Study done in 2022 in Mansoura district, Egypt by a cross-sectional study on 382 revealed that MHL was determined by low income (AOR = 6.9; 95% confidence interval [CI]: 3.2–15.3; $P \leq 0.05$), (37). Study done in 2015 in Mashhad, Iran using cross-sectional study on 120 pregnant women indicated that there was significant relationship between MHL and incomes(25). Study done in 2023, in Turkey on 454 Pregnant women was revealed that pregnant women who had a low income demonstrated higher total scores on the HLS(42) Study done in 2023, in Turkey on 454 Pregnant women was revealed that pregnant women who had been employed and had a low income demonstrated higher total scores on the HLS(42)

Another demographic factor associated with MHL is educational level of respondent and parents. According to study done in 2022 in Kabul, Afghanistan on 200 pregnant women revealed that is associated with higher education level($F=4.15, PV<0.01$, (31). Study done in 2012 in Isfahan, Iran by a cross-sectional survey of 354 participants revealed MHL is associated with fewer years of schooling($P = 0.01$)(35). Study done in 2022 in Mansoura district, Egypt by cross-sectional study on 382 revealed that MHL is determined by lower than university education (AOR = 5.3; 95% CI: 1.6–17.2; $P \leq 0.05$), (37). Study done in 2015 in Mashhad, Iran using cross-sectional study on 120 pregnant women indicate that there was significant relationship between MHL and educational level(25).

Study done in 2011 in Israeli on 1316 adolescents showed that MHL was significantly higher among adolescents whose mothers had higher education (AOR= 0.16, $P = 0.04$)(43). Study done in 2017 in Bojnord, Iran, using descriptive-analytical and cross-sectional study 394 pregnant women revealed that there is significant relationship between health literacy and educational level of pregnant women ($P<0.05$)(36). Similarly study done in 2020 in Gurage Zone southern, Ethiopia conducted by facility

based study on 635 pregnant women revealed that educational level (AOR: 1.358; $p < 0.001$) was positively associated with MHL(40).

2.2.2. Obstetric characteristics of a woman related to MHL

Study done in 2011 in Ibadan, Oyo state, Nigeria using descriptive survey of 231 pregnant women established that there were significant relationships between MHL and antenatal care (13). Similarly, a study done in 2020 in Gurage Zone southern, Ethiopia conducted by a facility-based study on 635 pregnant women revealed that number of ANC visits (AOR: 1.418; $p < 0.001$) were positively associated with MHL. Another study done in 2022 in Ilubabor Zone, Oromia, Ethiopia on 411 pregnant women revealed that mothers who had four or more prenatal care follow-ups were found to have sufficient MHL higher than those who had just one, two, and three times antenatal care contacts(41).

Study done in 2022 in Kabul, Afghanistan on 200 pregnant women revealed that it is associated with number of 2 to 4 gravidities($F=5.27, PV < 0.006$)(31). Study done in 2015 in Mashhad, Iran using cross-sectional study on 120 pregnant women indicated that there was a significant relationship between MHL and the number of pregnancy(25). Another study done in 2020 in Gurage Zone southern, Ethiopia conducted by facility based study on 635 pregnant women revealed that 2 to 4 gravidities(AOR: 1.439; $p < 0.001$) was positively associated with MHL(40).

A study done in 2022 in Kabul, Afghanistan on 200 pregnant women revealed that it is associated with the time that early onset of the prenatal care($F=3.07, PV=0.02$)(31). A study done in 2022 in Mansoura district, Egypt by a cross-sectional study on 382 revealed that having unplanned pregnancy is a determinant factor that affect MHL(AOR = 3.7; 95% CI: 1.6–8.5; $P \leq 0.05$)(37). Study done in 2022 in Ilubabor Zone, Oromia, Ethiopia on 411 pregnant women revealed that Women who gave birth vaginally were 0.24 times less likely to have adequate MHL than women who had a cesarean section(41).

2.2.3. Health system-related characteristics of women related to MHL

Study done in 2011 in Israeli on 1316 adolescents showed that MHL was significantly higher among positively associated with pregnant women empowerment (AOR= 0.36, $P < 0.0005$)(43). Similarly, this study done in 2011 in Israeli on 1316 adolescents showed that MHL was significantly associated with who report more interpersonal sources of health information (AOR = 0.23, $P < 0.01$)(43).

However, study done in 2011 in Israeli on 1316 adolescents showed that MHL was associated with health behavior (AOR= 0.03, P = 0.05)(43).

Another study done in 2020 in Gurage Zone southern, Ethiopia conducted by facility based study on 635 pregnant women revealed that enrolment in CBHI scheme (AOR: 2.282; $p < 0.001$) and being a model household(MHH) (AOR: 1.681; $p < 0.001$) was positively associated with MHL(40).

2.3. Conceptual framework

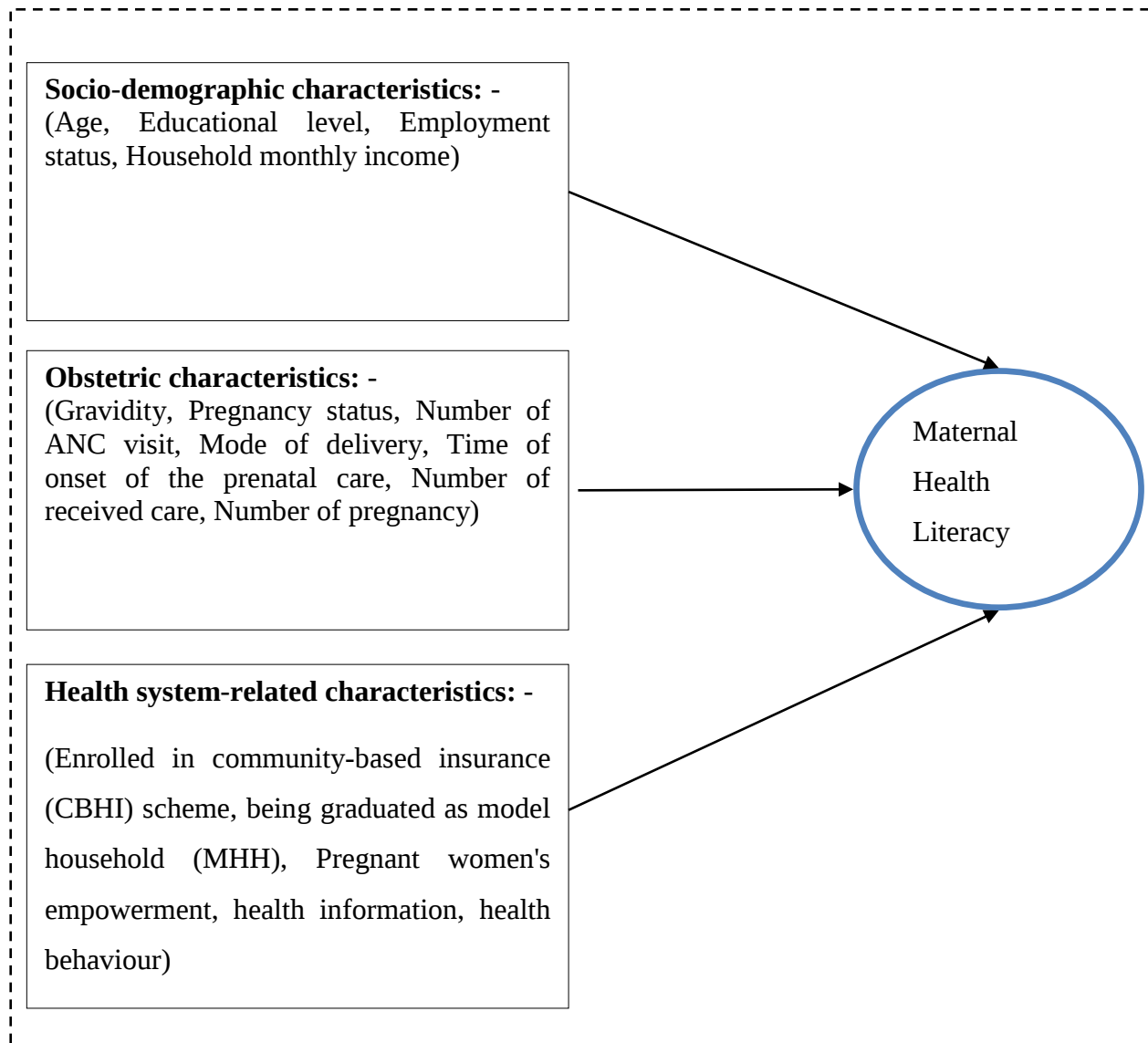


Figure 1: A conceptual framework of prevalence of maternal health literacy and associated factors among pregnant women in Asella Town, Ethiopia, 2024GC (40,41).

3. OBJECTIVES

3.1. General objective

To assess the prevalence of maternal health literacy and associated factors among pregnant women in Asella Town, Ethiopia, 2024.

3.2. Specific objectives

- To determine the prevalence of maternal health literacy among pregnant women in Asella Town, Ethiopia, 2024.
- To identify factors associated with maternal health literacy among pregnant women in Asella Town, Ethiopia, 2024.

4. METHOD AND MATERIALS

4.2. Study area

The study was conducted in Asella town, southeast Ethiopia. Asella Town is the capital town of the Arsi zone, established in 1945. It is located 175 km southeast of Addis Ababa. The town has a latitude and longitude of (7°57'N, 39°7'E), with an elevation of 2,430 meters. The town has 8 administrative kebeles (44).

According to Asella town 2024 demographic data projected from the Central Statistical Agency (CSA) 2007 census, it has a total population of 118,578 (males 60,475 and females 58,103). Of these, 26,241 are in the reproductive age group, and 4,426 are pregnant women in 2024 (45).

4.1. Study design and period

A community-based cross-sectional study design was conducted from August 01 to September 30, 2024.

4.3. Source and Study population

4.3.1. Source Population

- ✓ The source population was all pregnant women in Asella town

4.3.2. Study population

- ✓ The study population was pregnant women in Asella town during the study period.

Inclusion and exclusion criteria

Inclusion criteria

- ✓ All pregnant women who lived in Asella town for at least 6 months before the study period

Exclusion criteria: -

- ✓ Pregnant women who were seriously ill and unable to communicate at the time of data collection were excluded.

4.4. Sampling size and sampling procedure

4.4.1. Sample size determination for the first objective

Sample size was determined by using a single population proportion formula, considering the following assumptions: Where: $p = 53.5\%$, from the previous study done on MHL in Gurage Zone, Southern Ethiopia (40), $D = 5\%$ the margin of error, $Z_{\alpha/2} = (1.96)$, critical value at a 95% confidence level of certainty.

$$So, n = \frac{((Z_{\alpha/2})^2 P (1-P))}{d^2} = \quad \text{Where}$$

n = desired sample size
 P = magnitude of MHL = 53.5%
 z - Confidence interval = 95%
 d - Desired precision (%) = 5 % = 0.05

$$n = \frac{1.96^2 \times 0.535 (1-0.535)}{(0.05)^2} = \frac{3.84 \times 0.535 \times 0.465}{0.0025} = 382$$

And a 10% non-respondent rate, 38 added to the sample size. Then the final sample size became 420.

Sample size determination for objective 2

Factors affecting the dependent variable were many. Among these factors consider a confidence level of 95% and power of 80% and by using the double population proportion formula. (**P1, P2=proportion1&2**).

s. n	Variables	P1 (%)	P2 (%)	Beta (%)80	CI (%)95	Sample size	Reference
1	Route of delivery	23.3	5.35	0.84	1.96	111	(41)
2	Complete vaccination	3.4	2.53	0.84	1.96	72	
3	Educational background	0.48	14.84	0.84	1.96	100	
4	Freq of ANC contact	0.2	26	0.84	1.96	45	

The ultimate sample size was determined 420 of the calculated first objective.

4.4.2. Sampling procedure

There are eight kebeles in Asella town. The final study participants were recruited using both basic and systematic random sampling in order to reach the study unit. K was determined using calculated sample size (n) and two-month pregnant women (N). First, town health extension workers' home-based reports from the last two months are examined. About 738 women were determined to be pregnant within two months. Second, by dividing the total number of pregnant women during two months by the sample size ($N/n=738/420$), the sampling interval was calculated. The resultant Kth values are 1.757 or 2. A representative study unit for each kebele is calculated by dividing the number of pregnant women in each kebele by the Kth interval (1.757) of two months.

Lastly, a total of 420 pregnant women were scheduled for interviews from all kebeles in Asella town, specifically in Halila (41), Walkessa (70), H/gudina (70), K/bolcha (43), Hanku (54), Cilalo (40), Burkitu (60), and Busata (42). The first participant was selected through simple random sampling at the start of the data collection period and was recognized as the initial interviewee. Subsequently, every second pregnant woman was interviewed to achieve the required sample size through systematic sampling.

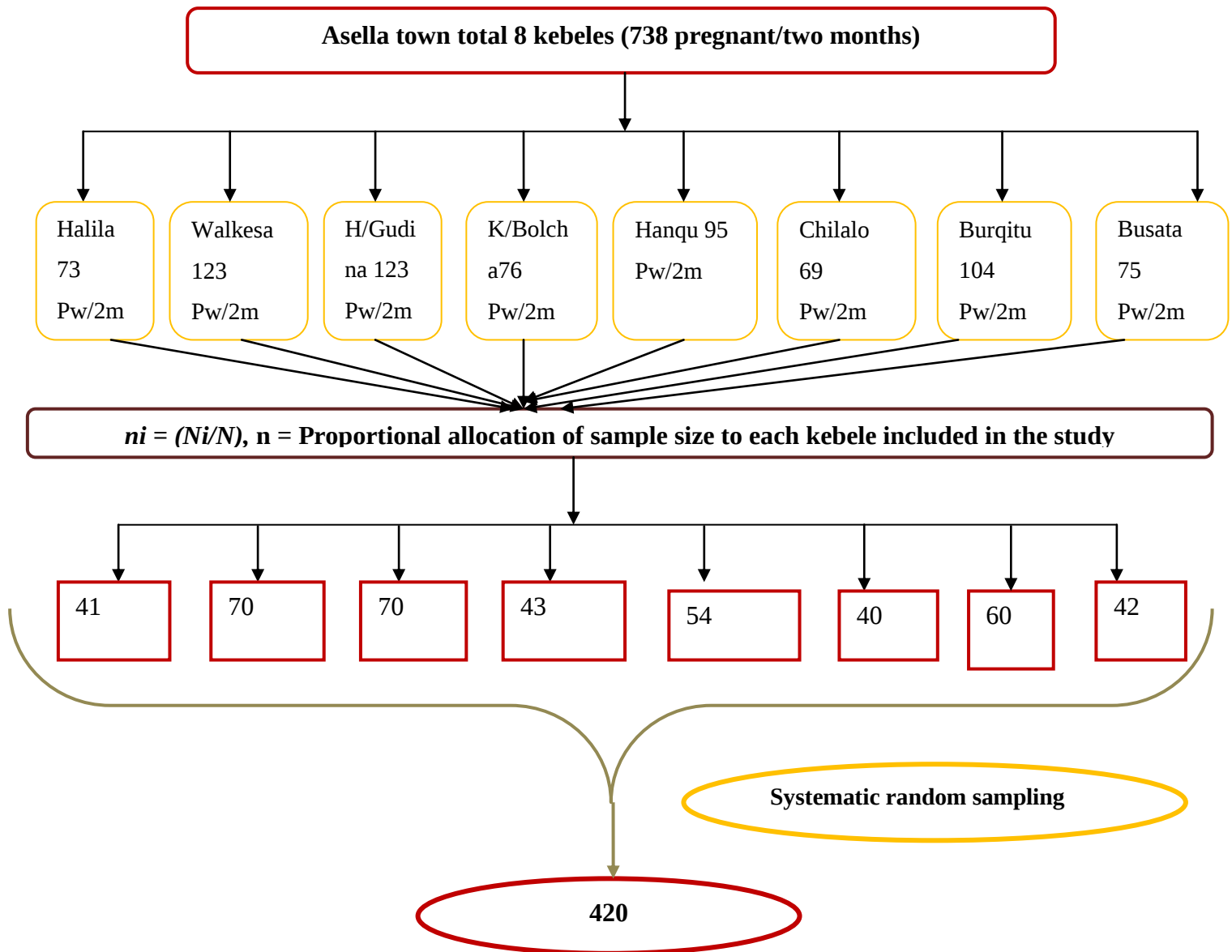


Figure 2: Schematic presentation of sampling procedure among pregnant women in Asella town, Southeast, Ethiopia 2024.

4.5. Variables of the study

4.5.1. Dependent variable

Maternal Health Literacy among pregnant women

4.5.2. Independent variable

Socio-demographic characteristics: - Age educational level, mother Educational level, employment status, house-hold monthly income)

Obstetric characteristics:-(Gravidity, pregnancy status, number of ANC visit, mode of delivery, time that onset the prenatal care, number of received care, number of pregnancy)

Health system-related characteristics: - (Enrolled in community-based insurance (CBHI) scheme, Recognized model household (MHH), pregnant women's empowerment, media exposure, type profession health workers serve them, sources of health information)

4.6. Operational Definition

Maternal Health Literacy measurement scale: The MHL was assessed by using four domains that contain a total of 38 items. Those 4 domains are maternal health knowledge (18 items), 2) maternal health information search (1 item), 3) maternal health information assessment (6 items), and 4) maternal health decision-making power (13 items). A correct response was assigned a code of '1,' while an incorrect response received a code of '0.' The total score was then calculated, resulting in a minimum possible score of '0' and a maximum possible score of '38.'

Adequate maternal health literacy; - The respondents who were got an overall maternal health literacy score of more than or equal to (≥ 19).

Inadequate maternal health literacy:- The respondents who were got less than (< 19) according to study done in Ethiopia(41,46) .

Women's Decision-Making Autonomy: A pregnant woman is said to possess autonomous decision-making power when she makes decisions about at least one of the following three topics, either independently or in conjunction with her husband: 1) her personal health (personal decision-making authority), 2) her economic situation (economic decision-making authority), and 3) her mobility (visiting friends or relatives). She is not regarded as autonomous when her spouse or another party makes decisions about any of the aforementioned activities(17,47).

Community-based health insurance (CBHI) scheme enrolment status: Acceptance to be a member of the system and paid a fee for a full year and have an updated service card(46).

Model households (MHHs): Those who have obtained official certification and have executed 75% of the four components of the health extension packages (HEPs). These HEPs cover interventions that can be divided into four groups: Family health services, environmental sanitation and hygiene, health education and communication, and the prevention and control of infectious diseases(28).

4.7. Data collection tools and procedure

Data were collected using an interviewer-administered valid and reliable structured questionnaire, which was adapted from previous literature and modified to the local context (36). The main sections of the questionnaire comprised socio-demographic characteristics and obstetrics characteristics. The questionnaire was initially prepared in English after reviewing literature by investigators and then translated into Afaan Oromo and Amharic by language experts and translated back to English by Language expert to ensure its consistency and accuracy. A total of five data collectors (three clinical nurses and two BSc nurses) and two public health officers as supervisors were recruited. The recruitment was based on their previous experience in data collection and fluency in the languages of the community.

4.8. Data quality assurance

Throughout the data collection process, close supervision was maintained by both the supervisor and principal investigator. Prior to the actual data collection, one-day training was provided for the data collectors and the supervisors. The training focused on understanding the study objectives, familiarizing participants with the data collection tools (questionnaires), instructing them on how to

approach study participants, emphasizing the importance of maintaining confidentiality and ensuring efficient use of time.

Moreover, to maintain data quality, a structured questionnaire pretest was conducted among 5% of the sample size in Bekoji town, which is located about 56 kilometers by road from Asella town in the study area. The pretest data were excluded from the analysis of the actual study. The reliability of the questionnaire was evaluated using Cronbach's Alpha, which produced a value of 0.813 for the maternal health literacy questionnaires, indicating a good level of internal consistency. Furthermore, modifications were made to the arrangement of questions to align with the specific objectives they addressed.

Based on the findings of the pretest, adjustments were made to some items of the questionnaire. Codes were given to each questionnaire so that any identified errors could be traced back using the codes. The principal investigator, together with the supervisors, closely monitor the data collectors during the data collection process and make spot-checks and review the completed questionnaires on a daily basis to ensure completeness, accuracy, clarity, and consistency of the information collected during the period of data collection.

4.9. Data processing and analysis

The data were entered into Epi-data version 4.0.2.3 and exported to SPSS version 26 to check for completeness and missing values. The assumption of normality of data was checked by data exploration using Histogram, Q-Q probability plots, and box plots. The assumptions of multi-collinearity were checked by variance inflation factor (VIF) to determine the strength of correlation between in-dependent variables. The Homer-Lemeshow test (HL test) was used for a goodness of fit test for logistic regression. After cleaning the data for inconsistencies and missing values in SPSS, descriptive statistics were done, such as percentages, frequency distributions, mean and measures of dispersion were used for describing the data. Bivariate and multivariable analysis was employed to identify factors associated with the outcome variable. Logistic regressions were used to identify independent determinants of MHL. A P-value < 0.05 at 95 % CI was considered statistically significant. Simple logistic regression was carried out to select candidate for multi-variable logistic regression analysis. Multi-variable logistic regression was done for candidate variables in simple

logistic regression to identify factors associated with MHL. The degree of association between independent and dependent variables was assessed using odds ratio with 95% confidence interval. SPSS version 26 was used to summarize results with tables and graphs. The normality of the data was checked and showed there were no detected outliers in the data. Model goodness-of-fit test was checked by Hosmer and Lemeshow test. Accordingly, Hosmer and Lemeshow test statistics indicated that the logistic regression model was of good fit for factors associated with Maternal health literacy (P-value = 0.678). The multicollinearity test was checked, and it indicated that there is no severe multicollinearity, as the VIF is less than 10 and the Tolerance Test (TT) is greater than 10%. Finally, the results were presented in the form of tables, figures, and text.

4.10. Ethical consideration

Ethical clearance was obtained from the Institutional Review Board (IRB) of Arsi University College of Health Sciences. A permission letter was obtained from Asella Town Health Offices. Written consent was sought from selected participants to confirm their willingness to participate in the study. Privacy and confidentiality were ensured throughout the process of the study. The study participants were also ensured the option to refuse participation in the study if desired.

4.11. Dissemination of the results

The final report will be submitted to the Department of Mid-wifery, Research and Community service office, of college of health sciences, Arsi University. In addition, the study findings will be disseminated to Asella town health office and other relevant bodies. Above all it will be published the findings on any scientific Journals.

5. RESULT

5.1. Socio-demographic Characteristics

All pregnant women, 420 were enrolled in this study, resulting in a 100% response rate. The women primarily fell within the age range of 21-30 years of age, comprising 190 (45.2%) of the total. Regarding marital status, 344 (81.9%) of the women were married. Regarding ethnicity, 253 (60.2%) of them were Oromo in ethnicity. Concerning the educational status of the mothers, 141 (33.6%) had Primary School. Regarding the occupation of the mothers, the primary occupation of the heads of households was housewife, accounting for 182 (43.3%) (**Table 1**).

Table 1: Frequency distribution of Socio-demographic characteristics of pregnant women in Asella Town, Ethiopia, 2024 (n=420)

Variables		Frequency	Percent (%)
Age	<20	55	13.1
	21-30	190	45.2
	31-40	175	41.7
Marital status	Single Mother	55	13.1
	Married	344	81.9
	Divorced	21	5.0
Ethnicity	Oromo	253	60.2
	Amhara	120	28.6
	Gurage	37	8.8
	Others *	10	2.4
Religion	Orthodox	144	34.3
	Muslim	179	42.6
	Protestant	87	20.7
	Others**	10	2.4
Mothers Employment Status	Farmer	21	5.0
	Government Employee	107	25.5
	Student	45	10.7
	Housewife	182	43.3

	Self-Employee	65	15.5
Maternal Educational level	No formal education	102	24.3
	Primary School	141	33.6
	Secondary School	123	29.3
	College or university degree	54	12.9

Others*Tigre, Silte,

Others** Waqeffata, Catholic, Joba

5.2 Maternal Health Characteristics

In this study, of the total sample population, 344 (81.9%) were multi-gravida, while 245 (58.3%) were multiparous (having had two or more previous births). Regarding pregnancy status, 264 (62.9%) had planned pregnancies. The number of women who received previous ANC was 339 (80.7%), and 366 (87.1%) had a current history of ANC contacts. Among those with current ANC contacts, 36.2 % had one contact, 22.6% had two contacts, 19.8% had three contacts, and 11.0% had four contacts (Table 2).

Table 2: Frequency distribution of Maternal health characteristics among pregnant women in Asella town, Ethiopia, 2024 (n=420)

Variable	Category	Frequency	Percent (%)
Gravidity	Multi-gravida	344	81.9
	Primi-gravida	76	18.1
Parity	Nulli-parus	78	18.6
	Primi-parus	53	12.6
	Multi-parus	245	58.3
	Grand-	44	10.5
Pregnancy status	Planned	264	62.9
	Unplanned	156	37.1
Do have a Previous history of ANC	Yes	339	80.7
	No	81	19.3
Do you have a current history of ANC	Yes	366	87.1
	No	54	12.9
How many contacts of ANC contacts	One	152	36.2

did you have	Two	95	22.6
	Three	83	19.8
	Four and above	46	11.0
Abortion history	Yes	167	39.8
	No	253	60.2

5.3 Health System-Related Characteristics

In this study regarding the distance to health institutions in minutes, just more than half (52.6%) reported a distance of less than 30 minutes. Enrollment in Community-Based Health Insurance (CBHI) was reported by 79.5% of participants. The availability of Health Extension Workers (HEWs) was reported by 49.5% of participants. Regarding attendance at conferences on health issues, 88.6% of participants didn't attend health conferences related to health issues (Table 3).

Table 3: Frequency distribution of Health system-related characteristics among pregnant women in Asella town, Ethiopia 2024 (n=420).

Variables	Category	Frequency	Percent (%)
Distance to a health institution in minutes	Less than 30 minutes	221	52.6
	Greater than 30 minutes	199	47.4
Availability of Health Extension Workers in kebele	Yes	208	49.5
	No	212	50.5
Enrolled in CBHI	Yes	334	79.5
	No	86	20.5
Do you attend conferences on maternal health issues?	Yes	48	11.4
	No	372	88.6
Are you a recognized model house hold?	No	308	73.3
	Yes	112	26.7

5.4 Prevalence of Maternal health Literacy

Out of all study participants 262 (62.4%) had adequate maternal health literacy with a 95% confidence interval (CI) of (57.6, 66.9), while inadequate maternal health literacy was reported in 158 women (37.6%), with a 95% CI of (33.1, 42.4). In Component 1 (Assessing Maternal Health Knowledge), 196 women (46.7%) demonstrated adequate maternal health literacy, in contrast to 224 women (53.3%) with inadequate health literacy. For Component 2 (Maternal Health Information Assessment), 251 women (59.8%) exhibited adequate health literacy, while 169 women (40.2%) had inadequate health literacy. In Component 3 (Maternal Health Information Search), 377 women (89.8%) possessed adequate health literacy, and 43 women (10.2%) had inadequate health literacy. In Component 4 (Level of Maternal Health Decision-Making Power during Pregnancy), 342 women (81.4%) demonstrated Inadequate health literacy, whereas 78 women (18.6%) exhibited adequate health literacy (Table 4).

Table 4: Frequency distribution of prevalence of maternal health literacy among pregnant women in Asella town, Ethiopia 2024, (n=420)

Variables	Frequency	Percent (%)
Component 1 (Assessing Maternal Health Knowledge)		
Inadequate	224	53.3
Adequate	196	46.7
Component 2 (maternal health information assessment)		
Inadequate	169	40.2
Adequate	251	59.8
Component 3 (maternal health information search (Access)		
Inadequate	43	10.2
Adequate	377	89.8
Component 4 (maternal health decision making)		
Inadequate	342	81.4
Adequate	78	18.6

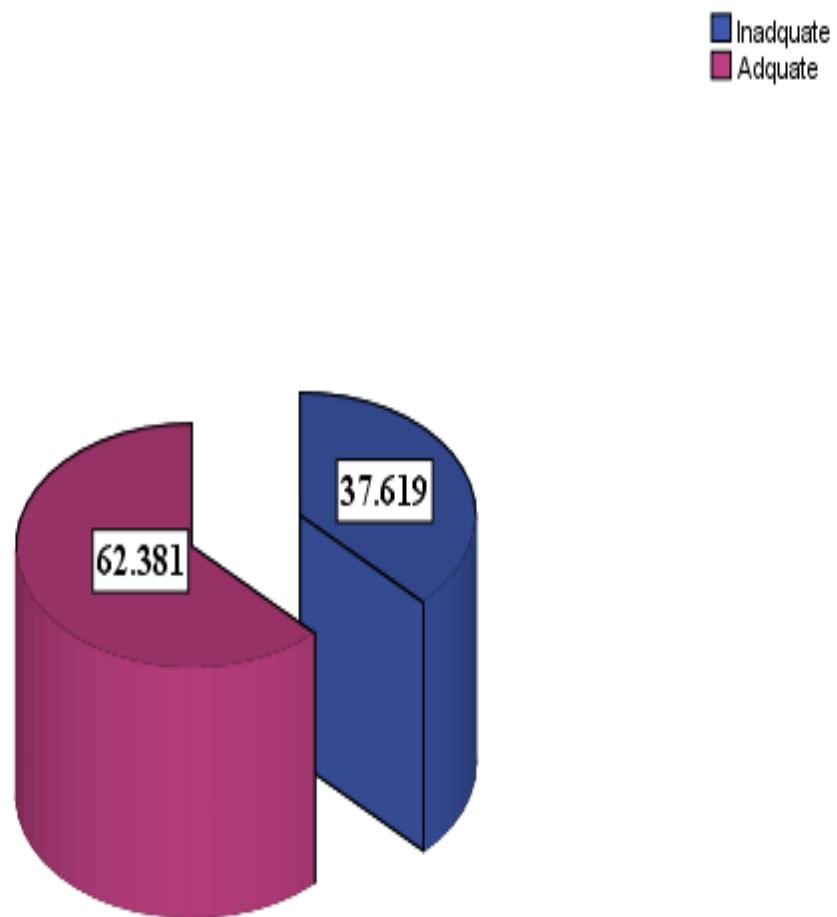


Figure 3: Prevalence of maternal health literacy among pregnant women in Asella town, Ethiopia, 2024.

Table 5: Frequency distribution of maternal health knowledge among pregnant women in Asella town, Ethiopia 2024, (n=420)

Variables	Categories	
	No n (%)	Yes n (%)
Do you know about natural physical changes during pregnancy	108(25.7%)	312(74.3%)
Do you understand natural psychological changes during pregnancy	257(61.2%)	163(38.8%)
Do you know about proper nutrition during pregnancy	111(26.4%)	309(73.6%)
Do you know about how to keep personal hygiene	30(7.1%)	390(92.9%)
Do you know about the need for proper exercise during pregnancy	311(74.0%)	109(26.0%)
Do you know about pregnancy supplements (Folic acid supplementation)	95(22.6%)	325(77.4%)
Do you know about the appropriate referral timing for pregnancy examinations	290(69.0%)	130(31.0%)
Do you know understanding diagnostic examination (ultrasound and tests) of maternal and fetal health in pregnancy	124(29.5%)	296(70.5%)
Do you know about the importance of weight gain during pregnancy (at least 12kg)	267(63.6%)	153(36.4%)
Do you know about at least one common pregnancy problem such as nausea, vomiting, lower back pain	22(5.2%)	398(94.8%)
Do you know about injecting safe (authorized) vaccines during pregnancy	100(23.8%)	320(76.2%)
Do you know about the normal number of fetal movements	354(84.3%)	66(15.7%)
Are you aware of the factors that can impact fetal health, such as smoking, excessive alcohol consumption, medications, and exposure to chemicals?	101(24.0%)	319(76.0%)
Do you know about danger signs during pregnancy	205(48.8%)	215(51.2%)
Do you know about pregnancy disease symptoms such as gestational diabetes, high blood pressure in pregnancy, and other diseases	323(76.9%)	97(23.1%)
Do you know about childbirth such as the advantages and disadvantages of each of the natural delivery methods and cesarean section and their associated care	257(61.2%)	163(38.8%)
Do you know about neonatal and infant care in the postpartum period	128(30.5%)	292(69.5%)
Do you know about the required number and timing of postpartum visits	283(67.4%)	137(32.6%)

Table 6: Frequency distribution of Maternal health information search (Access) among pregnant women in Asella town, Ethiopia 2024, (n=420)

Variables	Category	
	Yes	No
Have your adequate maternal health information access during pregnancy	377(89.8%)	43(10.2%)

Table 7: Frequency distribution of Maternal health information assessment (Comprehension) among pregnant women in Asella town, Ethiopia 2024, (n=420)

Variables	Categories	
	Yes	No
Do you easy to read and pronounce pregnancy-related information sources such as books, educational booklets	185(44.0%)	235(56.0%)
Do you understanding information obtained from different sources	174(41.4%)	246(58.6%)
Do you getting familiar with reliable and verified sources to get the right information	153(36.4%)	267(63.6%)
Do you asking the doctor or midwife to make sure information is reliable	223(53.1%)	197(46.9%)
Do you evaluating the accuracy of pregnancy-related information obtained from online sources	331(78.8%)	89(21.2%)
Do you evaluating the accuracy of pregnancy-related information obtained from friends and relatives	114(27.1%)	306(72.9%)

Table 8: Frequency distribution of maternal health decision making among pregnant women in Asella town, Ethiopia 2024, (n=420)

Variables	Category	
	Yes	No
Do you have ability to manage and control physical and psychological changes in pregnancy	147(35.0%)	273(65.0%)
Do you implement a proper diet for pregnancy	157(37.4%)	263(62.6%)

Do you implement necessary measures for personal hygiene during pregnancy	341(81.2%)	79(18.8%)
Do you adhere to the principles of activity and proper condition during pregnancy	274(65.2%)	146(34.8%)
Do you take pregnancy supplements as directed by doctor or midwife	368(87.6%)	52(12.4%)
Do you consult with the doctor or midwife for taking any type of medication during pregnancy	329(78.3%)	91(21.7%)
Do you attend for prenatal care(examinations) as scheduled	175(41.7%)	245(58.3%)
Do you perform ultrasound and tests in pregnancy recommended by healthcare professionals such as doctor	283(67.4%)	137(32.6%)
Do you monitor the weight gain during pregnancy	139(33.1%)	281(66.9%)
Do you avoid unnecessary practices during pregnancy like, abdominal massage, herbal intake and taboo without health professional instruction	233(55.5%)	187(44.5%)
Do you see the doctor or midwife as soon as possible when any danger signs during pregnancy were observed	274(65.2%)	146(34.8%)
Do you ask the doctor or midwife for further explanation if the information and recommendations are not clear enough	338(80.5%)	82(19.5%)
Do you participate in decision making about pregnancy issues with the doctor or midwife (providing person opinions)	363(86.4%)	57(13.6%)

5.5 Factors associated with maternal health literacy among pregnant women in Asella town, 2024

The bivariate analysis revealed significant associations between adequate MHL and several factors, including women's education levels, gravidity, previous ANC contacts, abortion history, pregnancy status, community based health insurance enrollment, distance to the health facility and recognized model house hold. In the multivariable analysis, with women's education levels, gravidity, CBHI enrollment, and distance to the health facility. Maternal health literacy was significantly associated

The likelihood of having adequate maternal health literacy during pregnancy among women with a secondary level of education was 6.75 times more likely than those who don't have formal education (AOR = 6.75; 95% CI: (3.53,12.92) at P-value=0.001. The odds of having adequate maternal health literacy during pregnancy among women with college or university degree was 5.9 times than those who don't have formal education (AOR=5.93; 95% CI: (2.56,13.72) at P-value=0.001. The odds of having adequate maternal health literacy during pregnancy among women living within a distance from the health facility of less than 30 minutes were 1.8 times more likely than their counterparts (AOR =1.87; 95% CI: (1.14,3.09) at P-value=0.013.

The odds of having adequate maternal health literacy during pregnancy among women who were enrolled in CBHI were 2.68 times more likely than those not enrolled in CBHI (AOR = 2.68; 95% CI: (1.39,5.16) at P-value= 0.003. The odds of having adequate maternal health literacy among pregnant women who were Multi-gravida was 84% lower compared to pregnant women who were Primi-gravida (AOR = 0.161; 95% CI: (.059, .438) at P-value=0.001(Table 5).

Table 9: Factors associated with maternal health literacy among pregnant women in Asella town, Ethiopia, 2024 (n=420).

Variables	Category	Maternal Health Literacy		COR (95%CI)	AOR (95%CI)	P-values
		Adequate	Inadequate			
Educational status	No formal education	40(39.2%)	62(60.8%)	1	1	
	Primary School	82(58.2%)	59(41.8%)	2.15(1.28, 3.62)	1.62(.888,2.93)	.116
	Secondary School	97(78.9%)	26(21.1%)	5.78(3.21, 10.41)	6.75(3.53,12.92)	.001*
	College or university degree	43(79.6%)	11(20.4%)	6.06(2.79,13.12)	5.93(2.56,13.72)	.001*
Gravidity	Multi-gravida	149(43.3%)	195(56.7%)	.18(.095, .344)	.161(.059, .438)	.001*
	Primi-gravida	9(11.8%)	67(87.2%)	1	1	
Pregnancy status	Unplanned	152(57.6%)	112(42.4%)	1	1	
	Planned	110(70.5%)	46(29.5%)	1.76(1.16,2.69)	1.82(.98,3.37)	.056
Abortion	Yes	86(51.5%)	81(48.5%)	1	1	
	No	176(69.6%)	77(30.4%)	2.15(1.44, 3.23)	1.67(.988,2.81)	.058
Previous ANC visit	No	58(71.6%)	23(28.4%)	1	1	
	Yes	204(60.2%)	135(39.8%)	0.59, (.353,1.02)	.57(.25,1.29)	.056
Distance to reach health facility	Less than 30 minutes	105(47.5%)	116(52.5%)	1	1	
	Greater than 30 minutes	53(26.6%)	146(73.4%)	2.49(1.66,3.76)	1.87(1.14,3.09)	.013*
Enrolled in CBHI	Yes	116(34.7%)	218(65.3%)	1.79(1.11, 2.89)	2.68(1.39,5.16)	.003*
	No	42(48.8%)	44(51.2%)	1	1	
Recognized model house hold	No	124(40.7%)	184(59.3%)	1	1	
	Yes	34(30.4%)	78(69.6%)	1.55(.97, 2.46)	1.02(.58,1.798)	.947

COR: crude odd ratio, **AOR:** Adjusted odd ratio, **CI:** confidence interval, 1: reference

6. DISCUSSION

In conclusion, the study established that the overall prevalence of adequate maternal health literacy among the participants was 62.4%, accompanied by a 95% Confidence Interval of (57.6, 66.9). This indicates a significant proportion of women possess the essential knowledge required to navigate maternal health effectively. Additionally, maternal health literacy was significantly associated by several factors, including women's education levels, gravidity, enrollment in Community-Based Health Insurance (CBHI), and Distance to health facilities. These findings emphasize the necessity of addressing these determinants to improve maternal health literacy, ultimately leading to enhanced health outcomes for mothers and their children.

The current study was higher than the result of the study conducted in Tehran, Iran, where 41.1% of women were found to have adequate maternal literacy ($PV=0.0057$)(29). Another similar study conducted at Shahid Beheshti Medical University in Tehran, Iran, revealed that 45.4% had adequate health literacy (33). A study done in the Mansoura district, Egypt, revealed that only 20.2% of them had sufficient MHL (37). The current study was also higher than the result of study conducted in Gurage Zone, southern Ethiopia, where 53.5% (95% CI: 49.1, 58.1) had good MHL(40). The current finding is also higher than another similar study done in the Illubabor zone of Oromia, Ethiopia, revealed that 28.7% of the women had adequate MHL (41). This discrepancy could be due to different factors, such as differences in educational level, study area, sample size, and study period.

The current study was lower than the result of the study conducted in the Anatolia region of Turkey, which revealed that 88.3% of pregnant women had adequate MHL (32). A study done in Bojnord, Iran, found that 98.2% was at an optimal level (36). This discrepancy could be due to different factors like differences in educational level, study area, sample size, and study period.

The likelihood of having adequate maternal health literacy during pregnancy among women with a secondary level of education was 6.75 times more likely than those who don't have formal education. The likelihood of having adequate maternal health literacy during pregnancy among women with a college or university degree was 5.93 times more likely than those who don't have formal education. This finding is consistent with the study conducted in Kabul,

Afghanistan, which revealed that it is associated with education level (31). The current finding is also consistent with a study done in Isfahan, Iran, that revealed MHL was associated with fewer years of schooling (35). The possible explanation for this could be women with higher education levels understand health-related information better, have better access to resources, and foster critical thinking skills. They are also more likely to engage in healthier behaviors, prioritize education for future generations, and navigate cultural beliefs related to pregnancy and childbirth. Improving educational opportunities is crucial for enhancing maternal health literacy, achieving better health outcomes, and promoting equity in maternal health.

The current finding is consistent with another study done in Israel that showed that MHL was significantly higher among mothers who had higher education (43). A study done in Bojnord, Iran, revealed that there is a significant relationship between health literacy and the educational level of pregnant women (36). Similarly, the current finding is consistent with a study in the Gurage Zone, southern Ethiopia, among pregnant women revealed that educational level was positively associated with MHL (40). This could be possible due to educational status is may be a positive factor regardless of difference in socio-economic and cultural variation. Educational curriculums and health education campaigns vary significantly across regions due to a range of cultural, systemic, and socioeconomic factors. Teaching methods differ as well, with some regions favoring traditional route learning while others employ interactive approaches; the use of technology varies based on access. Cultural beliefs can influence perceptions of health information, while socioeconomic status often limits resources for comprehensive education across different areas. Additionally, government policies and infrastructure shape the quality of health education, as do historical contexts that prioritize certain health issues based on past crises. Overall, these factors collectively inform how health education is structured and delivered in different regions, potentially leading to variations in maternal health literacy.

The odds of having adequate maternal health literacy during pregnancy among women living within a distance from the health facility of less than 30 minutes were 1.87 times more likely than their counterparts. The current finding is consistent with a study done in Mashhad, Iran, indicating that there was a significant relationship between MHL and living place (25). The probable reason could be due to short distance to health facility would bring maternal health literacy regardless of socio-demographic variation to previous study. Distance from health

facilities can significantly impact maternal health literacy, limiting access to essential information and services. Women far from health facilities may miss crucial health education and prenatal check-ups, leading to lower utilization of resources. Cultural barriers, logistical challenges, and transportation costs can further exacerbate health literacy issues. Addressing these barriers through targeted outreach and education programs is crucial for improving maternal health literacy among underserved populations.

The odds of having adequate maternal health literacy during pregnancy were 2.6 times higher among women enrolled in CBHI compared to those not enrolled (AOR = 2.68, 95% CI: (1.18,6.04). This finding is consistent with a study conducted in the Gurage Zone of southern Ethiopia, which revealed that enrollment in the CBHI scheme was positively associated with maternal health literacy(40). Community-based programs can play in improving health outcomes for pregnant women. This result advocates for continued investment in such initiatives as a means of enhancing maternal health literacy and, ultimately, maternal and child health outcomes, Since Community health education is crucial for improving maternal health literacy and enabling informed decisions about pregnancy, childbirth, postpartum care, and newborn health. It informs communities about available health services, promotes healthy behaviors during pregnancy, empowers women to advocate for their health needs, and fosters support networks. Tailoring education to cultural beliefs and addressing barriers faced by marginalized populations can reduce disparities and promote a culture of lifelong learning about health.

The odds of having adequate maternal health literacy among pregnant women who were Multi-gravida was 84% higher than pregnant women who were Primi-gravida (AOR = 0.161; 95% CI: (.059, .438) at P-value=0.01. The current finding is inconsistent with Study done in 2022 in Kabul, Afghanistan on 200 pregnant women revealed that it is associated with number of 2 to 4 gravidities(F=5.27,PV<0.006)(31). This discrepancy may be attributed to differences in the study area and the sample size; the referenced study utilized only 200 participants, whereas our study included 420 participants. The current findings of our study are consistent with the study conducted in 2015 in Mashhad, Iran, which utilized a cross-sectional design involving 120 pregnant women. This study indicated a significant relationship between maternal health literacy (MHL) and the number of pregnancies (25). This finding indicates that multi-gravida women

have lower odds of achieving adequate maternal health literacy compared to primi-gravida women, suggesting a potential disadvantage in their understanding of essential maternal health information. Contributing factors to this disparity include reliance on past experiences, knowledge gaps arising from evolving guidelines, limited access to educational resources, and cultural perceptions that may diminish the importance of health literacy for multi-gravida women.

Generally, the study identifies several factors significantly associated with maternal health literacy, including women's education levels, pregnancy status, enrollment in health programs, and distance to health facilities. This suggests that improving access to education and healthcare resources, especially for less educated women, could enhance maternal health literacy.

7. Strength and limitation of the study

7.1. Strength

- ✓ The methodological clarity provided by the designation of a community-based cross-sectional study suggests a focused approach to data collection at a specific time point.

7.2. Limitation

- ✓ The cross-sectional design, while useful for identifying associations, does not establish causality, making it challenging to determine direct influences among factors.
- ✓ There is potential for bias, as community-based studies may not always represent the broader population of pregnant women, and self-reported data may be affected by social desirability.
- ✓ Focusing solely on maternal health literacy could overlook other critical aspects of maternal well-being, such as access to healthcare services and mental health considerations.

8. CONCLUSION AND RECOMMENDATION

8.1 CONCLUSION

In this study area, the study reveals that over half of the pregnant women in Asella Town possess adequate maternal health literacy. The significant associations found between maternal health literacy and various factors, including education levels, gravidity, CBHI enrollment, and distance to health facilities were highlight the multifaceted nature of maternal health literacy. These findings underscore the need for targeted interventions that address these determinants to enhance maternal health literacy among pregnant women. By improving access to information and resources tailored to the specific needs of different demographic groups, stakeholders can foster better MHL.

8.2 RECOMMENDATIONS

Based on the significant association between maternal health literacy levels and the variables of women's education levels, gravidity, enrollment, and distance to the health facility, tailored recommendations were made.

To Ministry of Health

- ✓ Develop and implement policies to support and incentivize the enrollment of pregnant women in CBHI programs.
- ✓ Provide resources and support for training and providing targeted health educational programs. Develop and implement community-based educational programs tailored to different educational backgrounds.
- ✓ Should focus on enhancing system maternal health literacy, particularly for women with lower education levels, and should include information on prenatal care, nutrition, and childbirth preparation.

To Oromia Regional Health Bureau:

- ✓ Mobile health clinics or community health worker programs could facilitate access to information and resources, bridging the gap caused by distance to health facilities.

- ✓ Enhance community-based health education programs to improve maternal health literacy, with an emphasis on essential topics such as antenatal care, childbirth, and postnatal care.

To Woreda Health Office:

- ✓ Enhance partnerships with Community-Based Health Insurance (CBHI) programs to ensure that maternal health services are accessible and affordable for enrolled women.

To Health Professionals:

- ✓ Deliver ongoing education and training on maternal health literacy for healthcare providers to improve communication with pregnant women and mothers.
- ✓ Integrate maternal health literacy assessments into routine consultations to customize health education messages.
- ✓ Collaborate with Health Extension Workers (HEWs) to reinforce essential maternal health messages and support engagement with Model Households (MHH).

To Non-Governmental Organizations (NGO) Partners:

- ✓ Launch maternal health literacy programs in underserved communities.
- ✓ Provide funding and technical support for initiatives that promote Model Households (MHH) and community-based health promotion activities.
- ✓ Advocate for increased investment in maternal health education and services at regional and national levels.

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8 ANNEXES

Annex 1. English version information sheet and consent format

ARSI UNIVERSITY
COLLEGE OF HEALTH AND MEDICAL SCIENCES
DEPARTMENT OF MIDWIFERY

Hello my name is..... I'm Msc. student of Arsi University, college of health and medical sciences, Department of Midwifery. I would like to ask you a few questions related to MHL and associated factors of pregnant women. The purpose of this study is to identify factors associated with MHL among pregnant women Asella Town, South East Ethiopia. Your name will not be written on this questioner, and will never be used in connection with any of the information you delivered. You are selected for this study only by chance, not intentionally, so we would be thankful if you spend some time answering questions. Your correct answers to these questions will help us for better findings. We would greatly appreciate your help in responding to this survey. You have the right not to respond any question you don 't wants to. May we get your permission to continue?

YES _____

NO_____

Thank you

General Information Date: - _____ Data collector signature: _____

Kebele: - _____ HN _____, Respondents code _____

1. Starting time for interview _____ 2. Ending time for interview _____

Section I: Questions on Socio-economic and Demographic characteristics of the respondent

No.	Questions	Response categories	
101	How old are you?	In completed years _____	
102	What is your ethnicity?	1.Oromo 2.Amhara 3.gurage 4. silte	
103	Religion	1.Orthodox 2., Muslim 3.Protestant 4.Others	
104	Marital status	1.Single mother 2.Married 3.Divorced	
106	Mother Educational status	1. no formal education 2.Primary school 3.Seconderyschool 4.college or universty	
107	Mothers Employment Status	1.Farmer 2.Government Employee 3.Student 4.House wife 5.Self Employ	
108	What is your family 's	1. _____ birr per month	

	monthly income in birr	(estimate of the respondent) 2.No response	
109	How many live births have you had?	Enter the number_____	
110	Number of family		

Section II: Question related to Obstetric characteristics

No.	Questions	Response categories	Go to/Remarks
201	Gravidity	1. Multi-gravida 2.Primi-gravida	
202	Parity	1.Nulliparus 2.primiparus 3.multiparus 4.grandmultiparus	
203	Pregnancy status	1.planned 2.un planned	
204	Do you have a Previous history of ANC?	1.yes 2.no	
205	Do you have a current history of ANC?	1.yes 2.no	
206	How many contacts of ANC did you have?	1.one 2.two 3.three 4.four and above	

207	Do you have history of abortion	1.yes 2.no	
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Section III: Health system-related characteristics

No.	Questions	Response categories	Go to/Remarks
301	Distance to reach health facility	1.less than 30 minutes 2.greater 30 minute	
302	Do you enroll in Community base insurance scheme?	1.yes 2.no	
303	Are you recognized model household?	1.yes 2.no	
304	Are there Health extension Worker in your kebele?	1.yes 2.no	
305	Do you attend conference on maternal health health issue	1.yes 2.no	

Section IV: Domain of Maternal health literacy

4.1. Maternal health knowledge

No.	Questions	Response categories	Go to/Remarks
401	Do you know about natural physical changes during pregnancy	1.yes 2.no	
402	Do you understand natural psychological changes during pregnancy	1.yes 2.no	
403	Do you know about proper nutrition during pregnancy	1.yes 2.no	
404	Do you know about how to keep personal hygiene	1.yes	

		2.no	
405	Do you know about the need for proper exercise during pregnancy	1.yes 2.no	
406	Do you know about pregnancy supplements (Folic acid supplementation)	1.yes 2.no	
407	Do you know about the appropriate referral timing for pregnancy examinations	1.yes 2.no	
408	Do you know understanding diagnostic examination (ultrasound and tests) of maternal and fetal health in pregnancy	1.yes 2.no	
409	Do you know about the importance of weight gain during pregnancy (at least 12kg)	1.yes 2.no	
410	Do you know about at least one common pregnancy problem such as nausea, vomiting, lower back pain	1.yes 2.no	
411	Do you know about injecting safe (authorized) vaccines during pregnancy	1.yes 2.no	
412	Do you know about the normal number of fetal movements	1.yes 2.no	
413	Do you know about the factors affecting fetal health such as smoking, excess alcohol consumption, medications, chemicals...?	1.yes 2.no	
414	Do you know about danger signs during pregnancy	1.yes 2.no	
415	Do you know about pregnancy disease symptoms such as gestational diabetes, high blood pressure in pregnancy, and other diseases	1.yes 2.no	
416	Do you know about childbirth such as the advantages and disadvantages of each of the natural delivery methods and cesarean section and their associated care	1.yes 2.no	

417	Do you know about neonatal and infant care in the postpartum period	1.yes 2.no	
418	Do you know about the required number and timing of postpartum visits	1.yes 2.no	

4.2. Maternal health information search (Access)

No.	Questions	Response categories	Go to/Remarks
501	Have your adequate maternal health information access during pregnancy?	1.yes 2.no	

4.3. Maternal health information assessment (Comprehension)

No.	Questions	Response categories	Go to/Remarks
601	Do you easy to read and pronounce pregnancy-related information sources such as books, educational booklets	1.yes 2.no	
602	Do you understanding information obtained from different sources	1.yes 2.no	
603	Do you getting familiar with reliable and verified sources to get the right information	1.yes 2.no	
604	Do you asking the doctor or midwife to make sure information is reliable	1.yes 2.no	
605	Do you evaluating the accuracy of pregnancy-related information obtained from online sources	1.yes 2.no	
606	Do you evaluating the accuracy of pregnancy-related information obtained from friends and relatives	1.yes 2.no	

4.4. The level of maternal health decision making (Health decision making power and application during pregnancy)

No.	Questions	Response categories	Go to/Remarks
701	Do you have ability to manage and control physical and psychological changes in pregnancy?	1.yes 2.no	
702	Do you implement a proper diet for pregnancy	1.yes 2.no	
703	Do you implement necessary measures for personal hygiene during pregnancy	1.yes 2.no	
704	Do you adhere to the principles of activity and proper condition during pregnancy	1.yes 2.no	
705	Do you take pregnancy supplements as directed by doctor or midwife	1.yes 2.no	
706	Do you consult with the doctor or midwife for taking any type of medication during pregnancy	1.yes 2.no	
707	Do you attend for prenatal care(examinations) as scheduled	1.yes 2.no	
708	Do you perform ultrasound and tests in pregnancy recommended by healthcare professionals such as doctor	1.yes 2.no	
709	Do you monitor the weight gain during pregnancy	1.yes 2.no	
710	Do you avoid unnecessary practices during pregnancy like, abdominal massage, herbal intake and taboo without health professional instruction	1.yes 2.no	
711	Do you see the doctor or midwife as soon as possible when any danger signs during pregnancy were observed	1.yes 2.no	
712	Do you ask the doctor or midwife for further explanation if the information and recommendations are not clear	1.yes 2.no	

	enough		
713	Do you participate in decision making about pregnancy issues with the doctor or midwife (providing person opinions)	1.yes 2.no	

03	Do you implement necessary measures for personal hygiene during pregnancy	1.yes 2.no	
04	Do you adhere to the principles of activity and proper condition during pregnancy	1.yes 2.no	
05	Do you take pregnancy supplements as directed by doctor or midwife	1.yes 2.no	
06	Do you consult with the doctor or midwife for taking any type of medication during pregnancy	1.yes 2.no	
07	Do you attend for prenatal care (examinations) as scheduled	1.yes 2.no	
08	Do you perform ultrasound and tests in pregnancy recommended by healthcare professionals such as doctor	1.yes 2.no	
09	Do you monitor the weight gain during pregnancy	1.yes 2.no	
10	Do you avoid harmful practices during pregnancy	1.yes 2.no	
11	Do you see the doctor or midwife as soon as possible when any danger signs during pregnancy were observed	1.yes 2.no	
12	Do you ask the doctor or midwife for further explanation if the information and recommendations are not clear enough	1.yes 2.no	
13	Do you participate in decision making about pregnancy issues with the doctor or midwife (providing personal opinions)	1.yes 2.no	

Annex 2. Amharic version information sheet and consent format

አርሲ ዩኒቨርሲቲ

በጤና ሳይንስ እና የህክምና ኮሌጅ

የአዋላጅ ነርስ ክፍል

ስሜ _____ ነው

በአርሲ ዩኒቨርሲቲ፣ በጤናና ህክምና ሳይንስ ኮሌጅ፣ በአዋላጆች ትምህርት ክፍል እየተካሄደ ያለውን የምርምር እየሠራሁ ነው። ከእናቶች ጤና እውቀት እና ከነፍሰ ጡር ሴቶች ጋር የተያያዙ ጉዳዮችን በተመለከተ ጥቂት ጥያቄዎችን ልጠይቅዎት እፈልጋለሁ። የዚህ ጥናት አላማ በደቡብ ምስራቅ ኢትዮጵያ አሰላ ከተማ ውስጥ በእናቶች ጤና ልህቀት ጋር ተያይዘው የሚመጡ እርጉዞችን መለየት ነው። ስምህሽ በዚህ ጥያቄ ላይ አይጻፍም እና ከሰጠኸው ማንኛውም መረጃ ጋር በተያያዘ ፈጽሞ ጥቅም ላይ አይውልም። ለዚህ ጥናት የተመረጠኩ ሆኑ ተብሎ ሳይሆን በአጋጣሚ ነው። ስለዚህ ለጥያቄዎች መልስ በመስጠት የተወሰነ ጊዜ ብታሳልፍ አመሰግናለሁ። ለእነዚህ ጥያቄዎች ትክክለኛ መልስዎ የተሻሉ ግኝቶችን እንድናደርግ ይረዱናል። ለዚህ የዳሰሳ ጥናት ምላሽ ለመስጠት ለሚያደርጉት እገዛ በጣም እናደንቃለን። ለማትፈልጉት ለማንኛውም ጥያቄ ምላሽ የመስጠት መብት አልዎት። ለመቀጠል ፍቃድዎን ማግኘት እንችላለን?

አዎ _____

አይ _____

አመሰግናለሁ

አጠቃላይ መረጃ ቀን:- _____ መረጃ ሰብሳቢ ፊርማ: _____

ቀበሌ:- _____ HN _____ የተጠያቂዎች ኮድ _____

1. ለቃለ መጠይቅ የሚጀምርበት ጊዜ _____ 2. የቃለ መጠይቁ ማበቂያ ጊዜ _____

ክፍል I: ስለተጠያቂው መሀበራዊ-ኢኮኖሚያዊ እና ስነ-ሕዝብ ባህሪ ያት ጥያቄዎች

No.	ጥያቄዎች	የምላሽ ምድቦች	
101	ዕድሜሽ ስንት ነው?	በተጠናቀቁ ዓመታት _____	
102	ብሄርህሽ ምንድን ነው?	1.አሮሞ 2.አሜራ 3.ሌላ (ይግለጹ)	
103	ሃይማኖት	1.አርቶዶክስ 2.መስሊም 3.ፕሮቴስታንት 4.ሌሎች	
104	የጋብቻ ሁኔታ	1.በጋብቻ ግንኙነት 2.በጋብቻ ግንኙነት ውስጥ አይደለም	
106	እናት የትምህርት ደረጃ	1.ማንበብና መጻፍ አይቻልም 2.ማንበብ እና መጻፍ ይችላል 3.የመጀመሪያ ደረጃ ትምህርት ቤት 4.ጀኒየር ወይም ከፍተኛ ሁለተኛ ደረጃ 5.ከፍተኛ ትምህርት ተምሯል	
107	የእናቶች የስራ ሁኔታ	1.ገበሬ 2.የመንግስት ሰራተኛ 3.ተማሪ 4.የቤት ሙከት 5.ሥራ የሌለው(ጥገኛ) 6.ራስን ተቀጣሪ 7.ሌላ (ይግለጹ)	
108	የቤተሰብዎ ወርሃዊ ገቢ በብር ስንት ነው?	1._____ ብር በወር (የተጠያቂው ግምት) 2.ምላሽ የለም	
109	ስንት ህያው ልደቶች አሉሽ?	ቁጥሩን ያስገቡ _____	
110	የቤተሰብ ብዛት	ቁጥሩን ያስገቡ _____	

ክፍል II: ከመሀፀን ባህሪያት ጋር የተያያዘ ጥያቄ

No.	ጥያቄዎች	የምላሽ ምድቦች	ወደ /ይሂዱ
201	እርግዝና ታሪክ	1.አንድ 2.2-4 3. ከ 5 በላይ	
202	ፖሪቲ	1.ኑሊፖሩስ 2.ፕሪሚፖሩስ 3.ሜላቲፖራ 4.ግራጎ ድፖራ	
203	የእርግዝና ሁኔታ	1.እቅድ 2. ያልታወቀ	
204	ፅንሰ አስወርዶ አያታወቁም	1.አዎ 2.አይ	
205	የኤኤንሲ ታሪክ	1.1ኛ 2.2ኛ 3.3ኛ 4.4ኛ እና ተጨማሪ	
206	የመጠለጃ ቦታ	1. ጠፍ ጣቢያ 2.ሆስፒታል 3.የጠፍ ፖስት 4.ቤት	
207	የመጠለጃ ዘዴ	1.ኤስቪዲ 2.መካሪያ 3.ሲ. ኤስ	
208	ቢያንስ አንድ የአደጋ ምልክት አጋጥሞታል?	1.አዎ 2.አይደለም	

ክፍል III: ከጠፍ ስርዓት ጋር የተያያዙ ባህሪያት

No.	ጥያቄዎች	የምላሽ ምድቦች	ወደ /ይሂዱ
01	ወደ ጠፍ ተቋም ለመድረስ ርቀት	1.ከ 30 ደቂቃ ያነሰ 2.የበለጠ 30 ደቂቃ	
02	በመሀበረሰብ ቤዝ ኢንሹራንስ (CBHI) እቅድ ተመዝግበዋል?	1.አዎ 2.አይደለም	
03	እርስዎ የታወቁ ሞያል ቤተሰብ ነዎት?	1.አዎ 2.አይደለም	
04	በእርስዎ ቀበሌ ውስጥ UHEWS አሉ?	1.አዎ 2.አይደለም	

ኩታኦ IV: ዶሜ ኤምኤችኤል (MHL): .

4.1. የእናቶች ጤና እወቀት

ተ/ቁ	ጥያቄዎች	የሚፈለግ ደረጃ	ዝላል/አስቸኳይ
01	በእርግዝና ወቅት ስለ ተፈጥሯዊ አካላዊ ለውጦች ያወቃሉ?	1.አዎ 2.አይደለም	
02	በእርግዝና ወቅት የተፈጥሮ ሥነ ልቦናዊ ለውጦችን ተረድተዋል?	1.አዎ 2.አይደለም	
03	በእርግዝና ወቅት ስለ ትክክለኛ አመጋገብ ያወቃሉ?	1.አዎ 2.አይደለም	
04	የግል ንፅህናን እንዴት እንደሚጠበቁ ያወቃሉ?	1.አዎ 2.አይደለም	
05	በእርግዝና ወቅት ትክክለኛ የአካል ብቃት እንቅስቃሴ ስለሚሰፍን ያወቃሉ?	1.አዎ 2.አይደለም	
06	ስለ እርግዝና ተጨማሪዎች (ፎሊክ አሲድ ማሽኑ) ያወቃሉ?	1.አዎ 2.አይደለም	
07	ለእርግዝና ምርመራዎች ተገቢውን የማጥቀሻ ጊዜ ያወቃሉ?	1.አዎ 2.አይደለም	
08	በእርግዝና ወቅት የእናቶች እና የፅንሰ ጤና የምርመራ ምርመራ (አልትራሳውንድ እና ምርመራዎች) መረዳትን ያወቃሉ?	1.አዎ 2.አይደለም	
09	በእርግዝና ወቅት ተቀባይነት ያለው እና መደበኛ የሰውነት ክብደት መጨመር አስፈላጊ ስለሚሆኑ ያወቃሉ?	1.አዎ 2.አይደለም	
10	ቢያንስ አንድ የተለመደ የእርግዝና ችግር እንደ ማቆላሸላሸ, ማስታወክ, የታችኛው ጀርባ ህመም ያወቃሉ	1.አዎ 2.አይደለም	
11	በእርግዝና ወቅት ደህንነቱ የተጠበቀ (የተፈቀዱ) ክትባቶችን ስለመግባት ያወቃሉ?	1.አዎ 2.አይደለም	
12	በእርግዝና ወቅት ስለ ትክክለኛው የግብረ ሥጋ ግንኙነት ያወቃሉ?	1.አዎ 2.አይደለም	
13	ስለ መደበኛው የፅንሰ እንቅስቃሴዎች ቁጥር ያወቃሉ?	1.አዎ 2.አይደለም	
14	እንደ ሜኔጅ፣ ከመጠን በላይ አልኮል ማጠጣት፣ መድኃኒቶች፣ ኬሚካሎች... ያሉ የፅንሰ ጤና ላይ ተጽዕኖ ስለሚሰጥ ያወቃሉ?	1.አዎ 2.አይደለም	
15	በእርግዝና ወቅት ስለ አደገኛ ምልክቶች ያወቃሉ?	1.አዎ 2.አይደለም	
16	ስለ እርግዝና በሽታ ምልክቶች እንደ	1.አዎ	

	እርግዝና የስኳር በሽታ, በእርግዝና ወቅት የደም ግፊት መጨመር እና ሌሎች በሽታዎችን ያወቃሉ?	2.አይደለም	
17	ስለ ልጅ መውለድ የእያንዳንዳቸው የተፈጥሮ አሰጣጥ ዘዴዎች እና ቄሳሪያን ክፍል እና የእነሱ ተያያዥ እንክብካቤ ጥቅሞች እና ጉዳቶች ታወቃለህሽ?	1.አዎ 2.አይደለም	
18	በድህረ ወሊድ ጊዜ ውስጥ ስለ አራስ እና ህፃናት እንክብካቤ ያወቃሉ?	1.አዎ 2.አይደለም	
19	ስለሚያስፈልገው ቁጥር እና የድህረ ወሊድ ጉብኝት ጊዜ ታወቃለህሽ?	1.አዎ 2.አይደለም	

4.2. የእናቶች ጤና መረጃ ፍለጋ (መጻረሻ)

No.	Questions	Response categories	Go to/Remarks
01	በእርግዝና ወቅት በቂ የእናቶች ጤና መረጃ አለት?	1.መጽሕፍት 2.የትምህርት መስተወዳደሮች 3. ፋምባሌቶች 4.የሕክምና ብሮሹሮች	
02	በእናቶች ጤና ላይ በጣም የተለመደው የእውቀት ምን ጭማን ነው?	1.ሬዲዮ እና ቲቪ 2.የጤና ባለሙያዎች 3.ዘመድ ወይም ጓደኛ 4.ኢንተርኔት 5.ሌላ 6.የለም	

4.3. የእናቶች ጤና መረጃ ግምገማ (መረዳት).

ተ/ቁ	ጥያቄዎች	የመልሱ ደረጃ	ዝለል/አስብ
01	ከእርግዝና ጋር የተያያዙ የመረጃ ምንጮችን እንደ መጽሐፍቶች, ትምህርታዊ ቡክሌቶች ለማንበብ እና ለመናገር ቀላል ነው	1.አዎ 2.አይደለም	
02	ከእርግዝና ጋር የተያያዙ የመረጃ ምንጮችን እንደ መጽሐፍቶች, ትምህርታዊ ቡክሌቶች ለማንበብ እና ለመናገር ቀላል ነው	1.አዎ 2.አይደለም	

03	ትክክለኛውን መረጃ ለማግኘት ከታማኝ እና ከተረጋገጡ ምንጮች ጋር ትተዋወቃለህ	1.አዎ 2.አይደለም	
04	መረጃው አስተማማኝ መሆኑን ለመረጋገጥ ሐኪሙ ወይም አዋላጁን ትጠይቃለህ?	1.አዎ 2.አይደለም	
05	ከመከላከያ ላይ ምንጮች የተገኙ ከእርግዝና ጋር የተያያዙ መረጃዎችን ትክክለኛነት እየገመገመህ ወ?	1.አዎ 2.አይደለም	
06	ከጓደኞች እና ከዘመዶች የተገኘውን ከእርግዝና ጋር የተያያዙ መረጃዎችን ትክክለኛነት ይገመገማሉ?	1.አዎ 2.አይደለም	

4.4. የእናቶች ጤና ውሳኔ አሰጣጥ ደረጃ (የጤና ውሳኔ አሰጣጥ ኃይል እና በእርግዝና ወቅት አተገባበር)

ተ/ቁ	ጥያቄዎች	የመልሱ ደረጃ	ዝላል/አስብ
01	በእርግዝና ወቅት አካላዊ እና ሥነ ልቦናዊ ለውጦችን የመቆጣጠር እና የመቆጣጠር ችሎታ አለዎት?	1.አዎ 2.አይደለም	
02	ለእርግዝና ትክክለኛ አመጋገብ ይተገብራሉ?	1.አዎ 2.አይደለም	
03	በእርግዝና ወቅት ለግል ንፅህና አስፈላጊ እርምጃዎችን ይተገብራሉ?	1.አዎ 2.አይደለም	
04	በእርግዝና ወቅት የእንቅስቃሴ እና ትክክለኛ ሁኔታ መርሆዎችን ታከብራለህ?	1.አዎ 2.አይደለም	
05	በዶክተር ወይም በአዋላጅ መመሪያ መሰረት የእርግዝና ተጨማሪ መድሃኒቶችን ትወስዳለህ?	1.አዎ 2.አይደለም	

06	በእርግዝና ወቅት ማንኛውንም ዓይነት መድሃኒት ለመውሰድ ከሐኪሙ ወይም ከአዋላጅ ጋር ያማክራሉ?	1.አዎ 2.አይደለም	
07	ለቅድመ ወሊድ እንክብካቤ (ምርመራዎች) በታቀደው መረሃ ግብር ውስጥ ይሳተፋሉ?	1.አዎ 2.አይደለም	
08	በእርግዝና ወቅት አልትራሳውንድ እና ምርመራዎችን እንደ ዶክተር ባሉ የጤ ባለሙያዎች የሚዘጋጁ ታደርጋለህ?	1.አዎ 2.አይደለም	
09	በእርግዝና ወቅት የክብደት መጨመርን ይከታተላሉ?	1.አዎ 2.አይደለም	
10	በእርግዝና ወቅት ጎጂ ልማዶችን ያስወግዳሉ?	1.አዎ 2.አይደለም	
11	በእርግዝና ወቅት አደገኛ ምልክቶች ሲታዩ በተቻለ ፍጥነት ዶክተርን ወይም አዋላጆችን ይመለከታሉ?	1.አዎ 2.አይደለም	
12	መረጃው እና ምክሮች በበቂ ሁኔታ ግልጽ ካልሆኑ ሐኪሙ ወይም አዋላጁን ለተጨማሪ ማብራሪያ ይጠይቃሉ?	1.አዎ 2.አይደለም	
13	ስለ እርግዝና ጉዳዮች ከተከረሙ ወይም ከአዋላጅ ጋር (የግል አስተያየቶችን በሚረብ) ውሳኔ ላይ ይሳተፋሉ?	1.አዎ 2.አይደለም	

Annex 3. Afaan Oromo version information sheet and consent format

YUUNIVARSIITII ARSII

KOLLEEJII SAAYINSII FAYYAA FI MEDIKAALAA

KUTAA NARSII DEESSISTOOTAA

Maqaan koo _____

Qorannoo Yuunivarsiitii Arsii, Kolleejjii Fayyaa fi Saayinsii Fayyaa, Kutaa Deessistootaatiin gaggeeffamaa jiru hojjechaa jira. Gaaffiiwwan muraasa bekkumsa fayyaa haadholii fi wantoota kanaan walqabatan dubartoota ulfaa wajjin walqabatan isin gaafachuun barbaada. Kaayyoon qorannoo kanaa dubartoota ulfaa Kibba Baha Itiyoophiyaa Magaalaa Asellaa keessatti beekkumsa fayyaa haadholii wajjin walqabatan adda baasuudha. Gaaffii kana irratti maqaan kee hin barreeffamu, odeeffannoo ati kennite kamiyyuu waliin walqabatees gonkumaa itti hin fayyadamu. Qo'annoo kanaaf Kan filatamte itti yaaddee osoo hin taane akka tasaa qofa waan ta'eef gaaffii deebisuuf yeroo muraasa yoo dabarsite Nan galateeffadha. Gaaffiiwwan kanaaf deebii sirrii kennitan argannoo fooyya'aa argachuuf nu gargaara. Qorannoon kanaaf deebii kennuudhaaf gargaarsa nuuf gootan baayyee dinqisiifanna. Gaaffii hin barbaanne kamiifuu deebii kennuu dhiisuuf mirga qabda. Itti fufuuf hayyama keessan argachuu dandeenyaa?

EEYYEE_____

LAKKI_____

Galatooma

Odeeffannoo Waliigalaa Guyyaa: -_____

Mallattoo walitti qabaa odeeffannoo: _____.

Kebele: - _____ Lakiesha mana _____, Deebii kennitoonni
koodii _____

1. Yeroo gaaffii fi deebii jalqabaa _____ 2. Yeroo xumura gaaffii fi
deebii _____

Kutaa I: Gaaffiiwwan amala Hawaas-dinagdee fi Dimoogiraafii deebii kennaa

No.	Questions	Response categories	
101	Umriin keessaan meeqa?	Waggadhaan _____.	
102	Sabummaan keessan maali?	1.Oromoo 2.Amaaraa 3.Gurage 4. .	
103	Amantaa	1.Ortodoksii 2.Muslim 3.Pirootestaantii 4.Kanneen biro	
104	Haala gaa'elaa	1. Hariiroo gaa'elaa keessa kan jirtu 2. Hariiroo gaa'elaa keessa kan hin jirre	
106	Sadarkaa barnootaa haadha	1. Dubbisuu fi barreessuun hin danda'amu 2. Dubbisuu fi barreessuu ni danda'a 3. Mana barumsaa sadarkaa tokkoffaa 3. Mana barumsaa sadarkaa lammaffaa ykn sadarkaa olaanaa 5. Barnoota olaanaa qaba	
107	Haala Hojii Haadholii	1.Qonnaan bulaa 2.Hojjetaa Mootummaa 3.Barataa 4.Haadha manaa manaa 5.Hojii hin qabne(hirkataa). 6.Of Hojjechiisuu 7.Kanneen biroo (ibsi).	
108	Galiin maatiin keessan ji 'aa birriin maali	1. _____birrii ji'atti (imam deebii kennaa). 2.Deebiin hin jiru	
109	Daa'imman lubbuun jiran meeqa dhalattee?	Lakkoofsa _____ galchi.	
110	Baay'ina maatii	Lakkoofsa _____ galchi.	

Kutaa II: Gaaffii amala Da'umsaa wajjin walqabatu

No.	Gaafilee	Gulantaa deebii	Gara/yaada
201	Sadarkaa ulfaa	1.tokko 2.2-4 3.5 ol ta'e	
202	Paariitii	1.Nulliparus 2.primiparus 3.multiparus 4.grandmultiparus	
203	Haala ulfaa	1.kan karoorfame 2.karoora malee	
204	Seenaa ANC	1.1ffaa 2.2ffaa 3.3ffaa 4.4ffaa fi isaa ol	
205	Yoo xiqqaate mallattoo balaa tokko isa mudate	1.eeyyee 2.lakk	

Kutaa III: Amaloota sirna fayyaa waliin walqabatan

No.	Gaafilee	Response categories	Go to/Remarks
01	Fageenya dhaabbata fayyaa dhaqqabuuf	1.daqqiqa 30 gadi 2.daqqiqa 30 ol	
02	Iskimmii inshuraansii bu'uura Hawaasaa (CBHI) keessatti galmaa'aa jirtuu?	1.eeyyee 2.lakk	
03	Maatii fakkeenya beekamtii qabduu?	1.eeyyee 2.lakk	
04	Ganda kee keessa UHEWS ni jiraa?	1.eeyyee 2.lakk	

Kutaa IV: Domeenii MHL:

4.1. Beekumsa fayyaa haadholii

No.	Gaaffilee	Gosoota deebii kennuu	Utali/yaali
01	Waa'ee jijjiirama qaamaa uumamaa	1.yes	

	yeroo ulfaa ni beektu?	2.no	
02	Jijjiirama xiinsammuu uumamaa yeroo ulfaa ni hubattaa	1.yes 2.no	
03	Waa'ee yeroo ulfaa nyaata sirrii beekuu beektu?	1.yes 2.no	
04	Waa'ee qulqullina dhuunfaa akkamitti akka eegdan beektu	1.yes 2.no	
05	Yeroo ulfaa sochii qaamaa sirnaan gochuun barbaachisaa ta'uu beektaa?	1.yes 2.no	
06	Waa'ee dabalata ulfaa (Folic acid supplementation) beektu.	1.yes 2.no	
07	Waa'ee yeroo rifaralaa sirrii ta'e qorannoo ulfaaf ta'u beektaa?	1.yes 2.no	
08	Qormaata adda baasuu (ultrasound fi tests) fayyaa haadha fi daa'ima yeroo ulfaa hubachuu ni beektu	1.yes 2.no	
09	Barbaachisummaa yeroo ulfaa ulfaatina qaamaa fudhatama qabuu fi idilee ta'e eeguu ni beektu	1.yes 2.no	
10	Yoo xiqqaate rakkoo ulfaa beekamaa tokko kan akka garaa kaasaa, garaa kaasaa, dhukkubbii dugdaa gadii beektu?	1.yes 2.no	
11	Waa'ee talaallii nageenya qabu (hayyamame) yeroo ulfaa lilmoodhaan naqachuu beektaa?	1.yes 2.no	
12	Waa'ee walqunnamtii saalaa sirrii yeroo ulfaa beektuu	1.yes 2.no	
13	Waa'ee baay'ina sochii daa'ima idilee beektaa	1.yes 2.no	
14	Waa'ee wantoota fayyaa daa'ima gadameessaa irratti dhiibbaa geessisan kanneen akka tamboo xuuxuu, alkoolii garmalee dhuguu, qoricha, keemikaalota... beektu?	1.yes 2.no	
15	Waa'ee mallattoo balaa yeroo ulfaa ni beektaa	1.yes 2.no	
16	Mallattoolee dhukkuba ulfaa kanneen akka dhukkuba sukkaaraa ulfaa, dhiibbaa dhiigaa yeroo ulfaa, fi dhukkuboota biroo ni beektu	1.yes 2.no	
17	Waa'ee da'umsaa kan akka faayidaa fi miidhaa tokkoon tokkoon mala da'umsaa uumamaa fi kutaa baqaqsanii hodhuu fi kunuunsa isaan waliin walqabatu ni beektu	1.yes 2.no	

18	Waa'ee kunuunsa daa'immanii fi daa'immanii yeroo dahumsa boodaa ni beektu	1.yes 2.no	
19	Waa'ee baay'ina fi yeroo daawwannaa dahumsa boodaa barbaachisu ni beektu	1.yes 2.no	

4.2. Barbaacha odeeffannoo fayyaa haadholii (Access).

No.	Questions	Response categories	Go to/Remarks
01	Yeroo ulfaa odeeffannoo fayyaa haadholii gahaa argachuu dandeessaa?	1.kitaabota 2.yaadannoo barnootaa 3.phamplets jedhamuun beekama 4.birooshura yaalaa	
02	Maddi beekumsa fayyaa haadholii irratti beektu eenyu?	1.raadiyoo fi TV 2.ogeessota fayyaa 3.fira ykn hiriyyaa 4.interneetii 5.kan biroo 6.tokkollee hin jiru	

4.3. Madaallii odeeffannoo fayyaa haadholii (Hubannoo).

No.	Questions	Response categories	Go to/Remarks
01	Maddoota odeeffannoo ulfaa wajjin walqabatan kan akka kitaabota, kitaabota barnootaa salphaatti dubbisuu fi sagaleessuun ni danda'amaa	1.eeyyee 2.lakk	
02	Odeeffannoo maddoota adda addaa irraa argaman hubachaa jirtuu	1.eeyyee 2.lakk	
03	Odeeffannoo sirrii argachuuf maddoota amanamoo fi mirkanaa'an waliin wal baruu?	1.eeyyee 2.lakk	
04	Odeeffannoon amanamaa ta'uu isaa mirkaneeffachuuf doktora ykn deessiftuu gaafachaa jirtaa	1.eeyyee 2.lakk	
05	Odeeffannoowwan ulfaa wajjin walqabatan maddoota toora interneetii irraa argaman sirrii ta'uu isaanii madaaltuu	1.eeyyee 2.lakk	
06	Odeeffannoowwan ulfaa wajjin walqabatan hiriyootaafi firoota irraa argaman sirrii ta'uu isaanii madaaltuu	1.eeyyee 2.lakk	

4.4. Sadarkaa murtee fayyaa haadholii (Health decision making power and application during pregnancy).

No.	Gaaffilee	Gosootaa deebii	Utali /yaada
01	Jijjiirama qaamaa fi xiinsammuu ulfa keessatti dhufu to'achuu fi to'achuuf dandeettii qabdaa	1.eeyyee 2.lakk	
02	Ulfaaf nyaata sirrii ta'e hojiirra oolchitaa	1.eeyyee 2.lakk	
03	Yeroo ulfaa qulqullina dhuunfaaf tarkaanfiiwwan barbaachisoo ta'an hojiirra ni oolchitaa	1.eeyyee 2.lakk	
04	Yeroo ulfaa seera bu'uura sochii fi haala sirrii ta'e ni kabajtaa	1.eeyyee 2.lakk	
05	Dabalata ulfaa akka qajeelfama hakiima ykn deessiftuun fudhattuu	1.eeyyee 2.lakk	
06	Yeroo ulfaa qoricha gosa kamiyyuu fudhachuuf hakiima ykn deessiftuu mariisiftaa	1.eeyyee 2.lakk	
07	Kunuunsaa dahumsa duraa (qormaata) akka sagantaa qabameetti ni argamtuu	1.eeyyee 2.lakk	
08	Ulfa keessatti altiraasaawundii fi qorannoo ogeeyyiin fayyaa kan akka doktora gorsan ni raawwattu	1.eeyyee 2.lakk	
09	Yeroo ulfaa ulfaatina qaamaa dabaluu hordoftuu	1.eeyyee 2.lakk	
10	Yeroo ulfaa gochaalee miidhaa geessisan irraa fagaattaa	1.eeyyee 2.lakk	
11	Yeroo ulfaa mallattoon balaa kamiyyuu yeroo mul'ate daftee doktora ykn deessiftuu ni argitaa	1.eeyyee 2.lakk	
12	Odeeffannoo fi gorsi gahaan ifa hin taane yoo ta'e hakiima ykn deessiftuu ibsa dabalataa ni gaafatta	1.eeyyee 2.lakk	
13	Dhimma ulfaa irratti murtoo doktora ykn deessiftuu waliin kennuu irratti ni hirmaattaa (yaada dhuunfaa kennuu).	1.eeyyee 2.lakk	

Declaration of Investigator

I, the undersigned student of Maternity and Reproductive Health Nursing, declare that this thesis work is my original work in partial in partial fulfillment of the requirements for a master of science degree in maternity and reproductive health nursing to my knowledge.

Name of investigator: _____

Signature: _____ Date_____

Declaration of Advisors

We, the undersigned Advisors, declare that this thesis is our original work in partial in partial fulfillment of the requirements for a master of science degree in maternity and reproductive health nursing for the stated student above to our best knowledge. We confirmed that this thesis is ready for examination with our approval as the university advisors.

Name of primary Advisors:	Signatures	Date
_____	_____	_____

Name of secondary Advisors:	Signatures	Date
_____	_____	_____

Department Head:	Signatures	Date
_____	_____	_____

Name of secondary Advisors:	Signatures	Date
_____	_____	_____