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St. Paul's Hospital Millennium Medical College

GRADUATE STUDY PROGRAM

SCHOOL OF PUBLIC HEALTH

UTILIZATION OF PRECONCEPTION CARE AND ITS ASSOCIATED
FACTORS AMONG MOTHERS IN BAHIR DAR CITY, NORTHWEST
ETHIOPIA, 2023

BY: MIHRETU JEGNIE (BSC, IN PUBLIC HEALTH OFFICER)

A THESIS REPORT SUBMITTED TO THE DEPARTMENT OF
EPIDEMIOLOGY, ST. PAUL'S HOSPITAL MILLENNIUM MEDICAL
COLLEGE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF PUBLIC HEALTH IN EPIDEMIOLOGY

DECEMBER, 2023

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Abbreviations and acronyms

ANC: Ante-natal Care

AOR: Adjusted Odds Ratio

CI: Confidence Interval

COR: Crude Odds Ratio

HIV: Human Immunodeficiency Virus

PIH: Pregnancy Induced Hypertension

PNC: Post-natal Care

SPSS: Statistical Package for Social Sciences

STI: Sexually Transmitted Disease

UNICEF: United National International Children's Emergency Fund

WHO: World Health Organization

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Abstract

Introduction: Maternal and child morbidity and mortality continue to be major public health problems worldwide, especially in developing countries. In Ethiopia, though progresses have been observed, maternal and neonatal mortality is one of the highest in Africa. Although preconception care has numerous benefits for enhancing maternal and infant health outcomes, evidences showed that its utilization among women of reproductive age in Ethiopia is low and inconsistent.

Objective: To assess preconception care utilization level and associated factors among mothers who had given birth within the last 12 months in Bahir Dar City, Northwest Ethiopia.

Methods: A community-based cross-sectional study was conducted among women who had given birth within the last 12 months (May 1, 2022 to April 30, 2023) in Bahir Dar City. A multistage sampling technique was employed to select a total of 504 mothers. Face-to-face interviews were used to gather data, and a pre-tested, structured questionnaire was used. Data were entered into Epi Info version 7.2.4 and exported to Statistical Software Package for Social Sciences version 26 for analysis. Binary logistic regression was applied to identify the factors associated with the dependent variable. A variable was regarded as statistically significant if its adjusted odds ratio and 95% confidence interval had a p-value of less than 0.05.

Result: A total of 119 (24.1%) mothers utilized preconception care for their last pregnancy out of the 494 recently (in the last 12 months) delivered mothers interviewed. Mothers' educational level of secondary school (AOR=4.74; 95% CI: 1.43, 15.75) and diploma or above (AOR=4.51; 95% CI: 1.43, 14.22), household monthly income (AOR=4.66; 95% CI: 1.81, 11.99), prior ANC follow-up (AOR=5.01; 95% CI: 1.23, 20.44), previous adverse pregnancy outcome (AOR=2.81; 95% CI: 1.28, 6.18), husband support (AOR=5.46; 95% CI: 2.85, 10.49), knowledge about preconception care (AOR=2.88; 95% CI: 1.44, 5.78), adequate medication availability (AOR=3.85; 95% CI: 1.33, 11.08) and chronic health problems (AOR=6.03; 95% CI: 2.25, 16.19) showed statistically significant association with utilization of preconception care.

Conclusion: This study revealed that the level of preconception care utilization among women in the study area is low. There is a need to expand health education, establish separate

preconception care units, and develop a preconception care guideline to increase its uptake and ultimately improve pregnancy outcomes.

1. Introduction

1.1. Background

Preconception care is a critical component of health and includes the provision of biomedical, behavioral, and social health interventions to women of reproductive age and couples before conception (1–3). The World Health Organization (WHO) developed promotive, preventive, and curative intervention packages for preconception care. Family planning, micronutrient supplementation, food fortification, nutrition education, tobacco cessation, reducing harmful environmental exposures, and improving sexual health and behavior are among the basic packages. The expanded package includes mental health problems, intimate partner and sexual violence, alcohol and drug use, and non-population-specific genetic diseases (1). Packages of care for the prevention of teenage pregnancy, multifaceted youth development initiatives, and domestic abuse prevention were also suggested through systematic reviews and evidence synthesis (2).

Four out of ten women worldwide claim that their pregnancies were unintentional. As a result, 40% of pregnancies miss the essential health interventions required prior to pregnancy (4). Despite significant improvements in maternal health in the twenty-first century, far too many women continue to die or suffer from severe pregnancy complications every year. Worldwide, in 2017, nearly 295, 000 women died during and following pregnancy and childbirth. The maternal mortality ratio in the least developed countries is more than 40 times higher than in Europe (5). In 2020, 2.7 million children under the age of five died worldwide, with neonates accounting for 47% of those deaths (6). Nearly 30% of the under-five-year-old children's deaths were in the African region. In Ethiopia, the maternal mortality ratio is estimated to be 353 per 100,000 live births, and the infant mortality rate is 43 per 1,000 live births in 2019. Despite the substantial effort to improve newborn and neonatal health, Ethiopia still has one of the highest rates of neonatal deaths compared to other developing countries (24 neonatal deaths per 1,000 live births) (7).

Preconception care closes the gap in the continuum of care and addresses pre-pregnancy health risks and health problems that could have undesirable maternal and fetal outcomes (3). It provides a full range of effective interventions, focused primarily on the health of women of

reproductive age and their partners, prior to or between pregnancies, that promote the opportunity for safe motherhood and the birth of a healthy infant with the expectation of healthy longevity (8).

Evidence strongly suggests that earlier care before pregnancy leads to improved women's health and a better pregnancy outcome for both the mother and the newborn. Therefore, preconception care is any intervention given to women and couples of reproductive age prior to conception to enhance the health of pregnant women, newborns, and children (9). In recent community-based studies, the proportion of mothers who had used preconception care for their most recent pregnancy was 18.2% in Mekele city (10), 13.4% in Debre Birhan town (11), and 14.5% in West Shewa (12), suggesting lower levels of preconception care utilization. The main aim of this study is to assess the level of preconception care utilization and its associated factors among mothers who gave birth in the last 12 months in Bahi Dar City.

1.2. Statement of the problem

Worldwide, preconception care is not yet practiced routinely, mainly in developing countries. On the other hand, the highest maternal, newborn, and child death burdens are seen in these countries. About 77% of maternal, newborn, child, and stillbirth deaths could be averted by delivering vital preventive, promotive, and curative care in a community, health center, and hospital setting (13). Since preconception care is recognized as a critical component of health care for women of reproductive age, increasing its access and quality can reduce the risk of maternal and infant mortality and pregnancy-related complications. Implementing preconception care interventions has been shown to prevent or reduce the risk of preterm birth, low birth weight, congenital anomalies, maternal complications, neonatal complications, and intrauterine growth restriction. By optimizing health prior to pregnancy, preconception care reduces mortality and the risk of adverse health effects for the woman, fetus, and neonate (14).

If appropriate preconception care is given, the majority of pregnancy and delivery related adverse consequences could be avoided (15). For women of reproductive age who plan to be pregnant, taking iron supplements reduces their risk of anemia by 27%. In 72% of cases, prenatal folic acid supplementation prevents neural tube abnormalities, and in 68% of cases, it lowers the chance of recurrence. Prenatal multivitamin supplementation lowers preeclampsia by 27% and congenital abnormalities by 42%–62%. Preconception counseling regarding contraception lowers adolescent pregnancies by 37% and first-time pregnancies by 15% (16).

The level of preconception care utilization among women prior to their most recent pregnancy was 29.7% in Los Angeles (17) and 40% in China (18). In low-income countries, preconception care has not been widely implemented because its aims and objectives are not widely understood and accepted (19). It was reported to be only 18.8% in Nigeria (20) and 14.6% in Kenya (21). In Ethiopia, prior research findings showed inconsistent levels of preconception care utilization as low as 6.3% in Manna district of Jimma Zone (22) and as high as 19% in Hossana town (23).

Prior evidence showed that advanced maternal age (34–49 years old) (11,24), married women (11,25), tertiary education (11,25,26), being formally employed (25), residing in an urban area (22), and higher family monthly income (12) were significant factors associated with better

preconception care utilization. Furthermore, multigravidity (25), multiparity (24), prior experience with adverse pregnancy outcomes (17,25,26), intended pregnancy (24–27), having enough information about preconception care (25), having good knowledge of preconception care services (11,12,22,26,28), having an available unit for preconception care (11,28), having a history of post-natal care (PNC) (12), and being on follow-up for pre-existing medical illnesses (22) were significant factors associated with better preconception care utilization.

In the critical period of organ development, antenatal care is too late to prevent the negative impact that a woman's (and her partner's) health risks or health issues may have on the fetus. The continuum is completed by preconception care, which guarantees continual health monitoring and early intervention to ensure that women start pregnancies in the best possible health (29). Despite the substantial pre-pregnancy risk factors, women's and their partners' intentions to undertake preconception care are still insufficient in low-income countries (30). Preconception care services are not offered in Ethiopia in a separate unit in a regular manner, as per the standard. The service is instead offered in chronic disease follow-up clinics, mother and child health care units, and other facilities without integration (31,32).

Despite the fact that preconception care is essential for improving the health of both the mother and the unborn child, prior studies showed that the utilization of preconception care among women of reproductive age in Ethiopia is low and inconsistent (22–24,26). Identifying factors that hinder the utilization of preconception care is crucial to designing an effective implementation strategy that scales up its utilization in the years to come. Thus, the current study is aimed at assessing the level of preconception care utilization and its associated factors among delivered women in Bahir Dar City.

1.3. Significance of the study

The findings of this study will assist health planners, decision-makers, policymakers and other stakeholders in developing interventions and policies that will enhance women's uptake of preconception care, ultimately improving maternal and child health.

The findings of this study will also serve as a reference and a manual for future research on preconception care practices and the factors that influence them.

2. Literature review

2.1. Magnitude of preconception care utilization

Globally, less than one-third of women of reproductive age visit a health facility to consult a health care professional and check their health status before becoming pregnant (1). The utilization of preconception care varied widely among different ethnicities and cultural backgrounds, with some groups being less likely to access preconception care services.

The level of preconception care utilization by women prior to their current pregnancy was reported to be 42% in China (33) and 29.7% in Los Angeles (17). However, a much lower level of preconception care utilization was reported in studies conducted in developing countries, such as in Ghana (15%) (34) and Brazil (15.9%) (35). Preconception care utilization in other developing countries such as Kenya (25) and Nigeria (27) was 25.8% and 23.4%, respectively, indicating that the service uptake among reproductive-age women is low.

Community-based cross-sectional studies carried out in Ethiopia revealed a very low level of preconception care use among pregnant women in Manna district (6.3%) (22) and Adet town (9.6%) (24). Preconception care was used by 18.2% of reproductive-aged women in Mekele city (10), 28.6% in Mizan-Aman town (26), and 19% in Hosanna town (23). A similar study carried out among reproductive-age women in Debre Birhan town showed preconception care utilization to be 13.4% (11). Another community-based cross-sectional study conducted in the West Shewa Zone revealed that only 14.5% of the reproductive-age women who participated in the survey had utilized preconception care (12). A similar community-based cross-sectional study undertaken in Debre Tabor town showed that 15.8% of women had a good level of practice on preconception care utilization (36).

2.2. Factors associated with utilization of preconception care

Socio-demographic and socio-economic factors

Women who attended tertiary education were more likely to practice preconception care, according to a hospital-based cross-sectional study done in Kenya (25). Similarly, women's educational status was significantly associated with preconception care utilization, according to studies done in Mizan-Aman (26), Debre Birhan (11), Adet (24) and Manna District (22).

Married women utilized preconception care better than unmarried and widowed women, according to the studies done in Kenya (25) and Debre Birhan Town (11).

In a study carried out in the West Shoa zone, family monthly income was significantly associated with preconception care utilization (12). Compared to women whose husbands were farmers, those whose husbands were merchants were 23% more likely to receive preconception care (37). Women whose husbands had completed primary and secondary school were 33% and 20% less likely, respectively, to practice preconception care than women whose husbands had not attended formal education (37).

Contradictory findings were noted between studies on some of the socio-demographic factors associated with preconception care utilization. Younger women were more likely to use preconception care in a Shanghai, China study (33), whereas studies in Ethiopia (11,24,36), Nigeria (20), and Kenya (25) found that younger women were less likely to use the service. Unemployed women had utilized preconception care more likely than employed mothers in a study done in southeast Nigeria (27). Conversely, formally employed women were more likely to utilize preconception care than unemployed mothers, according to a study done in Kenya (25).

Knowledge-related factors

Mothers' knowledge of preconception care was found to be significantly associated with preconception care utilization in several studies (10–12,22,23,26,28,36). In a study done in Debre Tabor, mothers who had a good level of preconception care knowledge were nearly four times as likely to utilize preconception care as their counterparts (36). Similarly, in another study carried out in the West Shewa Zone, mothers' knowledge of preconception care had a positive association with preconception care utilization (12). Mothers who were knowledgeable about preconception care were six times more likely to practice preconception care than those who were not, according to a study done in Debre Birhan town (11).

Obstetric and reproductive factors

According to a study conducted in southeast Nigeria (27), primiparous women were more likely to use preconception care. However, it was reported that multiparous women are more likely to utilize preconception care than primiparous women in a study done in Adet, Northwestern Ethiopia (24). According to a Chinese study (33), women who had an unplanned pregnancy were

less likely to use preconception care. Previous histories of adverse pregnancy or birth outcomes were associated with better utilization of preconception care (10,23,26,36). Factors such as history of institutional delivery, family planning use, and PNC service utilization before the current pregnancy were associated with better uptake of preconception care (12,23). A community-based cross-sectional study conducted in Debre Tabor town indicated that mothers who had ANC attendance for their previous pregnancy were nine times more likely to practice preconception care (36). When compared to women who did not have their husband's support, mothers who had it were about 14 times more likely to use preconception care (10).

Health service-related characteristics

In studies conducted in Northern (10) and Southern Ethiopia (28), inaccessibility to a health facility was associated with lower utilization of preconception care. On the other hand, availability of units for preconception care was positively associated with utilization of preconception care (11,28).

Preexisting medical illnesses

Previous studies conducted in Debre Tabor (36), Southwest Ethiopia (22), and Northern Ethiopia (10) indicated that women with histories of chronic medical illness practiced preconception care better than those who did not. In a study conducted in Debre Tabor, women with chronic disease were seven times more likely than those without chronic disease to practice preconception care (36). Similarly, a study conducted in Mekele City revealed that women who were on follow-up for pre-existing medical illnesses were six times more likely to use preconception care (10).

2.3. Conceptual framework

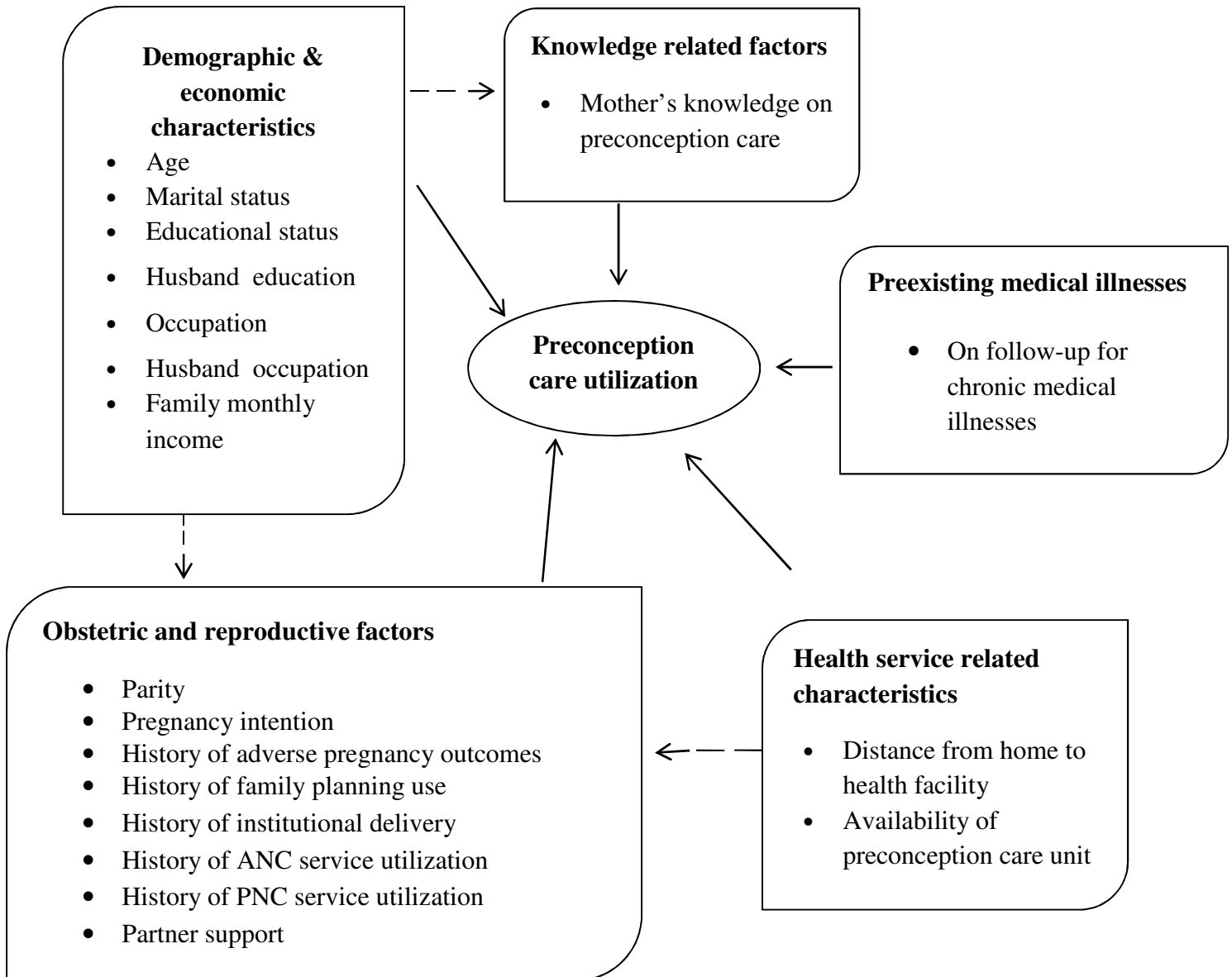


Figure 1: A conceptual framework that shows the relation between dependent and independent variables

Source: The conceptual framework was developed by reviewing various literatures (10–12,20,22–28,33,36)

Key: Broken lines indicate that only some of the grouped variables are related to the arrow directing while solid lines indicate a relation with the grouped variables.

3. Objective

3.1. General objective

To assess the magnitude of preconception care utilization and associated factors among mothers who gave birth in the last 12 months in Bahir Dar City, Northwest Ethiopia, 2023

3.2. Specific objectives

1. To determine the magnitude of preconception care utilization among women who gave birth in the last 12 months in Bahir Dar City, Northwest Ethiopia, 2023
2. To identify factors associated with utilization of preconception care among women who gave birth in the last 12 months in Bahir Dar City, Northwest Ethiopia, 2023

4. Methods

4.1. Study design and setting

A community-based cross-sectional study design was employed. The study was conducted in Bahir Dar City, the capital of Amhara National Regional State, located 565 kilometers to the northwest of Addis Ababa. The city has special zone status, with six sub-cities having district status. Based on the 2022 population projection conducted by the Ethiopian Statistical Service, the city has a total population of 349,995, of whom 174,424 are males and 175,571 are females (38). From the female population, around 66% were of reproductive age. The city has two public specialized referral hospitals, one public general hospital, two private hospitals, and ten health centers. The study data collection was conducted from May 1, 2023, to June 1, 2023.

4.2. Population and eligibility criteria

4.2.1. Source population

The source population were all delivered mothers living in Bahir Dar City.

4.2.2. Study population

The study population consisted of mothers who had delivered in the last 12 months (from May 1, 2022, to April 30, 2023) in selected kebeles of Tana, Dagmawi Minilik, and Facilo Sub-cities.

4.2.3. Inclusion and exclusion criteria

Inclusion criteria: Mothers who had delivered from May 1, 2022, to April 30, 2023 in Bahir Dar City.

Exclusion Criteria: Women who had lived in the city for less than six months as well as those who were seriously ill or incapable of providing the necessary information.

4.3. Sample size determination

For the first specific objective, sample size was determined by using the single population proportion formula, assuming a two-sided significance level of 1.96 at a 95% CI, a 5% margin of error, and an 18.2% preconception utilization proportion in a study done in Mekelle City (10).

$$n = \frac{Z^2 \alpha / 2 p (1-p)}{d^2}$$
 where, n= sample size, Z = 1.96, p = proportion, and d = precision (0.05)

Table 1: Sample size calculation for the dependent variable using STATCALC, Epi info version 7.2.4

Outcome	Preconception care utilization		
	Mekele (10)	Debre Tabor (36)	Debre Birhan (11)
Proportion	18.2%	15.8%	13.4%
Confidence Level	95%	95%	95%
Margin of error	5%	5%	5%
Sample size	229	204	178

For the second specific objective (factors associated with preconception care utilization), sample size was determined by using two population proportion formulas assuming 80% power, a 95% confidence level, and an odds ratio of 2.21 obtained from a study conducted in Mekelle (10).

Table 2: Sample size calculation for the independent variables using STATCALC, Epi info version 7.2.4

Factors	Mothers' knowledge on preconception care (10)	Having husband support	Having any chronic health problem
Confidence Level	95%	95%	95%
Power	80%	80%	80%
P2 (unexposed)	59.7%	53.5%	64.1%
P1 (Exposed)	11.6%	4.2%	14.8%
Sample size	38	44	88

A maximum sample size of 229 was obtained for the first specific objective. A design effect of 2 results in a sample size of 458. After adding 10% compensation for the non-response rate, the final sample size was 504.

4.4. Sampling technique

A multistage sampling technique was employed to select the study participants. In the first stage, three sub-cities were selected randomly by a lottery method from the six sub-cities of Bahir Dar. The selected sub-cities were: Tana, Dagmawi Minilik, and Facilo, each having five kebeles. In the second stage, nine kebeles were selected randomly by a lottery method from the selected three sub-cities. A list of mothers who gave birth in the last 12 months was found in the

respective kebele health post-registration book. At the third stage, a systematic random sampling technique was employed to select the study participants. The sample size for each kebele was computed as follows

$n_i = (N_i * n_0) / N$ where n_i is the number of women required in each kebele. N_i is the total number of women who delivered from May 1, 2022, to April 30, 2023, in each kebele; n_0 is the calculated sample size; and N is the total number of women who delivered from May 1, 2022, to April 30, 2023, in the selected nine kebeles. The sampling interval (K) was determined by dividing the population size, $N = 971$, by the required sample size, $n = 504$ ($k = 971/504 = 1.93 \sim 2$).

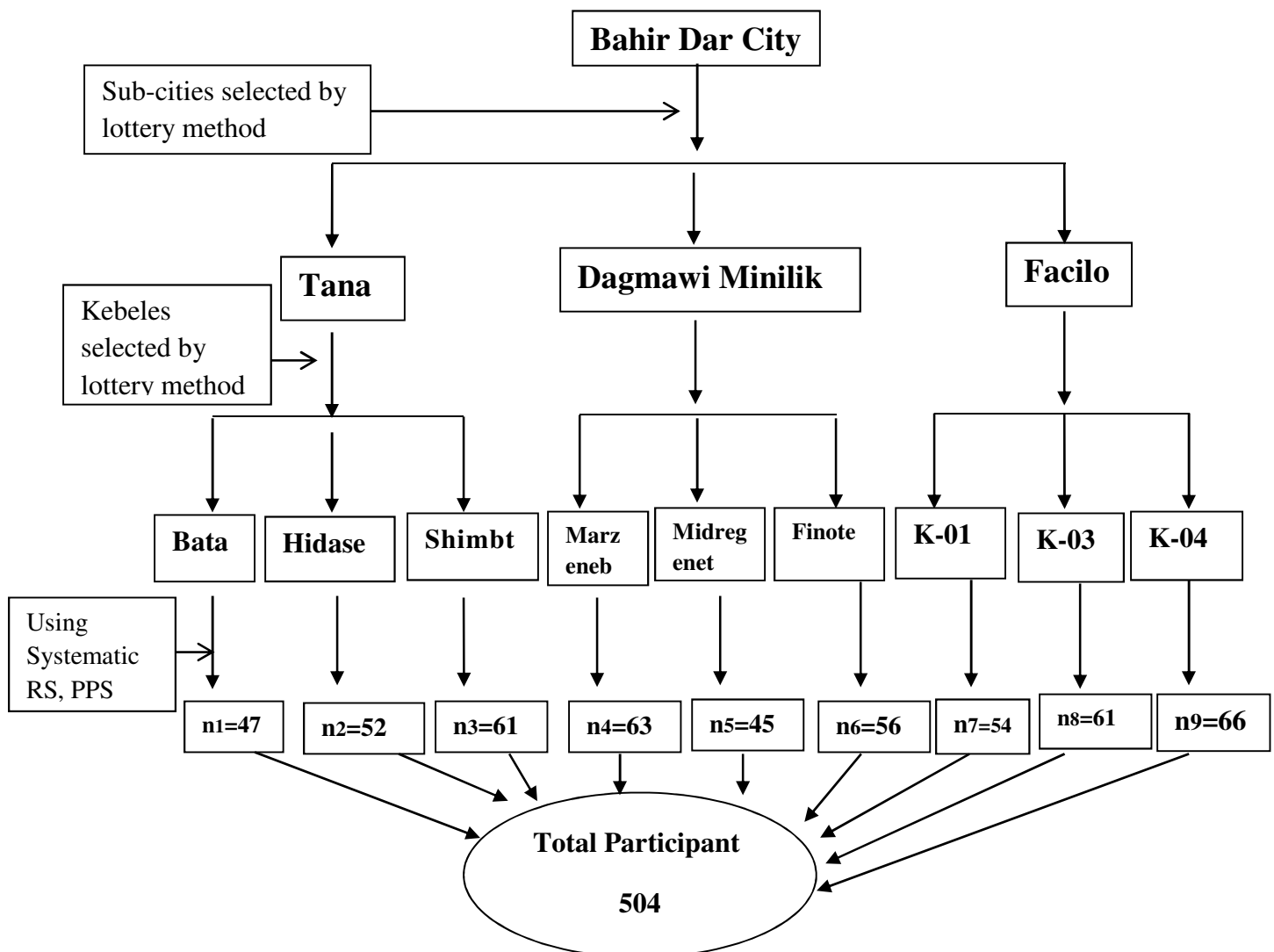


Figure 2: A diagram showing the sampling technique to select samples for the assessment of mothers' utilization of preconception care and associated factors in Bahir Dar City, Northwest Ethiopia, 2023

4.5. Study variables

Dependent variable: Preconception care utilization was the outcome variable. It was dichotomized as “Utilized” and “Not utilized”.

Independent variables:

- Socio-demographic and socio-economic characteristics: age, marital status, educational status, husband education, occupation, husband occupation, family monthly income
- Obstetric and reproductive health factors: parity, pregnancy intention, history of adverse pregnancy outcomes, history of family planning use, history of institutional delivery, history of ANC services utilization, history of PNC service utilization, partner support
- Health care system factors: distance from home to health facility, availability of preconception care unit
- Mothers' awareness and knowledge on preconception care
- Preexisting medical illnesses: Diabetes Miletus, Hypertension, PIH, Cardiac diseases, Asthma, Renal problem, Epilepsy

4.6. Operational definitions

Preconception care utilized: A woman was considered to have utilized preconception care if she received at least one of the following ten items from a preconception care intervention package in a health facility or community setting at least once before becoming pregnant: advice on cessation of alcohol use, advice on cessation of cigarette smoking, stop taking of illegal substances and drugs, advice to protect from environmental hazards, counseling on balanced diet, micronutrient supplementation (iron, folic acid), vaccination (hepatitis B, tetanus, and the measles, mumps, and rubella vaccines), screening and treatment of infectious disease (STI/HIV), screening and management of chronic disease (Diabetes Miletus, chronic hypertension, PIH, cardiac diseases, asthma, renal problems, epilepsy), and counseling on social and mental health concern (24).

Knowledge on preconception care: Women's knowledge of preconception care was determined based on the correct responses to ten preconception care knowledge-related questions. Using 50% as the cutoff point, women's knowledge was divided into adequate and inadequate (39).

Distance from home to health facility: It was measured by the time it takes for the mother to access a health facility from her home. If it takes less than or equal to 30 minutes to arrive at the health facility, it was labeled "accessible". If it takes more than 30 minutes to arrive at the health facility, it is labeled "inaccessible".

4.7. Data collection tools, methods and procedures

A pre-tested, structured interviewer-administered questionnaire was used to collect the data. The interview questionnaire was prepared by modifying previous related studies in the English version, which was translated to the local language, Amharic, and back to English for consistency by two different language experts who speak both English and Amharic fluently. The questionnaire has seven parts, i.e., socio-demographic and socio-economic characteristics, obstetric and reproductive health characteristics, mothers' awareness of preconception care, mothers' knowledge of preconception care, health service-related characteristics, pre-existing medical illnesses, and preconception care utilization. Nine data collectors (Diploma Nurses) and three supervisors (BSc Midwives) were recruited for the data collection and supervision, respectively. The data was collected on a house-to-house basis, and women selected for the interview were contacted with the guidance of local community workers.

4.8. Data quality control

A pre-test was conducted on ten percent of the sample in Gesh Abay sub-city, Bahir Dar. The questionnaire was checked by supervisors and the principal investigator, and it was restructured accordingly before the main data collection. A two-day training was given to the recruited supervisors and data collectors on the objectives and relevance of the study, data collection, and confidentiality of the information. Besides this, after data collection, the principal investigator checked the completeness of all questionnaires and consistency before the data entry. Data were coded and double-entered into Epi Info version 7.2.4 before being exported to Statistical Package for Social Sciences (SPSS) version 26 for processing and analysis. Frequent and timely supervision of data collectors was undertaken by the supervisors and principal investigator.

Appropriate measures and corrections were taken on time for completeness and accuracy at each site.

4.9. Data processing and analysis

After the completion of data collection, the data were coded and cleaned up manually. Then information from completed questionnaires was entered into computer software called Epi Info, version 7.2.4, and transferred to SPSS version 26 for analysis. Descriptive statistics were computed to determine the mean and standard deviation of age as well as the median and interquartile range of income. Frequencies and percentages were computed for the remaining variables.

Bivariable binary logistic regression analysis was first conducted to check for the presence of an association between the dependent and independent variables using a p value of 0.25 and a crude odds ratio with a 95% confidence interval. Then all independent variables that showed a significant association ($p < 0.25$) in the bivariable binary logistic regression were entered into the multivariable binary logistic regression analysis. The model's fitness was evaluated using the Hosmer and Lemeshow goodness-of-fit test, and it was fit with a p-value of 0.34. Using the variance inflation factor (VIF) multicollinearity was examined for interactions between independent variables. The VIF for each variable was less than 2. Tolerance was greater than 0.7 for all variables. An adjusted odds ratio (AOR) with a 95% confidence interval was generated for each variable by SPSS, and a p value of less than 0.05 was considered statistically significant in the multivariable logistic regression. The data was presented using tables, graphs, and charts.

4.10. Ethical consideration

Ethical clearance was obtained from the Institutional Review Board of St. Paul's Hospital, Millennium Medical College. The official letter was submitted to the Bahir Dar City Administration Health Department.

Informed consent was obtained from the respective mothers for their participation after the objective of the study was fully explained by the data collectors. Moreover, participants were

informed that they would be free to refuse to answer any question or stop the interview at any time. Any inconvenience to participants during data collection was minimized, and confidentiality was maintained at all levels.

5. Result

5.1. Socio-demographic characteristics

A total of four hundred and ninety-four mothers were interviewed, making the response rate 98%. The median age of the mothers was 30 years, ranging from 19 to 48 years. Majority 261 (57%) of the study participants were educated to the level of a high school or higher. Most of the mothers 459 (92.9%) were married. The median ($\pm$ IQR) of household monthly income was 8000 $\pm$ (7000) ETB. The majority 204 (41.3%) of the mothers were housewives by occupation (Table 3).

Table 3: Socio-demographic and socio-economic characteristics of the study participants in Bahir Dar City, Northwest, Ethiopia, 2023

Variables		Frequency	Percent
Age of the mother in years	19-24	43	8.7
	25-34	325	65.8
	35-48	126	25.5
Mothers' education	Unable to read and write	82	16.6
	Able to read and write	61	12.3
	Elementary (1-8 Grade)	90	18.2
	High school (9-12 Grade)	120	24.3
	College and above (12+ Grade)	141	28.5
Mothers' occupation	Housewife	204	41.3
	Government employee	118	23.9
	Private business	89	18.0
	Employed in private sector	50	10.1
	Daily worker	22	4.5
	Student	11	2.2
Marital status	Married	459	92.9
	Widowed	6	1.2
	Separated	21	4.3

	Single	8	1.6
Household monthly income in ETB	Low (1000-5000)	150	30.4
	Medium (5001-12000)	216	43.7
	High (>12000)	128	25.9

5.2. Reproductive and obstetric health characteristics

Majority 370 (74.9%) of the mothers were multiparous. The majority of the mothers had planned the pregnancy 439 (88.9%) and used family planning methods 418 (84.6%) before getting pregnant with their index child. Similarly, 332 (89.7%) and 349 (94.3%) of the mothers had attended ANC follow-up and delivered at a health facility for the previous birth, respectively. Before their most recent birth, 81 (21.9%) mothers experienced at least one adverse pregnancy outcome. The commonest adverse pregnancy outcomes reported were abortion 17 (21%), preterm birth 16 (19.7%), and low birth weight 15 (18.5%).

Table 4: Reproductive and obstetric health characteristics of the study participants in Bahir Dar City, Northwest, Ethiopia, 2023

Variables		Frequency	Percent
Parity	Primiparous	124	25.1
	Multiparous	370	74.9
Previous pregnancy was planned	No	55	11.1
	Yes	439	88.9
Family planning use	No	76	15.4
	Yes	418	84.6
ANC follow up for the previous pregnancy (n=370)	No	38	10.3
	Yes	332	89.7
Number of ANC visits (n=332)	Once	8	2.4
	Twice	27	8.1
	Three times	72	21.7
	Four and more times	225	67.8
Delivered at health facility for the previous birth (n=370)	No	21	5.7
	Yes	349	94.3
PNC for the previous birth (n=370)	No	97	26.2
	Yes	273	73.8
Number of PNC visits (n=273)	Once	154	56.4
	More than once	119	43.6
History of adverse pregnancy outcome (n=370)	No	289	78.1
	Yes	81	21.9
Types of adverse pregnancy outcome for the previous birth (n=81)	Congenital anomalies	11	13.5
	Low birth weight	15	18.5

	Preterm birth	16	19.7
	Abortion	17	21
	Still birth	13	17.2
	Neonatal death	8	9.8
Husband support (n=459)	No	277	60.3
	Yes	182	39.7

5.3. Knowledge of mothers about preconception care

As depicted in Figure 3, more than half 295 (59.7%) of the mothers have information about preconception care. The majority 133 (45.1%) of them heard it from health care providers. About 29 (10%) of the mothers got the information from the mass media. Others heard it from school 3 (1%), family and friends 9 (3.1%), and multiple sources 121 (41%). Women were asked ten preconception-care-related knowledge questions about its definition and benefits. More than half 255 (51.6%) of the women scored below 50% (had inadequate knowledge of preconception care). Only 25 (5.1%) of the respondents correctly answered all of the 10 questions asked.

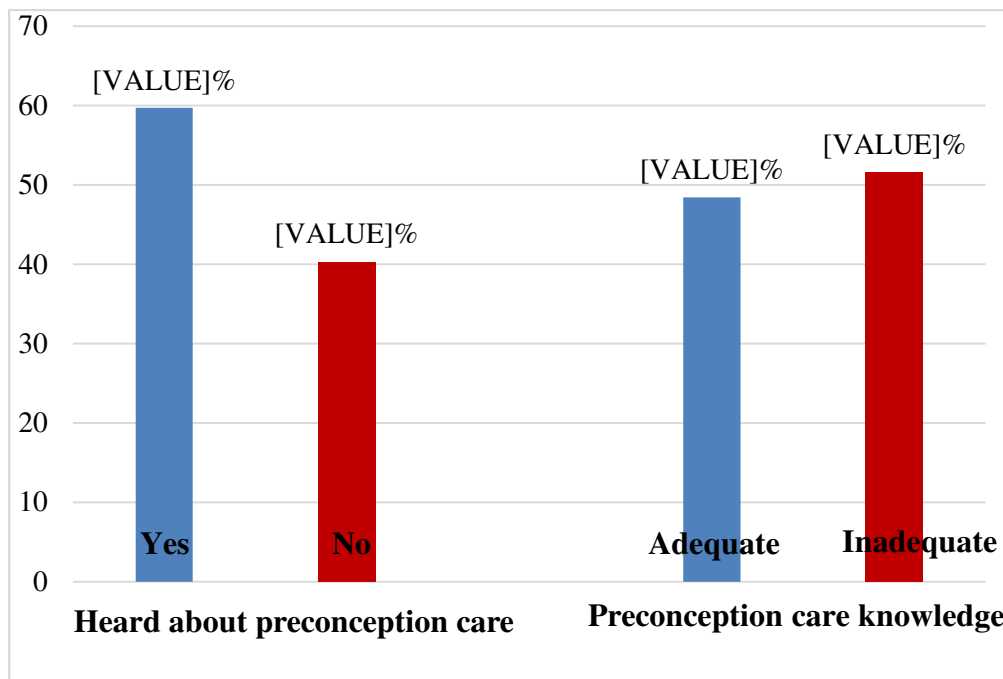


Figure 3: Knowledge of mothers about preconception care in Bahir Dar City, Northwest, Ethiopia, 2023

5.4. Availability and accessibility of health service facility

The majority of the women had good access to a health facility 373 (75.5%), laboratory tests 449 (90.9%), and medications 389 (78.7%), but there was no separate preconception care unit available in the majority of the cases 435 (88.1%) (Figure 4).

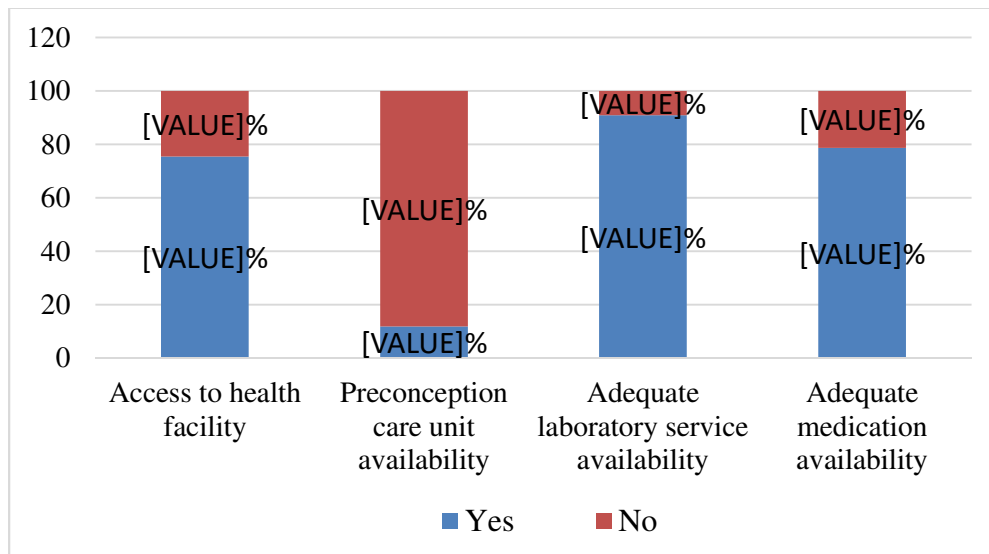


Figure 4: Availability and accessibility of health service facilities in Bahir Dar City, Northwest, Ethiopia, 2023 (values are expressed as percentages)

5.5. Chronic health problem

Sixty (12.1%) of the women who participated in the survey had chronic health problems. HTN and diabetes accounted for more than half (58%) of the total (Figure 5).

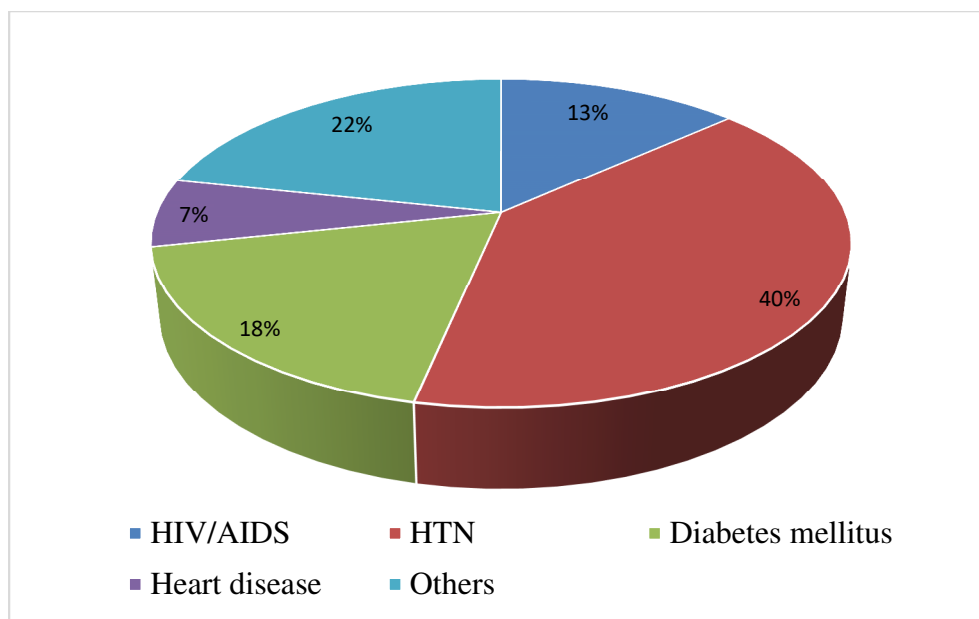


Figure 5: Chronic health problem types among mothers who gave birth in the last 12 months in Bahir Dar City, Northwest, Ethiopia, 2023 (n=60).

5.6. Utilization of preconception care

Prior to conceiving their current child, 119 (24.1%) (95% CI: 20, 28) of the mothers received at least one element of the WHO recommended preconception care package. Micronutrient supplementation (iron, folic acid), screening and management of chronic disease, vaccination (hepatitis B, tetanus, measles, mumps, and rubella vaccines) were the most widely obtained services, while advice on cessation of cigarette smoking, stopping taking illegal substances, and protecting from environmental hazards were the least obtained services (Table 5). About 86 (17.4%) of the mothers utilized three or more WHO-recommended preconception care packages. There was no woman who took all the available elements of care.

Table 5: The proportion of respondents who received the WHO recommended packages of preconception care among women who gave birth in the last 12 months in Bahir Dar City, Northwest, Ethiopia, 2023.

Types of preconception care used	Frequency	Percent	
		n=119	n=494
Micronutrient supplementation (iron, folic acid)	98	82.4	19.8

Screening and management of chronic disease	80	67.2	16.2
Vaccination (hepatitis B and tetanus vaccines)	75	63	15.2
Screening & treatment of infectious disease (STI/ HIV)	66	55.5	13.4
Counseling on balanced diet	45	37.8	9.1
Advice on cessation of excessive alcohol use	17	14.3	3.4
Counseling and advising of social and mental health concern	16	13.4	3.2
Advice on cessation of cigarette smoking	10	8.4	2.0
Stop taking illegal substances and drugs	8	6.7	1.6
Advice to protect from environmental hazards	5	4.2	1.0

Mothers were asked about their reasons for not utilizing the service. The most commonly cited reason was “I had no information on preconception care” 116 (30.9%) (Figure 6).

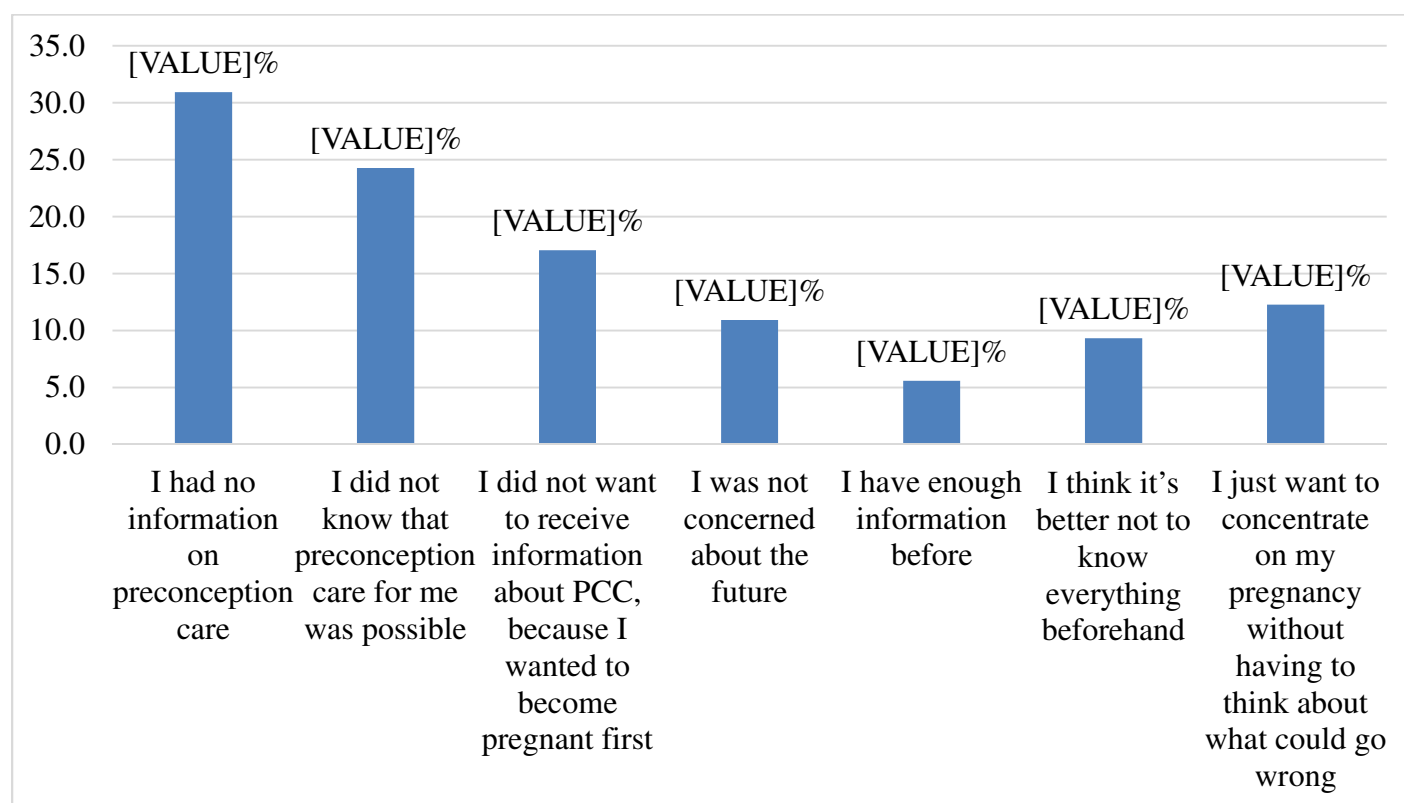


Figure 6: Mothers' reason for not utilizing preconception care in Bahir Dar City, Northwest, Ethiopia, 2023 (n=375)

5.7. Factors associated with utilization of preconception care

A number of factors were significantly associated with the utilization of preconception care in the bi-variable logistic regression analysis, as shown in Table 6. Age of the mother, educational level of the mother, occupation of the mother, spouse educational level, spouse occupation, household monthly income, having ANC follow-up for the previous pregnancy, having delivered at a health facility, previous history of adverse pregnancy outcome, husband support, knowledge about preconception care, access to a health facility, preconception care unit availability, adequate laboratory service availability, adequate medication availability, and chronic health problems had a statistically significant association with utilization of preconception care.

In the multivariable analysis (Table 6), educational level of the mother, household monthly income, previous history of ANC follow-up, previous history of adverse pregnancy outcome, husband support, knowledge about preconception care, adequate medication availability, and chronic health problems showed a statistically significant association with utilization of preconception care. Mothers who attained a high school educational level had 4.7 (AOR= 4.74; 95% CI: 1.43, 15.75) times higher odds of utilizing preconception care than those who were not able to read and write. Likewise, mothers who had a diploma or higher had 4.5 (AOR= 4.51; 95% CI: 1.43, 14.22) times higher odds of utilizing preconception care than those who were not able to read and write. Previous history of ANC follow-up (AOR=5.01; 95% CI: 1.23, 20.44) and previous adverse pregnancy outcome (AOR=2.81; 95% CI: 1.28, 6.18) were also positively associated with the practice of preconception care. Mothers who had previous history of ANC follow-up had five times higher odds of utilizing preconception care than mothers who had not. Mothers who had experienced adverse pregnancy outcomes previously had 2.8 times increased odds of utilizing preconception care than mothers who had not.

Those mothers who have support from their husbands have a five times higher odds of utilizing preconception care (AOR= 5.46; 95% CI: 2.85, 10.49). The odds of utilizing preconception care were nearly three times higher among women with good knowledge of preconception care than their counterparts (AOR=2.88; 95% CI: 1.44, 5.78). Mothers with high (>12000 birr) household income had 4.7 times higher odds of utilizing preconception care than those who earn below 5000 birr (AOR= 4.66; 95% CI: 1.81, 11.99). Mothers who reported an availability of adequate medication in the nearby health facility had nearly four times (AOR=3.85; 95% CI: 1.33, 11.08)

higher odds of utilizing preconception care. The odds of practicing preconception care were six times higher among mothers who had chronic medical conditions (AOR= 6.03; 95% CI: 2.25, 16.19).

Table 6: Bi-variable and multivariable logistic regression analysis to identify factors associated with utilization of preconception care among mothers who gave birth in the last 12 months in Bahir Dar City, Northwest, Ethiopia, 2023

Variables		Preconception care		Odds ratio (95% CI)	
		No	Yes	Crude	Adjusted
Age of the mother categorized	19-24	35	8	1	1
	25-34	253	72	1.25 (0.55, 2.80)	1.37 (0.11, 17.92)
	35-48	87	39	1.96 (0.83, 4.62)*	1.63 (0.12, 22.41)
Mothers' education	Unable to read and write	69	13	1	1
	Able to read and write only	52	9	0.92 (0.37, 2.31)	3.04 (0.74, 12.48)
	1-8 Grade	68	22	1.72 (0.80, 3.68)*	2.88 (0.79, 10.51)
	9-12 Grade	85	35	2.19 (1.07, 4.45)*	4.74 (1.43, 15.75)*
	Diploma or above (12+Grade)	101	40	2.10 (1.05, 4.22)*	4.51 (1.43, 14.22)*
Mothers' occupation	House wife	163	41	1	1
	Government employee	83	35	1.68 (0.99, 2.83)*	1.47 (0.61, 3.58)
	Private business	67	22	1.31 (0.72, 2.36)	0.92 (0.33, 2.52)
	Employed in private sector	37	13	1.40 (0.68, 2.87)	1.17 (0.37, 5.65)
	Other [#]	16	6	1.27 (0.54, 3.03)	0.65 (0.13, 3.21)
Marital status	Married	346	113	1	
	Widowed	4	2	1.53 (0.28, 8.47)	
	Separated	18	3	0.51 (0.15, 1.76)	

	Single	7	1	0.44 (0.05, 3.59)	
Spouses' educational level (n=459)	Unable to read and write	52	23	1	1
	Able to read and write only	51	10	0.44 (0.19, 1.02)*	0.36 (0.10, 1.30)
	1-8 Grade	58	12	0.47 (0.21, 1.03)*	0.66 (0.19, 2.29)
	9-12 Grade	58	29	1.13 (0.58, 2.20)	2.51 (0.87, 7.19)
	12+ Grade	127	39	0.69 (0.38, 1.23)	0.70 (0.27, 1.81)
Spouses' occupation	Government Employee	149	38	1	1
	Private business	109	48	1.73 (1.06, 2.82)*	1.81 0.75 4.36
	Private sector employee	52	19	1.43 (0.76, 2.70)	1.39 (0.49, 3.93)
	Daily laborer	26	5	0.75 (0.27, 2.09)	0.97 (0.16, 6.01)
	Others	10	3	1.18 (0.31, 4.49)	1.99 (0.30, 13.08)
Household income	Low (1000-5000)	130	20	1	1
	Medium (5001-12000)	168	48	1.86 (1.05, 3.28)*	1.28 (0.52, 3.12)
	High (>12000)	77	51	4.31 (2.39, 7.76)*	4.66 (1.81, 11.99)*
Parity	Primiparous	100	24	1	
	Multiparous	275	95	1.44 (0.87, 2.38)	
Planned pregnancy	No	43	12	1	
	Yes	332	107	1.16 (0.59, 2.27)	
Family planning use	No	61	15	1	
	Yes	314	104	1.35 (0.73, 2.47)	
ANC follow up	No	33	5	1	1
	Yes	242	90	2.46 (0.93, 6.48)*	5.01 (1.23, 20.44)*
Number of ANC visits	Once	6	2	1	
	Twice	20	7	1.05 (0.17, 6.46)	
	Three times	61	11	0.59 (0.11, 3.28)	
	Four and more times	155	70	1.42 (0.28, 7.22)	
Delivered at HF	No	15	6	1	1
	Yes	260	89	0.86 (0.32, 2.27)	0.66 (0.07, 6.47)
PNC	No	75	22	1	
	Yes	200	73	1.24 (0.72, 2.15)	
Adverse pregnancy outcome	No	223	66	1	1
	Yes	52	29	1.88 (1.11, 3.20)*	2.81 (1.28, 6.18)*
Husband support	No	242	35	1	1
	Yes	104	78	5.19 (3.27, 8.22)*	5.46 (2.85, 10.49)*
PCC Knowledge	Inadequate PCC knowledge	224	31	1	1
	Adequate PCC knowledge	151	88	4.21 (2.66, 6.66)*	2.88 (1.44, 5.78)*
Access to the health facility	Inaccessible	104	17	1	1
	Accessible	271	102	2.30 (1.31, 4.04)*	1.79 (0.70, 4.59)
Preconception care unit availability	No	343	96	1	1
	Yes	32	23	3.15 (1.79, 5.52)*	1.77 (0.55, 5.69)
Adequate laboratory	No	39	6	1	1

service availability	Yes	336	113	2.19 (0.90, 5.30)*	0.77 (0.16, 3.62)
Adequate medication availability	No	92	13	1	1
	Yes	283	106	2.65 (1.42, 4.94)*	3.85 (1.33, 11.08)*
Chronic health problem	No	340	94	1	1
	Yes	35	25	2.58 (1.47, 4.53)*	6.03 (2.25, 16.19)*

Key: * shows significant at $p < 0.25$ in crude odds ratio and $p < 0.05$ in adjusted odds ratio

Daily laborer,

6. Discussion

In this study, utilization of preconception care and its associated factors among mothers who had delivered in the preceding 12 months period was assessed. Out of the 494 respondents, 119 (24.1%; 95% CI: 20.3%, 27.9%) utilized at least one component of the WHO recommended packages of preconception care for their recent pregnancy. This finding was in line with the study conducted in South-east Nigeria (23.4%) (27), Kenya (25.8%) (25), and West Guji Zone (22.3%) (40).

The practice of preconception care in our study is very low when compared with the studies done in other regions of the world such as in China (42%) (33) and Los Angeles (29.7%) (17). This discrepancy could be due to the existing socioeconomic difference particularly education and health care infrastructure. Lack of awareness about the importance of preconception care and limited knowledge about its benefits might be one reason for the low utilization rates. This is evidenced with the low awareness (59.7%) and knowledge (48.4%) levels observed in our study compared to low-income Mexican-American population in USA (76%) (41) and Jordan (85%) (42). Low socioeconomic status in Ethiopia may deter individuals from seeking preconception care services due to financial constraints, associated costs, and health system-related factors. Insufficient infrastructure, shortage of trained healthcare providers, and inadequate integration within maternal and child health services contribute to low utilization rates.

This finding is higher than the study done in Debre Tabor town (15.8%) (36), Adet (9.6%) (24), Manna district (6.3%) (22), Mekele city (18.2%) (10), and Hosanna (19%) (23). This could be due to the difference in study setting and population. Preconception care utilization might be hampered by healthcare accessibility and inequalities, such as poor infrastructure, a shortage of qualified specialists, and long distances. Cultural customs and beliefs may also deter people from seeking such types of services.

In this study, out of the ten preconception care packages recommended by the WHO, micronutrient supplementation (iron and folic acid) was the most widely obtained care (19.8%) which is consistent with the study done in Mizan-Aman town (18.5%) (26), and Mekele city (16%) (10). However, the commonest service utilized by the women in a study done in West Guji (40) was screening and treatment of infectious disease (STI/ HIV) (19%). There was no woman who took all the available elements of care in our study. However, in a study done in Mizan-Aman town, 1.5% of the participants received all of the recommended components of preconception care services (26).

Educational level of the mothers was observed to have an influence on preconception care utilization in this study. Mothers who attended high school or above were more likely to utilize the service which is consistent with the previous studies conducted in West Guji Zone (40) and Debre Birhan town (11). This might result from the fact that women who are educated will have an opportunity to get information and knowledge on the significance of preconception care than women with no formal education.

Previous history of ANC follow up was significantly associated with preconception care utilization in the current study which is consistent with the study done in Debre Tabor (36). This can be attributed to the significant role of continuity of care and consistent engagement with healthcare providers throughout the pregnancy and beyond. Women who have experienced negative pregnancy outcomes are more likely to seek preconception care, possibly due to increased motivation to use early intervention to improve the success of their subsequent pregnancy. This finding is consistent with the study done in Los Angeles City (17). Prior to their subsequent pregnancies, women in Los Angeles City who had previously had a poor birth outcome were more likely to obtain pregnancy-related health counseling than women who did not report such prior outcomes (17). A study done in Hossana town also revealed similar finding

of positive association between prior experience of adverse pregnancy outcome and preconception care utilization (23).

The current study revealed that mothers with high (>12000 birr) household income were 4.7 times more likely to utilize preconception care than those who earn below 5000 birr. This finding is in line with the study done in West Guji Zone (40). Women with a higher income tend to have better access to healthcare resources, including preconception care facilities. They are more likely to afford the necessary medical consultations, tests, and other preventive measures associated with preconception care.

Getting support from their husband had an increased odds of utilizing preconception care in the current study which is in line with the study done in Mekele city (10). Having a supportive husband or partner plays a significant role in encouraging women to seek preconception care, as it reinforces the importance of proactive healthcare utilization.

Having a good level of knowledge on preconception care was found to be significantly associated with increased odds of preconception care utilization. This finding is supported by several other studies (10,11,23,36,40). Women who possess good preconception care knowledge are more likely to utilize preconception care due to increased awareness, understanding, empowerment, improved access to services, and higher motivation levels. Empowering women with accurate information and ensuring access to quality healthcare can play a crucial role in promoting preconception care utilization and ultimately improving maternal and child health outcomes.

Having chronic medical condition was significantly associated with increased uptake of preconception care in the current study. This is in line with other community based studies carried out in Debre Tabor town (36) and Mekele city (10). Women with a chronic medical condition often have improved awareness of the importance of preconception care in controlling their health problem and maintaining a successful pregnancy.

7. Limitations of the study

There are some limitations to mention in this study. There's a chance that social desirability bias and recall will affect the outcome. A number of strategies were used to reduce recall biases in the

course of the inquiry. First, a comprehensive and in-depth questionnaire was created to help participants accurately remember past experiences or events. To improve memory retrieval, the questionnaire had clear instructions, time constraints, and prompts. In an additional attempt to eliminate memory biases imposed by forgetting or distortion, mothers who had given birth within the last 12 months were included to reduce the time interval. Additionally, measures were taken to guarantee a welcoming and unthreatening atmosphere throughout the data collection process. This was done to encourage participants to provide honest and accurate responses without feeling pressured to conform to social desirability biases. Lastly, it should be noted that a causal association cannot be established as the study is cross-sectional.

8. Conclusion

This study revealed that the level of preconception care utilization in the study area among women is low. Preconception care use was positively associated with the formal education of women, higher household monthly income, ANC follow-up, prior experience of unfavorable pregnancy outcomes, husband support, having adequate knowledge of preconception care, adequate medication availability, and having a chronic medical condition.

9. Recommendations

The findings of the study lead to the following recommendations.

- **Health Care Workers:** Health care providers including Health Extension Workers shall provide health education to women's and couples on the importance of preconception care.
- **Bahir Dar City Administration Health Department:** The health department in collaboration with the health facilities shall provide increasing women's awareness on preconception care, and encouraging the involvement of husbands and partners in preconception care activities.

- **Amhara Regional Health Bureau:** In collaboration with the Federal Ministry of Health, the regional health bureau shall improve healthcare infrastructure and accessibility and training healthcare professionals.
- **Ministry of Health-Ethiopia:** It shall develop a preconception care guideline and facilitate to establish separate preconception care units in health facilities or integrate preconception care within the existing healthcare system.
- **Researchers:** Future researches on preconception care shall focus on experiences, perspectives and views on barriers using qualitative study designs. It is also recommended to conduct further studies on its effectiveness using longitudinal designs.

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Annexes

Annex 1: Information sheet

Greeting: Hello good morning /good after noon, my name is_____, I am here today to collect data on preconception care practice among mothers who gave birth in the last 12 months. The study is being conducted by Mr. Mihretu Jegnie from St. Paul's Hospital Millennium Medical College, Department of Epidemiology in Partial Fulfillment of the Requirements for the Degree of Masters of public health in Epidemiology.

The objective of this study is to assess preconception care utilization and its associated factors among mothers who gave birth in the last 12 months here in Bahir Dar. I request you to take part in this study and to respond genuinely. Your cooperation and willingness is greatly helpful in identifying problems related to preconception care utilization by reproductive age women.

The study will be conducted through interviews and you are being asked for a little of your time, about 30 min, to help us in this study. Your name will not be written in this form and will never be used in connection with any information you tell us. There is no possible risk associated with participating in this study except the time spent for responding to the questionnaire. All information given by you will be kept strictly confidential. Your participation is voluntary and you are not obligated /enforced/ to answer any question you do not give to answer.

If you feel discomfort with the question, it is your right to drop it any time you want. If you have questions regarding this study or would like to be informed of the results after its completion, please feel free to contact the principal investigator.

Address of the principal investigator: Mihretu Jegnie: Tell: Mobile +251-984079816
: Email:mihretuj@gmail.com

Do You Have Any Questions About the Survey? Are you willing to participate in this study?

1. Yes Continue to the next page
2. No.....Skip to the next participants

Interviewer Name and Signature _____Date of Interview: _____

Questionnaire Id. No: _____

Consent form

I undersigning at this document and give my consent to participate in the study entitled as “utilization of preconception care and associated factors and its associated factors among mothers who gave birth in the last 12 months here in Bahir Dar, Northwest Ethiopia, 2023.” The research is being done by a student of St. Paul’s Hospital Millennium Medical College as fulfillment of Master of Public Health in Epidemiology. I fully understand that they are going to ask me about socio-demographic characteristics, obstetric and reproductive related characteristics, knowledge related factors, health facility related characteristics and preconception care utilization.

The questionnaire will not take more than 30 minutes of my time. I have been informed that the purpose of this study and my participation is entirely voluntarily. I want to take part in the study because I have been told that; I can stop participation at any time, skip any question if I do not like to answer and the purpose of the study. No one will know my answers other than investigators and the information will not be used for other purposes other than study. I understood that Mihretu Jegnie is the contact person if I have questions about the study or about my rights as a study participant.

Are you willing to participate in the study?

Yes

No

If **yes continue**, if **no Stop**, Thank you!

Date: ____/____/____

Supervisors name -----signature-----

Annex 2: English version questionnaire

St. Paul's Hospital Millennium Medical College

Graduate Study Program

School of Public Health

Questionnaire for assessment of preconception care practice among mothers who gave birth in the last 12 months in Bahir Dar City, Northwest Ethiopia, 2023

Part I: socio-demographic characteristics			
No	Questions	Categories & responses	Skip to
101	How old are you?	-----year	
102	What is your religion?	1.Orthodox 2. Protestant 3. Muslim 4.Catholic 5. Other (specify)	
103	What is your educational level?	1. Unable to read and write 2. Read and write 3. Primary (1-8) 4 Secondary (9-12) 5.College/university and above	
104	What is your occupational condition?	1.House wife 2.Government employee 3. Private business 4. Employed in private sector	

		5.Daily worker 6.Student	
105	What is your current marital Status?	1.Married 2.Divorced 3.Widowed 4.Single	If your answer is 2, 3, or 4 go to question no 108
106	Husband educational status	1. unable to read and write 2. Read and write 3. Primary (1-8) 4. Secondary (9-12) 5.College/university and above	
107	Husband occupation	1. Government employee 2. Private business 3. Private sector employee 4. Daily worker 5.Others (specify)-----	
108	Monthly family income	-----ETB	
Part II: Obstetrics and reproductive health characteristics			
201	How many times did you give birth (Both live neonate and stillbirth)?	-----	
202	How many alive children do you have?	-----	
203	Was your recent pregnancy planned?	1.Yes 2.No	
204	Have you used any family planning method before this pregnancy?	1.Yes 2.No	
205	Did you have history of ANC follow up?	1.Yes 2.No 3. Para I	If 2 go to Q 207 If 3 go to Q 301
206	If yes for Q.no 205, how many ANC visits?	1.Once 2. Twice 3. Three times 4.Four and above	
207	Was your previous delivery at health facility (if any)?	1.Yes 2.No	If 3 go to Q 210
208	Did you receive PNC service after your previous delivery?	1.Yes 2.No	If no go to Q 210
209	If yes to Q.208, how many times?	1. Once 2. More than one	
210	Have you ever experienced any adverse pregnancy outcome before?	1.Yes 2.No	If no go to Q 301
211	If yes for Q.210 type of	1.Congenital anomalies	

	adverse pregnancy outcome (Multiple responses are possible)	2.Low birth weight 3.Preterm birth 4.Abortion 5.Still birth 6.Neonatal death 7.Ectopic Px 8.other (specify)	
Part III: Mothers' awareness on preconception care			
301	Have you ever heard about preconception care?	1.Yes 2.No	If no go to Q 401
302	If yes for Q.301 where did you have get the information?	1.Health care worker 2.Mass-media 3.School 4.Family/friends 5.others (specify)-----	
Part IV: Mothers' knowledge on preconception care			
401	What does preconception care mean?	1. Specialized care given to every pregnant woman. 2.Specialized care given to all reproductive age women before planning for pregnancy 3.Specialized care for elderly women 4. Don't know	
402	In which group of peoples preconception care is needed	1.For men, only 2.For women, only 3.For men and women planning of birth 4.Don't know	
403	In which group of peoples preconception care important	1.For baby, only 2.For mother, only 3.For baby and mother 4.Don't know	
404	Is quitting smoking crucial when you wish to become pregnant?	1.Yes 2.No	
405	Is avoiding alcohol important when planning to become pregnant?	1.Yes 2.No	
406	Do you know that taking multivitamins and folic acid before you plan to become pregnant is essential to preventing neural tube defects?	1.Yes 2.No	
407	Do you realize that staying away from pesticides and	1.Yes 2.No	

	insecticides is crucial when planning a pregnancy?		
408	Do you know that it's crucial to keep a healthy weight before becoming pregnant?	1.Yes 2.No	
409	Do you know that it's important to get checked for STIs and treated before trying to get pregnant?	1.Yes 2.No	
410	Is general medical checkup important before pregnancy?	1.Yes 2.No	
Part V: Health service related characteristics			
501	Is there a health facility in your neighborhood?	1.Yes 2.No	If no go to Q601
502	If yes for Q.501, time to reach health facility (on foot)	-----hr	
503	Is preconception care unit available in the health facility?	1.Yes 2.No	
504	Is adequate laboratory service available?	1.Yes 2.No	
505	Is adequate medication available?	1.Yes 2.No	
Part VI: Pre-existing medical illnesses			
601	Do you have any chronic health problem?	1.Yes 2.No	If no go to Q.701
602	If yes for Q.601, which chronic health problem do you have? (Multiple responses are possible)	1.HIV/AIDS 2. HTN disorder including PE. 3.Diabetes mellitus 4.Heart disease 5.Renal problem 6.Asthma 7. Others(specify)-----	
Part VII: Preconception care utilization related questions			
701	Have you ever had a preconception care prior to conception?	1.Yes 2.No	If no skip to 706
702	If yes for Q.no 701, which components of preconception care did you received before being pregnant? (multiple response can be possible)	1.Micronutrient supplementation (iron, folic acid) 2.Vaccination (hepatitis B, tetanus and the measles, mumps, and rubella vaccines) 3.Screening and treatment of infectious disease (STI/ HIV) 4.Screening and management of chronic disease (Diabetes Miletus, Hypertension, PIH, Cardiac	

		diseases, Asthma, Renal problem, Epilepsy) 5. Counseling on balanced diet 6. Advice on cessation of excessive alcohol use 7. Advice on cessation of cigarette smoking 8. Counseling and advising of social and mental health concern 9. Stop taking illegal substances and drugs 10. Advice to protect from environmental hazards	
703	Did you encountered challenges while in service for preconception care?	1. Yes 2. No	
704	What are the challenges you faced during preconception screening?	1. Negligence from health care providers 2. Services are not integrated 3. Consumption of extended time 4. lack of privacy assurance 5. Shortages of materials and supplies 6. Other (indicate)_____	
705	Do you have support from your husband for preconception care	1. Yes 2. No	
706	If NO for Q. no.701; what are the most important reasons for this?	1. I had no information on preconception care 2. I did not know that preconception care for me was possible 3. I did not want to receive information about preconception care, because I wanted to become pregnant first 4. I was not concerned about the future. 5. I think it's better not to know everything beforehand 6. I just want to concentrate on my pregnancy without having to think about what could go wrong 7. Other(specify)_____	

Dear data collector, you are at the end of the interview. Please thank and say good bye to

the esteemed study participant!

Annex 3: Amharic version questinnnaire

የቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ሕክምና ኮሌጅ
የድህረ ምረቃ ፕሮግራም

የሕብረተሰብ ጤና ትምህርት ቤት

በባህርዳር ከተማ በሚኖሩና ባለፈው አንድ ዓመት ውስጥ በወለዱ እናቶች ላይ ስለቅድመ እርግዝና የጤና ክትትል አጠቃቀም እና ተያያዥ ጉዳዮችን ለማጥናት የተዘጋጀ መጠይቅ፤ኢትዮጵያ፣2015.

የመረጃ ቅጽ

እንደምን አደሩ/ዋሉ፤ ስሜ እባላለሁ፤ ዛሬ እዚህ የተገኘሁት በወለዱ እናቶች ላይ የቅድመ እርግዝና የጤና ክትትል አጠቃቀም እና ተዛማጅ ጉዳዮች ላይ መረጃ ለመሰብሰብ እና ጥናት ለማድረግ ነው። ጥናቱን የሚያጠኑት አቶ ምህረቱ ጀግኔ ሲሆኑ በቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ሜዲካል ኮሌጅ በኤፒዲሚዮሎጂ ትምህርት ክፍል ለህብረተሰብ ጤና ማስተርስ ዲግሪ በኤፒዲሚዮሎጂ ማሟያነት ነው።

የዚህ ጥናት ዓላማ በባህርዳር ከተማ ውስጥ የእናቶችን የቅድመ እርግዝና የጤና ክትትል አጠቃቀም እና ተያያዥ ምክንያቶችን ማወቅ ነው። ስለሆነም በዚህ ጥናት እንዲሳተፉ እና ምላሾችን እንዲሰጡን እጠይቃለሁ።የእርስዎ ትብብር እና ፈቃደኝነት የእናቶችን የቅድመ እርግዝና የጤና ክትትል አጠቃቀም ጋር ተያይዞ በባህርዳር ከተማ ያለውን ሁኔታ ለማወቅ በጣም ይረዳናል። ጥናቱ የሚካሄደው ለጥናቱ በተዘጋጀው መጠይቅ ሲሆን ይህም 30 ደቂቃ የሚሆን ጊዜ ሊወስድ ይችላል። ስምዎን የማይጠቀስ መሆኑን እና ከሚሰጡት ማንኛውም መረጃ ጋር በተያያዘ የማይነሳ መሆኑን ላረጋግጥልዎት እወዳለሁ። በዚህ ጥናት በመሳተፍዎት መጠየቁን ለመሙላት ከሚተባበሩት ጊዜ ውጭ ምንም አይነት እክል የለውም። የሚሰጡት ማንኛውም መረጃ ሚስጥራዊ ነው።ተሳትፎዎት በፈቃደኝነት ላይ የተመሰረተ እና ያልፈለጉትን ጥያቄ ያለመመለስ መብትዎ የተጠበቀ ነው። በጥያቄዎቹ ምሽት ካልተሰማዎት በፈለጉት ወቅት ማቋረጥ ይችላሉ።ነገር ግን የሚሰጡኝ መልስ ትክክለኛ መሆኑ ህብረተሰቡ ምን እንደሚገነዘብ፣ ምን እንደሚተገብር ለመረዳት ያስችለናል። በእውነቱ ስለትብብርዎ እና በጥናቱ ስለሚያደርጉት አስተዋጽኦ በጣም ላመስግንዎት እወዳለሁ።

ስለጥናቱ ጥያቄ ካለዎት ወይም ስለጥናቱ ማወቅ ከፈለጉ ዋና የጥናቱ አጥኝ የሆኑትን አቶ ምህረቱ ጀግኔን በሚከተለው አድራሻቸው ማግኘት ይችላሉ። ስልክ፡ 0984079816 Email: mihretuj@gmail.com

ስለጥናቱ አላማ በሚገባ ተረድቻለሁ። የምሰጠው መረጃም ለጥናቱ ተግባር ብቻ እንደሚውልና የምሰጠው መረጃም ሆነ ማንነቴ በሚስጥር እንደሚጠበቅ ተረድቻለሁ።

ስለዚህ በጥናቱ ለመሳተፍ ፍቃደኛ ነዎት?

1.አዎ-----ወደ ቀጣዩ ጥያቄ ይሂዱ

2.አይደለሁም-----ወደ ቀጣዩ ተሳታፊ ይሂዱ

የስምምነት ቅጽ

በቅዱስ ጳውሎስ ሆስፒታል ሚሊኒየም ሜዲካል ኮሌጅ የሁለተኛ ዲግሪ ተመራቂ ተማሪ የሆኑት አቶ ምህረቱ ጀግኔ ባለፈው አንድ ዓመት ውስጥ በወለዱ እናቶች ላይ ስለቅድመ እርግዝና የጤና ክትትል አጠቃቀም እና ተያያዥ ጉዳዮች ዙሪያ ጥናት ሊያካሂዱ መፈለጋቸውን በተነገረኝ መሰረት በጥናቱ ለመሳተፍ ተስማምቻለሁ። በመሆኑም ስለማህበራዊ፣ እርግዝና እና ወሊድ ሁኔታዎች ፣ ከግል ጤና እና ከጤና ተቋማት ጋር የተያያዙ ጥያቄዎችን እንደምጠየቅ ተገንዝቤአለሁ ። መጠይቁ ከ 30ደቂቃ ያልበለጠ ጊዜ እንደሚወስድ ተነግሮኛል። በተጨማሪም በማንኛውም ጊዜ ጥያቄ መጠየቅ ፣ መዝለል፣ ብሎም ካልፈለግሁ ማስቆም እንደምችል የተነገረኝ ሲሆን፤ መረጃው ለጥናቱ ብቻ የሚውል መሆኑ እና ሚስጥራዊነቱ የተረጋገጠ ስለመሆኑ ግንዛቤ ተሰጥቶኛል። በማንኛውም ሰዓት ስለጥናቱ ጥያቄ መጠየቅ ከፈለግሁ ምህረቱ ጀግኔ ማናገር እንደምችል ተረድቻለሁ።

ጥናቱ ላይ ለመሳተፍ ፈቃደኛ ነዎት?

አዎ-----

አይደለሁም -----

ፈቃደኛ ከሆኑ ይቀጥሉ

ካልሆኑ እናመሰግናለን

ክፍል 1፡- ግለ ታሪክን የሚዳስሱ መጠይቆች			
ተ.ቁ	ጥያቄዎች	ምድቦች እና ምላሾች	ወደ... ይለፉ
101	እድሜዎት ስንት ነው?	-----አመት	
102	ሀይማኖትዎት ምንድን ነው?	1. ኦርቶዶክስ 2. ፕሮቴስታንት 3. ካቶሊክ 4. ሙስሊም 5. ሌላ (ይግለጹ)-----	
103	የትምህርት ደረጃዎት?	1. ማንበብና መጻፍ አልቻልንም 2. ማንበብ እና መጻፍ እችላለሁ 3. የመጀመሪያ ደረጃ (ከ1-8) 4. ሁለተኛ ደረጃ (ከ9-12) 5. ኮሌጅ እና ከዚያ በላይ	
104	ስራዎት ምንድን ነው?	1. የቤት እመቤት	

		2. የመንግስት ሰራተኛ 3. የግል ቢዝነስ 4. የግል ተቋም ዉስጥ ሰራተኛ 5. ሌላ (ይግለጹ) -----	
105	በአሁኑ ሰዓት የትዳር ሁኔታዎት?	1. ያገባች 2. ባል የሞተባት 3. የተፋታች 4. ያላገባች	መልስዎ ከ ቁ.1 ዉጭ ከሆነ ወደ 108 ይለፉ
106	የባለቤትዎ ትምህርት ደረጃ?	1. ማንበብና መጻፍ አይችልም 2. ማንበብ እና መጻፍ ይችላል 3. የመጀመሪያ ደረጃ (1-8) 4. ሁለተኛ ደረጃ (9-12) 5. ከሌጅ እና ከዚያ በላይ	
107	የባለቤትዎ ሥራ?	1. የመንግስት ሰራተኛ 2. የግል ቢዝነስ 3. የግል ተቋም ዉስጥ ሰራተኛ 4. የቀን ሰራተኛ 5. ሌላ (ይግለጹ) -----	
108	የቤተሰብ የወር ገቢ	-----ብር	
ክፍል 2: ስነ-ተዋልዶንና የእርግዝና ሁኔታን የሚዳስሱ መጠይቆች			
201	ስንት ጊዜ ወልደዋል (በህይወትዎ ይሁን ጠፍተው የተወለዱ)	-----	
202	አሁን በህይወት ያሉ ልጆች ብዛት ስንት ናቸው?	-----	
203	አሁን የወለዱትን/የወለዱትን ልጅ እርግዝና አቅደውት ነበር?	1. አዎ 2. የለም	
204	አሁን የወለዱትን/የወለዱትን ልጅ ከማርገዝዎ በፊት የወሊድ መቆጣጠሪያ ተጠቅመው ያውቃሉ?	1. አዎ 2. የለም	
205	ከአሁኑ/ኗ ልጅ በፊት የቅድመ ወሊድ ክትትል አድርገው ያውቃሉ?	1. አዎ 2. የለም 3. አንድ ጊዜ ብቻ የወለዱ	መልስዎ የለም ከሆነ ወደ 207 ይለፉ ቁ. 3 ከሆነ ወደ 301 ይለፉ
206	ለጥ.ቁ.205 መልስዎ አዎ ከሆነ ስንት ጊዜ?	1. አንድ ጊዜ 2. ሁለት ጊዜ 3. ሶስት ጊዜ 4. አራት እና ከዚያ በላይ	
207	ከአሁኑ/ኗ ልጅ በፊት በጤና ተቋም ወልደው ያውቃሉ?	1. አዎ 2. የለም	
208	ከአሁኑ/ኗ ልጅ በፊት ለወለዱት/ዲት ልጅ የድህረ ወሊድ ክትትል አድርገው ነበር?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ 210 ይለፉ
209	ለጥ.ቁ.208 መልስዎ አዎ ከሆነ ስንት ጊዜ?	1. አንድ ጊዜ 2. ከአንድ ጊዜ በላይ	
210	ከዚህ በፊት ከእርግዝና ጋር በተያያዘ መጥፎ አጋጣሚ ገጥሞዎት ያዉቃል?	1. አዎ 2. የለም	መልስዎ የለም ከሆነ ወደ 301 ይለፉ
211	ለጥያቄ ቁጥር 210 መልስዎ አዎ ከሆነ ከሚከተሉት ውስጥ የትኛው አጋጥሞዎት ያውቃል?	1. የተዛባ ቅርጽ ያለው ልጅ መውለድ 2. ክብደቱ ትንሽ የሆነ ልጅ መውለድ 3. ያለጊዜዉ መውለድ 4. የጽንሰ መወረድ 5. የልጅ ሞት መውለድ 6. ልጅ ከተወለደ በኋላ መሞት 7. ሌላ ካለ ይጠቀስ-----	
ክፍል 3: የቅድመ እርግዝና የጤና ክትትል ግንዛቤን የሚዳስሱ መጠይቆች			

301	ስለቅድመ እርግዝና ክትትል ሰምተው ያውቃሉ?	1.አውቃለሁ 2.አላውቅም	
302	ለጥያቄ ቁጥር 301 መልስዎ አውቃለሁ ከሆነ የመረጃ ምንጭዎ ምን ነበር? (ከአንድ በላይ መምረጥ ይቻላል)	1.ከጤና ባለሙያዎች 2.ከብዙሀን መገናኛ 3.ከትምህር ቤት 4.ከቤተሰብ ወይም ከጓደኛ 5. ሌሎች ካሉ ይጠቀሱ-----	
ክፍል 4: የቅድመ እርግዝና የጤና ክትትል እውቀትን የሚዳስሱ መጠይቆች			
401	የቅድመ እርግዝና የጤና ክትትል ማለት ምን ማለት ነው?	1. ለሁሉም ሴቶች የሚሰጥ የህክምና አገልግሎት 2.ለአረጋገዙ እናቶች የሚሰጥ የህክምና አገልግሎት 3.የመወለጃ እድሜ ክልል ውስጥ ላሉ ሴቶች የሚሰጥ የቅድመ ወሊድ የህክምና አገልግሎት 4.በእድሜ ለገፉ ሴቶች የሚሰጥ የህክምና አገልግሎት	
402	የቅድመ እርግዝና የጤና ክትትል የሚያስፈልገው ለማን እንደሆነ ያውቃሉ?	1.ለወንዶች ብቻ 2.ለሴቶች ብቻ 3.ለመወለድ ዝግጁ ለሆኑ ወንዶችና ለሴቶች 4.አላውቅም	
403	የቅድመ እርግዝና የጤና ክትትል የሚጠቅመው ለማን ነው?	1.ለጽንሱ ብቻ 2.ለእናቶች ብቻ 3.ለእናቶችና ለጽንሱ 4.አላውቅም	
404	በቅድመ እርግዝና ወቅት ሲጋራ ማጨስን ማቆም ይጠቅማልን?	1. አዎ 2. አላውቅም	
405	በቅድመ እርግዝና ወቅት አልኮል መጠጣትን ማቆም ይጠቅማልን?	1. አዎ 2. አላውቅም	
406	ፎሊክ አሲድና ቫይታሚን መወሰድ የአከርካሪ አጥንት ቴቦ አለመገጠምን እንደሚከላከል ያውቃሉ?	1. አዎ 2. አላውቅም	
407	ለማርገዝ ከማቀድ በፊት ከተባይ ማጥፊያና ከኬሚካል መራቅ እንደሚያስፈልግ ያውቃሉ?	1. አዎ 2. አላውቅም	
408	በቅድመ እርግዝና ወቅት የሰውነት ክብደትን ማስተካከል ጥቅም እንዳለው ያውቃሉ?	1. አዎ 2. አላውቅም	
409	በቅድመ እርግዝና ወቅት የአባላዘር በሽታ ምርመራ ማድረግና ካለ መታከም አስፈላጊ መሆኑን ያውቃሉ?	1. አዎ 2. አላውቅም	
410	ከእርግዝና በፊት አጠቃላይ የጤና ምርመራ ማድረግ አስፈላጊ ነውን?	1. አዎ 2. አላውቅም	
ክፍል 5: የጤና ሁኔታን እና የጤና ተቋማትን ሁኔታ የሚዳስሱ መጠይቆች			
501	በሚኖሩበት አካባቢ የጤና ተቋም አለ?	1. አዎ 2. የለም	የለም ካሉ ወደ 601 ይለፉ
502	ለጥያቄ ቁ. 501 መልስዎ አዎ ከሆነ በእግር ስንት ሰዓት ይወስዳል?	------(ሰዓት)	
503	የጤና ተቋሙ የቅድመ እርግዝና የጤና ምርመራ እና የህክምና አገልግሎት የሚሰጥበት የራሱ ክፍል አለው?	1. አዎ 2. የለም	
504	በጤና ተቋሙ ውስጥ በቂ የሆነ የላቦራቶሪ አገልግሎት አለ?	1. አዎ 2. የለም	
505	በጤና ተቋሙ ውስጥ በቂ የሆነ የመድሀኒት አቅርቦት አለ?	1. አዎ 2. የለም	
ክፍል 6: የቆዩ የሕክምና በሽታዎችን የሚመለከቱ ጥያቄዎች			
601	ለብዙ ጊዜ የቆዩ የጤና ችግር አለብዎት?	1. አዎ	መልስዎ የለብኝም ከሆነ ወደ

		2. የለብኝም	701ይለፉ
602	ለጥ.ቁ.601 መልስዎ አዎ ከሆነ የትኛው ነው ያለብዎት?	1. ኤች አይ ቪ ኤድስ 2. የደም ግፊት 3. የስኳር በሽታ 4. የልብ ህመም 5. ሌላ ካለ ይጠቀስ (-----)	
ክፍል 7: የቅድመ እርግዝና የጤና ክትትል አጠቃቀምን የሚዳስሱ መጠይቆች			
701	የቅድመ እርግዝና የጤና ክትትል አድርገው ያውቃሉ?	1.አዎ 2.የለም	መልስዎ የለም ከሆነ ወደ 706
702	ለጥ.ቁ 701 መልስዎ አዎ ከሆነ የትኞቹን የቅድመ እርግዝና የጤና ምርመራና ህክምና አድርገው ያውቃሉ? (ከአንድ በላይ መመለስ ይቻላል)	1. ፎሊክ አሲድና አይረን መውሰድ 2. የክትባት አገልግሎት 3. የተላላፊ በሽታዎች ምርመራና ህክምና(የአባላዘር በሽታ እና የኤች አይቪ ኤድስ) 4. ሙሉ የጤና ምርመራ እና የህክምና አገልግሎት 5. ስለተመጣጠነ ምግብ የምክር አገልግሎት 6. ከመጠን ያለፈ አልኮል መጠጣትን ለማቆም የምክር አገልግሎት 7. ሲጋር ማጨስ ለማቆም የምክር አገልግሎት 8. የስነ-አእምሮና የስነ-ልቦና የምክር አገልግሎት 9. ህገ-ወጥ እጽ እና መድሀኒቶችን መጠቀምን ማቆም 10. ራስዎን ከአደገኛ ኬሚካሎች መከላከል	
703	የቅድመ እርግዝና የጤና ምርመራና የህክምና አገልግሎት በተጠቀሙበት ወቅት ያጋጠመዎት ችግር ነበር?	1.አዎ 2.የለም	
704	በቅድመ እርግዝና የጤና ምርመራና የህክምና አገልግሎት ወቅት ያጋጠመዎት ችግሮች ምን ምን ናቸው?	1. የጤና ባለሙያዎች ለአገልግሎት አሰጣጥ ዝንቡ መሆን 2. የሚሠጠው አገልግሎት የተሳለጠ አለመሆን 3. በአገልግሎት አሰጣጥ ወቅት ሠዓት ማባከን 4. በአገልግሎቱ ምስጢራዊነትን አለመጠበቅ 5. የመገልገያ እቃዎች እጥረት መኖር 6. ሌላ _____	
705	ለቅድመ እርግዝና የጤና ምርመራ እና የህክምና አገልግሎት ከባለቤትዎ እገዛ ነበረዎት?	1.አዎ 2.የለም	
706	ለጥያቄ ቁ.701 መልስዎ የለም ከሆነ በቅድመ እርግዝና ወቅት ምንም አይነት የቅድመ እርግዝና ምርመራ አገልግሎት ተጠቅሜ አላዉቅም ያልሆኑት ዋነኛ ምክኒያቶች ምን ምን ናቸው?	1. ከማርገዜ አስቀድሞ ሊኖረኝ ስለሚገባ የቅድመ እርግዝና ምርመራ ምንም መረጃ ስለሌለኝ 2. የቅድመ እርግዝና ምርመራን ማድረግ እንደምችል ስለማላዉቅ 3. ምንም አይነት የቅድመ እርግዝና ምርመራ መረጃ ስለማልፈልግ ፤ ምክንያቱም መጀመርያ ማርገዝ ስለምፈልግ 4. ወደ ፊት ስለሚሆነው ስለ ምንም ነገር ስለማያስጨንቀኝ 5. ከአሁን በፊት ብዙ መረጃዎች ሳላሉኝ 6. ነገሮች ከመፈጠራቸው አስቀድሞ ማወቁ ጥሩ ስላልሆነ 7. ወደ ፊት ስለሚሆነው ነገር ሳላስብ እርግዝናዉ ላይ ብቻ ማትኮር ስለምፈልግ 8. ሌላ ካለ _____	

Declaration

I, the undersigned declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of Public Health. I also declare that it has never been presented in this or any other university and that all resources and materials used in the thesis have been duly acknowledged.

Student Name: _____

Signature: _____

Place of submission: _____

Date of submission: _____

This thesis has been submitted with my approval as a College/university advisor.

Primary advisor Name: _____

Signature: _____

Date of submission: _____

Co-advisor Name: _____

Signature: _____

Date of submission: _____