ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF REPRODUCTIVE FAMILY AND POPULATION HEALTH

ANTENATAL CARE UTILIZATION AND ASSOCIATED FACTORS AMONG INTERNALLY DISPLACED REPRODUCTIVE AGE AMHARA WOMEN (15-49 YEARS) IN THE NORTH-SHEWA CAMPS OF AMHARA REGION, 2023.

By

Hana Meseret (B.Sc. in Public Health)

A THESIS SUBMITTED TO THE DEPARTMENT OF REPRODUCTIVE, FAMILY AND POPULATION HEALTH, SCHOOL OF PUBLIC HEALTH, COLLEGE OF HEALTH SCIENCES, ADDIS ABABA UNIVERSITY FOR THE PARTIAL FULLFILLMENT OF THE MASTERS OF PUBLIC HEALTH IN REPRODUCTIVE, FAMILY AND POPULATION HEALTH.

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APPROVAL SHEET

I hereby certify that I have read and reviewed this thesis prepared on the assessment of antenatal care utilization and associated factors among internally displaced reproductive age Amhara women (15-49 years) in North-Shewa camps of Amhara region, 2023, under my guidance by Hana Meseret. I recommended that it should be submitted to the Department of Reproductive, Family and Population Health to schedule it for an open defense.

Dr. Wubegzier Mekonnen (PhD) __________________ _______________

Primary advisor Signature Date

Dr. Assefa Seme (MD/MPH) _____________________ ________________

Co-advisor Signature Date

STATEMENT OF THE AUTHOR

By my signature below, I declare and affirm that this MPH thesis is my own original work. Any scholarly matter that is included in the thesis has been given recognition through appropriate citation. This thesis is submitted to the Department of Reproductive, Family and Population Health, School of Public Health, College of Health Sciences in Addis Ababa University for an open defense in the presence of external and internal examiners.

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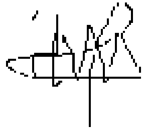

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Abstract

Background: Ethnic induced conflict has displaced over 1.8 million people in Tigray, more than 1 million people in Amhara, and 334,196 in Afar regions. There is paucity of information on the utilization of maternal and child health services among internally displaced persons (IDPs).

Objective: The aim of this study was to assess the magnitude of antenatal care (ANC) service utilization and its associated factors among internally displaced reproductive-age Amhara women in the North-Shewa camps of Amhara region.

Methods: A facility based cross-sectional study was conducted from February to March, 2023 among internally displaced women in Semen Shewa zone Amhara region. Thus a total of 512 women were included in the study with simple random sampling. The bi-variable and multi-variable logistic regression model were employed to identify factors significantly associated with ANC utilization. Adjusted odds ratio (AOR) with 95% CI was estimated to show the strength of association. Finally p-value <0.05 in multivariable logistic regression analysis was used to identify factors associated with ANC service utilization. Finally, key findings of the study are portrayed using tables and graphs with adequate textual descriptions.

Result: Overall 51% of mothers received at least one Antenatal care service during pregnancy and 5.2% of women had the recommended four and above visits. Women whose husbands attained primary and above level of education [AOR: 2.6, 95% CI: (1.24-5.27)], pregnancy complications [AOR: 4.1, 95% CI: (2.07-8.07)], good knowledge on ANC services [AOR: 5.67, 95% CI: (2.93-10.99)], wanted pregnancy [AOR: 8.1, 95% CI: (3.97-16.55)] and distance to health facility[AOR: 4.45, 95% CI:(2.07-9.45)] were significantly associated with ANC service utilization. Using Poisson regression, empowered women (AIRR=1.3: 95% CI (1.07-1.59), those with good knowledge about ANC (AIRR=1.29: 95% CI (1.09-1.53), living in a camp where health facilities are available (AIRR=1.72: 95% CI (1.32-2.35) and women whose pregnancies are both wanted and desired (AIRR=1.27: 95% CI (1.09-1.48) had association with frequency of ANC visits.

Conclusion and Recommendations: Close to half of women didn't utilize ANC services during their pregnancy and only about 5% of them had four plus ANC visits. Availing health facilities in the camps, and enhancing education and awareness creation about ANC service could help women utilize ANC service.

Keywords: At least one ANC visit, number of ANC visits, IDPs, Amhara region, Ethiopia.

Acronyms

ANC	Antenatal care visit
FMOH	Federal Ministry of Health
DHS	Demographic and Health Survey
HIV	Human Immune Virus
IOM	International Organization for Migration
IPV	Intimate Partner Violence
IDW	Internally Displaced Women
IDP	Internally Displaced Persons
LMIC	Low-and Middle-Income Country
PNC	Post Natal Care
SRH	Sexual and Reproductive Health
SSA	Sub-Sharan Africa

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Chapter one: **INTRODUCTION**

1. Background of the study

An Internally Displaced Person (IDP) is a person who is forcefully evicted to leave her/his home due to conflicts, other natural or man-made reasons and lives within his/her country's territorial boundary. Most IDPs are women and children which are vulnerable to many health, social and economic problems (1).

Recent reports of International Organization for Migration (IOM) indicated that, in 2023, about 2.75 million people (532, 889 households) were internally displaced in Ethiopia due to conflict (64.6%), drought (21.1%) and natural disasters like flood (5.5%). People displaced from *Metekel Zone in Benishangul-Gumz region and from both East and west Wellega zones in Oromia* to settle in Amhara region and increased by 14.5% (67,053 IDPs) compared with the previous report. Majority of these IDPs are ethnic induced (99.8 %)(2).

Women are at risk of developing complications during pregnancy and childbirth (3,4). Antenatal Care (ANC) is a gateway for maternal health services and an effective way to reduce related maternal and newborn morbidity and mortality. The 2016 WHO ANC model aims to provide respectful, individualized, person-centered care for pregnant women. The model recommends eight contacts (*one at first, two at second and five at third trimester*). The number of contact in third-trimester pregnancy increased as most pregnancy related complications occurs at this time (5).

Globally, about 89.7% and 66.4% of pregnant women received one and four ANC visit respectively compared to 82.9% and53.8% in SSA (6) and in Amhara regional state, according to 2019 Ethiopian mini DHS reported that ANC coverage was 82% and 50.8% respectively (7). The global ANC service utilization among IDPs is not clearly defined; there is differences among countries lowest in Africa which is 20% in Nigeria(8) and better utilization reported from Syria 82% (9).

Studies in Ethiopia reported that as the number of ANC visits increases maternal morbidity and mortality decrease like postpartum hemorrhage (PPH), early neonatal death, preterm labour and low-birth weight of 81.2%, 61.3%, 52.4% and 46.5% respectively by having four or more visits (10).

There have been international commitments and local interests to set goals to address MCH problems; The Ethiopian five year reproductive health strategy sets a goal of improving ANC+4 visits coverage from 68% to 98% by 2020 (11) (12). However, there is a paucity of information on magnitude of ANC utilization among ethnic-induced internally displaced persons in Least and Middle-Income Countries (LMIC).

1.1 Statement of problem

Due to conflict and violence, more than 41 million people were internally displaced globally and 21 million were women and girls (of which SSA contributed around 40%). Ethiopia had one of the hugest burden (13). Due to the recent war in the country, over 1.8 million people (in Tigray), 1 million (in Amhara) and 334,196 (in Afar) were daily displaced (2).

IDPs encounter more negative health outcomes compared to general population (14). And access to maternal health care is a major challenge among IDPs. most pregnancies ended as still birth and miscarriage and also increased number of maternal mortality among IDPs and not attending ANC visit increases the odds of maternal mortality by 1.75(8)(15).

Conflict related displacement affects maternal reproductive health (MRH) directly and indirectly and leads to increased number of maternal and newborn morbidity and mortality, intimate partner violence (IPV), unwanted pregnancies and acquire sexually transmitted infections like HIV/AIDS (16). The problems is devastating among adolescent girls due to SRH related mortalities and morbidities and its effect on their children (13)(17).

Although ANC has a positive impact on maternal and newborn health, the utilization of the recommended number of visits remain low, particularly in Sub-Saharan Africa; The problem worsen for those displaced women (18)(19). Studies conducted among internally displaced women revealed that service utilization was even lower(13), which stack at 28% in Nigeria (20), 59% in the Democratic Republic of Congo(21) ,20% in Nigeria(8). and 82% in Syria (9).

Studies have indicated that different factors are associated with ANC service utilization among Internally Displaced women. Socio demographic (including couples educational status, maternal age(22), husband educational status, household monthly income, lack of knowledge (23)); health system related factors (including distance to the health facility) (24) (15) (25),); and political factors such as conflict and war (26) affect ANC service uptake.

Missing ANC visit had adverse maternal and birth outcome; a study done in Tigray revealed that a women who had less than four ANC visit had 4.35 times more risk of experiencing adverse birth outcome(24); This study was supported by another study done in Nigeria which showed that attending fewer than 4 ANC visits increases the odds of maternal death by 1.75 among pregnant mothers(15).

Despite the highest magnitude of displaced persons (due to conflict, natural disaster and other factors), studies are lacking on assessing ANC service utilization among internally displaced pregnant Amhara women, who have been forcefully evicted from their usual place of abode due to their identity from different parts of Ethiopia. Thus, our study aims to bridge this gap and generate evidences for policy makers.

1.2 Rationale of the study

Currently, there is an increasing number Internally Displaced Persons (IDPs) due to different natural and manmade disasters in Ethiopia. Amharas have been targeted for eviction for different parts of the countries. The IDP recipient Amhara region is crowded by IDPs that come to it due to ethnic based conflict. The region has low coverage of maternal and child health services including ANC, delivery, PNC, and child immunization service which was severely compromised and disrupted due to destruction of the health facilities and the high work load fatigue(27).

Internally displaced pregnant mothers can't access maternal health care services and other Sexual Reproductive Health services due to different reasons(28). ANC is very crucial and an entry point for other maternal health services and helps to reduce maternal and perinatal mortality and morbidity among pregnant mothers(10)(29). Despite the growing number of ethnic Amhara IDPs displaced to the Amhara region, there are no adequate studies conducted to assess ANC utilization among internally displaced reproductive age women. Our current study aimed to address these gaps and identify factors that hinder service utilization, to bring to the attention of policy makers to set appropriate strategies and improve service uptake. The study will also be a spring board for conducting other similar studies and to generate objective findings on the continuum of maternal health care services.

Chapter two: LITERATURE REVIEW

2.1 Magnitude of Antenatal care utilization

ANC service utilization had great impact in curving maternal and child mortality and morbidity. Globally the post MDGs era reveals that overall prevalence of ANC service use was 78.2% (30). In SSA countries, it was 58.5% and higher in Southern (78.9%) and lower (53.39%) in Eastern Africa (31). In Ethiopia 74% of women received ANC from skilled provider and the 2019 mini DHS revealed that ANC utilization in Amhara region was 82.6%(7). To my knowledge there is no evidence which shows global prevalence of ANC service utilization among IDPs.

Use of SRH service has been very low among internally displaced women than the general population. In Nigeria more than half didn't attend any ANC visit and only 28% had four ANC visit. In Syria, 17% of pregnant women living in camps were unable to get ANC service (20) (32).

Number of ANC visits

Globally, more than four fifths (84.2%) of women had only one visit and 59.1% of them have four or more ANC visit, while in SSA 76.7% and 48.6% of women had only one and four plus ANC visits respectively.(33). Evidences in Ethiopia showed that only 42% women and in Amhara region 50.8% of women have received four or more ANC visits (7).

2.2 Factors Associated with Antenatal care service utilization among IDPs

Socio-demographic factors

A leading characteristics of a women that affects ANC service utilization is age; a systemic literature review done in 37 conflict affected countries showed that younger women were less likely to utilize ANC service than older women(23). But, studies done in Yemen and among conventional households in Ethiopian using the mini DHS 2019 reveals that older maternal age was significantly associated with inadequate utilization of ANC(7) (23) (31).

Primary and above level of maternal education was positively associated with ANC service utilization; a study done in Ethiopia shows that women with primary and secondary and above level of educational status were 1.8 and 4.4 times more likely to utilize ANC service compared with those who have never been in school. This result is comparable with a study

done in Nigeria among internally displaced pregnant women which revealed that a women with no education didn't attend ANC service, while those who attained primary school attended 3-4 ANC visits (20) (34) (20) (35); not only maternal education husband educational status is also positively associated with number of ANC visits (36).

Place of residence is also associated with ANC utilization; women who lives in rural areas is 47% less likely to utilize ANC service than urban dwellers (37), marital status is also associated with ANC service utilization; married women were more likely to utilize ANC(22)(38), Religion (34), and economic status (23) (39) of women are also among the socio-demographic determinants that are correlated with utilization of ANC services among IDP women. Having Access to mass media such as radio, watching TV and reading newspaper were more likely to utilize ANC services and early initiation of ANC service (40) (41).

Obstetric related factors

Among obstetric factors that associate with ANC service utilization is parity; women who had no previous parity are more likely to initiate ANC service than women who had more parity; but a study done in Ethiopia revealed that women having increased number of children had a 7% lower level of utilization of ANC services compared with their counterparts (23) (37),

A women who had previous history of pregnancy related complication such as miscarriage or stillbirth (42), and Another study in Konso showed that mothers who had not planned their pregnancy were less likely to utilize ANC service than those who planned their pregnancy (40) (37) are more likely to utilize ANC services compared with their comparison groups.

Health system related and other factors

There are also health system related factors that affect utilization of ANC including distance to the nearest health facility (20). A study in Ethiopia showed women who lived to the nearest health facility in less than an hour from their home were more likely to utilize ANC (40). A study done in Nigeria also shows women who reside in 1km and 5kms far away

from the health facility increases the proportion of not utilizing by 39.1% and 63.5% respectively(20).

Availability of health facility and health professional who provide the service in the camp, and readiness of MCH service in health facilities has also a significant impact on ANC utilization (20).

Women’s autonomy on decision of maternal health services is also an important factor for ANC service utilization. A woman who has autonomy to decide is 49% times more likely to utilize ANC than those who doesn’t have the autonomy (43). This finding is consistent with another study done Ethiopia and Bangladesh that indicated the autonomy of women increases utilization of ANC service and frequency of visits (44).

2.3 consequence of missing ANC visit

Missing ANC visit had an impact on the health of the mother and her child. A systemic review in Nigeria revealed that fewer than 4 ANC visits increased the odds of maternal death among pregnant mothers (15).

A systematic literature review done in conflict in Syria indicated a reduction of ANC service coverage from 87.7% to 62% during the conflict and resulted to have an increased maternal mortality, neonatal mortality, and still birth(45) A similar finding was also reported from another study in the Sudan (46).

Conceptual framework

ANC service utilization was affected by different factors. According to the new Anderson Newman's behavioral health belief model(47) (shown in Figure 2 below) individual determinants of health care utilization can be divided into predisposing, enabling and need components. This model helped us to conceptualize the factors associated with ANC service utilization and was also used to guide the literature search in this study in order to find out the factors associated with antenatal care utilization.

With respect to ANC, predisposing determinants refer to sociodemographic characteristics of women affecting the use of ANC service. Enabling determinants refer to conditions which make ANC service available to pregnant women. So, in our study, factors that categorized as enabling factors were the health facility related factors and knowledge about ANC service. And the need factors were pregnancy related components that explain the degree of care needed. Thus, the need factors, in our study, were obstetric related factors.

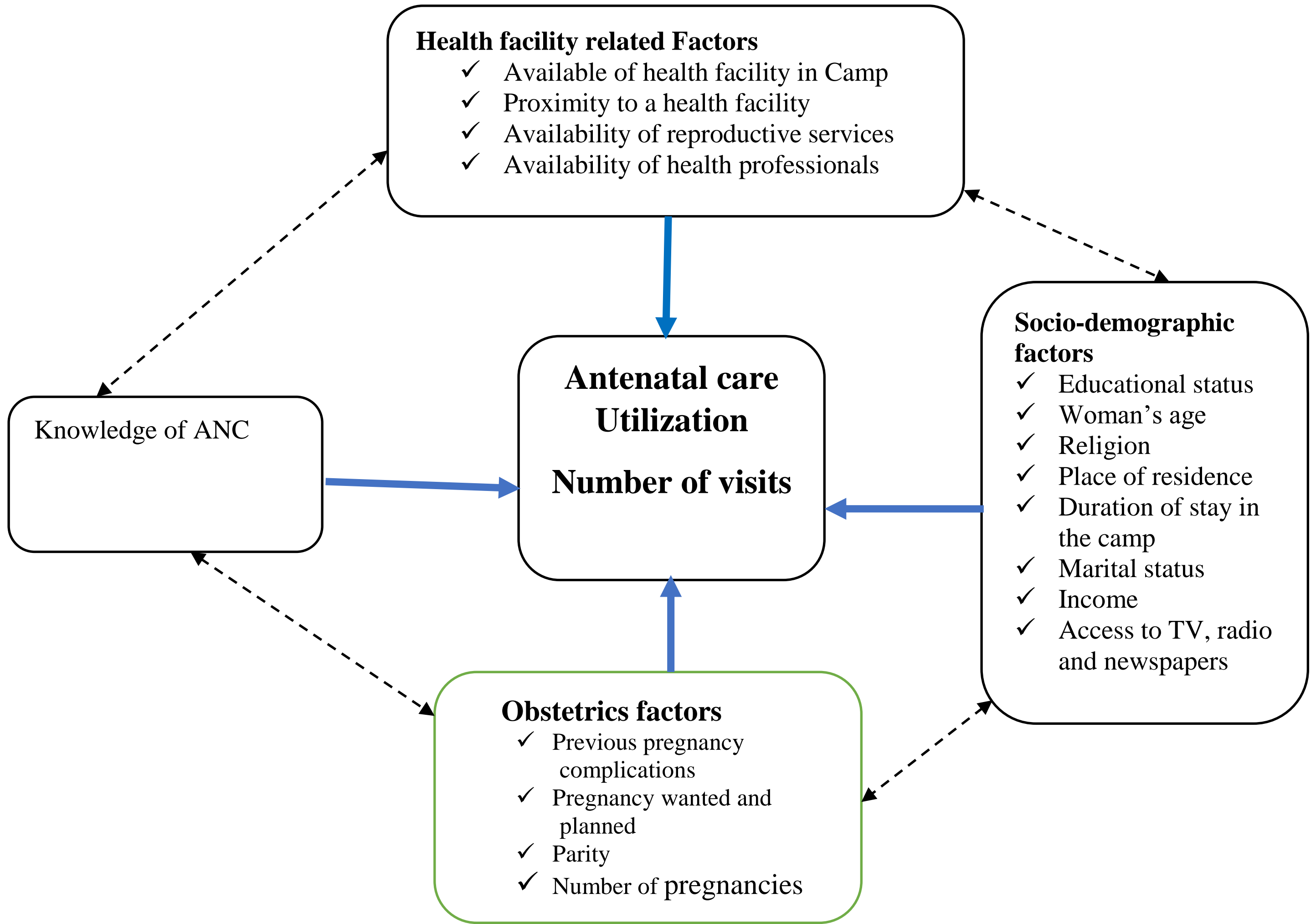

Figure 1:-**The adapted conceptual framework from different litrature review and Anderson Newman's model** (47)(20)**.**

Chapter three: OBJECTIVES

3.1 General objective

- To assess antenatal care service utilization and its associated factors among internally displaced reproductive age Amhara women in the North-Shewa zone camps in Amhara region, 2023.

3.2 Specific objective

- To determine the prevalence of antenatal care service utilization among internally displaced reproductive age Amhara women in the North-Shewa zone camps in Amhara region, 2023.
- To identify factors associated with antenatal care service utilization among internally displaced reproductive age Amhara women in the North-Shewa zone camps in Amhara region, 2023.

Chapter four: METHODS

4.1 Study area

The study was conducted in Amhara region which is the second largest region in Ethiopia, Bahir-Dar is the capital city of the region and found 450 km from the capital city of Addis Ababa. The region has 15 zones and town administrations. According to the Regional Disaster Risk Management Bureau, there were about 840,714 internally displaced peoples in the region in 2022. Around 136,857 were found in 37 camps, located in six different zones. IDPs were temporarily settled in Semen Shewa zone (24,170), East Gojam (16,071), West Gojam (193,780), Bahir-Dar (7893), Awi zone (30,602), Waghmera zone (92,822), Oromo zone (4623), South Wello (16,594), Gondar Town (2,238), Waghmera (32,961), North Gondar (12824) and South Gondar (431). There are 13 IDP camps in semen Shewa zone alone (*6 in Debre-Birhan, 1 in Minjar, 1in Menz-lalo, 1 in Menz-Mama, 1 in Menz-keya, 1 in Meda, 1 in Ataye town, &1 in Shewa Robit town).*

4.2 Study design and Period

- ✓ The study employed a facility based cross-sectional study design. The study was conducted from February-March 2023

4.3 Population

4.3.1 Source of Population

- ✓ The source population for this study area all internally displaced reproductive age Amhara women who were living in North-Shewa Zone of Amhara region in North East Ethiopia.

4.3.2 Study population

- ✓ The study population are all internally displaced reproductive age Amhara women who had birth after displacement or are pregnant at the time of the study and are living in the IDP camps in North-Shewa zone in Amhara region of Ethiopia.

4.4 Eligibility criteria

4.4.1 Inclusion criteria

The inclusion criteria for this study include all internally displaced reproductive age Amhara women living in IDP camps of Debre-Birhan woreda in Amhara region of Ethiopia, those IDP mothers who became pregnant and gave birth after displacement at the camp regardless of birth outcome, and those who were pregnant at time of data collection

4.4.2 Exclusion criteria.

Critically ill and those women who were unable to communicate during the study and living out of camps were excluded from the study.

4.3 Sample size determination

The sample size was calculated using single population proportion formula. The prevalence of ANC service utilization among IDPs in Nigeria which was 28% was considered since the study was conducted in the same situation as the present study (20). With the assumption of 95% confidence interval and 5% margin of error, the sample size was calculated as follows.

$$N= \frac{(Z_{\alpha/2})^2 (P) (1-P)}{d^2}$$

$$N = \frac{(1.96)^2 x 0.28 (1-0.28)}{(0.05)^2} = \frac{3.84 X 0.774}{0.0025}$$

N=310

Adding 10% non-response rate 310 X10%=31

The calculated sample size using the single population proportion was **341.**

For 2nd objective, the sample size was calculated by using Epi-info 7.

Table 1: Sample size calculation for the second objective.

Variables (Associated factors)	Confidence interval	Power	Percent in non-exposed %	Adjusted OR	Sample size
Knowledge on ANC	95%	80%	4.8(48).	6.52	134
Educational status	95%	80%	26.6(49)	6.52	305
Place of residence	95%	80%	73.3(40)	4.93	178

The largest sample size is the one which is calculated for the primary objective using the single population proportion formula. We considered a design effect 1.5 was to control for heterogeneity of the characteristics of study women. Then final sample size for this study become **512.**

4.5 Sampling Technique and procedure

A multi-stage sampling technique was used to select study participants. From the 15 zones in Amhara region North-Shewa zone was purposely selected. In North-Shewa zone, there were 7 Woredas that have IDPs camps and two woredas (Debre-Birhan and Minjar) were selected by considering 30% of the Woredas with IDPs (due to financial and logistics issues). Minjar Woreda has one and Debre-Birhan Woreda has six IDPs camps. Finally, we selected the camp from Minjar Woreda and two camps (namely China and Weynshet IDP camps) in Debre-Birhan using lottery method. There were about 6044 internally displaced women (IDW) in China, 2430 in Weynshet, and 1223 in Minjar woreda Seferselam camp. The sample size was proportionally allocated to the size of IDW in the selected camps and simple random sampling method were used to select study participants in each camp (Figure 2).

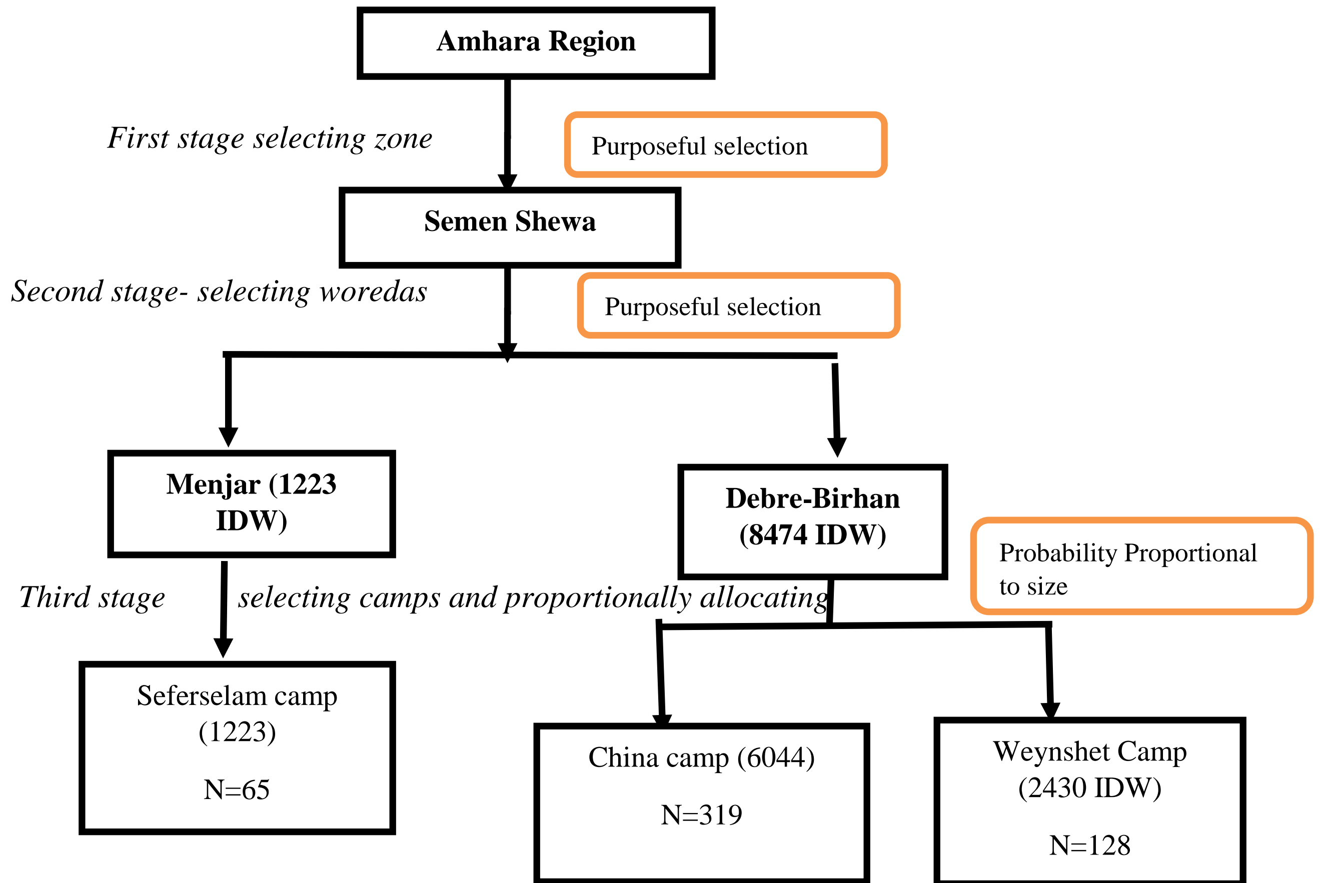

Figure 2: Schematic presentation of the sampling procedure

4.6 Study variable

4.6.1 Dependent variable

In this study the outcome variables are two, that includes a dichotomous variable of at least 1st visit ANC utilization (yes/no) and the frequency of ANC visits made to a health facility.

4.6.1 Independent variable

The following thematic determinants were considered in this study.

- **Sociodemographic -** *age, religion, income, educational status, duration of stay in the camp, media exposure, respondent autonomy,*
- **Health facility and related enabling factors***, health facility distance, availability of ANC service, availability of health provider, having support from family member*
- **Obstetrics need factor** - *parity, previous history of complication, pregnancy wanted.*
- **Knowledge -** about ANC service.

4.7 Operational definition

According to our study the following word operationalize as

- ***Antenatal care utilization*****:** a care given to pregnant mothers at least once during her latest pregnancy by health professionals with obstetric and gynecological skills (doctors, health officers, midwifes and nurses) (50).
- ***Internally Displaced Person (IDP):*** are peoples forced to leave their homes due to mainly their identities, but remain within the borders of their own country (1).
- **Knowledge** about- knowledge about ANC was assessed by asking 10 dichotomous (yes/no) questions. They were *(1) ANC is a care provided by skilled health professionals during pregnancy to ensure the health condition of the mother and her baby; (2) A women will have six to eight visits during her pregnancy; (3) A women should receive a respectful individualized and a women-centered care during her pregnancy; (4) A women can initiate her ANC visit starting from three month of her pregnancy; (5) ANC will help to prevent pregnancy related complications on the women and her baby; (6) ANC can help the women to be aware of danger signs during pregnancy; (7) A woman needs support of her husband and/or family during ANC visit; (8) Does ANC support pregnant women in obtaining information about the place of their delivery and other postpartum services; (9) ANC can be provided*

for all women irrespective of their place of residence, religion and other disparities that exists; (10) The care for pregnant women will continue after delivery. We then taking composite variable of those question a women who answers above the mean labeled as "Good knowledge" and below the mean "Poor knowledge".

- ***Women autonomy to decide:*** is coded as "Yes" on the options when women have the right to participate in health service utilization to use health care; that means a woman decided alone by her own or decided jointly with her husband. On the other hand if the women has no role in the decision the option will be coded as "No"; husband or someone else in the family make the decision in which case, she is not autonomous in decision making to utilize health service utilization(34)(51).

4.8 Data collection tools and procedure

Data was collected using the digital Kobo Toolbox data collection scheme and an interviewer administered questionnaire adopted from different literatures and the local context of the study area, to obtain information on sociodemographic factors, obstetric history related characteristics, health systems related factors and ANC service utilization (52)(20)(40). Five midwives and three BSc nurses who are working in nearby health facilities were recruited. They are given adequate training on the principles of data collection and on how to complete each question and the methods that should be applied to further clarify the questions. The data collection was supervised by the principal investigator and one MPH student who is recruited as supervisor. The interview was done on a safer place in each camp after getting full informed consent from the camp leaders and study participants.

4.9 Data quality assurance

First the questionnaires were prepared in English and translated to Amharic and back translated to English to maintain its consistency. The data collection template was prepared in MS Excel and deployed to Mobile Kobo Toolbox collect app. Data were uploaded using get blank form in the app by data collectors. Before actual data collection, the data collection process and data collection tool were pretested on 5% of the sample at places other than study area (Shewa-Robit IDPs camp) and the necessary correction was made on the tool. Detailed training was given for data collectors and supervisor by the principal investigator.

Furthermore, the principal investigator and supervisor gave feedback and correction on daily basis. The interview was conducted on private/safe place in the camp to ensure that the respondent feels at ease at the time of data collection.

4.10 Data process and analysis

The data was collected by electronic capture using Kobo Toolbox. Then it was downloaded in the MS XLS form and exported to STATA V-14 for editing, cleaning, coding and analysis. During data cleaning, missing values and outliers were checked. Descriptive statistics such as frequency distribution of study participants, percentage distribution of ANC service utilizers, mean and standard deviation of the number of ANC visits are used to describe the study participants.

The difference in the prevalence of ANC service utilization levels across the categories of the different covariates considered in the study were checked using a chi-square test. Besides, the difference in the mean number of ANC visits across the various categories of the exposure variables were assessed using One-way Analysis of Variance (One-way ANOVA)

Multicollinearity diagnostic test was done for all independent variables before entered to multivariate analysis by using VIF (variance inflation factor).

Bivariable binary logistic regression was conducted and variables with p-value less than 0.25 were selected for multivariable analysis. Adjusted odds ratio along with the 95% confidence interval were used to measure the strength, direction and significance of association between the different covariates and utilization of at least 1st ANC visit services. In the multivariable binary logistic regression, level of statistical significance was declared at 95% confidence interval and p-value of ≤ 0.05 and reported with respective crude and adjusted odds ratios.

Besides, there is a count outcome variable, which is the number of ANC visit made by internally displaced reproductive age group Amhara women. To identify factors associated with the number of ANC visits made by pregnant woman, Poisson regression model were used. Crude and adjusted incidence rate ratios along with their 95% confidence intervals are

used to calibrate the strength, direction and significance of association. Finally, key findings of the study are portrayed using tables and graphs with adequate textual descriptions

4.11 Ethical consideration

Ethical clearance was obtained from the research Ethics Committee of the School of Public Health, College of Health Sciences in Addis Ababa University. Formal support letter was written for the Amhara Regional and Semen Showa Zone Disaster Risk Commission and Health Bureau. The purpose and importance of the study was explained to the study participants and data was collected after full informed verbal consent was obtained from the respondents. Confidentiality of information was maintained by excluding names as identifiers in the questionnaire and the interview was conducted in a private place. Moreover, respondents were told that they can stop the interview and raise any question on unclear issues at any time during the interview. Pregnant women who do not start ANC were counseled to start ANC as a benefit attached to this study after data collection.

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5 Results

5.1 Sociodemographic characteristics of study respondents

In our study, out of the 512 estimated sample size of study participants 500 agreed to share their experiences with us which makes the response rate 97.7%. The majority 234 (46.8%) of the respondents were from Weynshet Kebele IDP camp and more than half 261(52%) were in the age group of 25-34 years. Three hundred fifty-nine (71.8%) of the participants were rural dwellers in the place of origin and the majority 434 (86.8%) stay for six months and above in the camp. More than three-fifths 308 (61.6%) can't read and write during the study time and 383 (65.6%) had a monthly income of less than 2500 Ethiopian birr. (Table 2)

Table 2: Sociodemographic characteristics of Internally Displaced Amhara Women in North-Shewa zone camps of Amhara Region, Northern East Ethiopia, 2023. (n=500)

Variable	Frequency	Percent (%)
Name of kebele IDP camp found		
Seferselam	85	17
Chainia	181	36.2
Weynshet	234	46.8
Age		
<25	71	14.2
25-29	186	37.2
30-34	75	15
35-49	168	33.6
Place of residence type(origin)		
Rural	359	71.8
Urban	141	28.2
Duration of stay in camp		
≤6 month	66	13.2
≥6 month	434	86.8
Religion		
Orthodox	319	36.2
Muslim	181	36.2
Educational status of mother		
Can't read and write	308	61.6
Primary education and above	192	38.4
Marital status		
Married	390	78
Unmarried	110	22
Husband educational status		
Can't read and write	168	42.9
Primary education and above	222	57.1
Monthly income (ETB)		
<2500	383	56.6
2500-4000	178	35.6
>4000	39	7.8
Knowledge about ANC		
Good	236	47.2
Poor	264	52.8
Access to media like TV, radio and newspaper	73	14.6
Yes		
No	427	85.4

Knowledge about ANC Services

To assess the knowledge of study participants regarding ANC, ten questions were asked. Our data was normally distributed and we take mean as a cut-off point and the value were 15.7± 3.38. About, 264 (52.8%) of internally displaced Amhara women involved in this study had good knowledge on antenatal care services. Among 500 women, nearly three fourth 355 (71 %) are aware that ANC helps to prevent complication. About 229 (45.8%) of women are aware that ANC visit should be initiated in the first three months of a pregnancy while only nearly two fifths 199 (39.8%) are aware that a woman will have to have six to eight visits. Moreover, 367(73.4%) of women are also aware of the fact that they should receive a respectful and individualized care and 369 (76.8%) of the women believe that ANC should be provided irrespective of their religion and place of residence. (**Table 3)**

Table 3: knowledge on ANC among Internally Displaced Amhara Women in North-Shewa zone camps in Amhara Region, Northern East Ethiopia, 2023. (n=500)

Variable	Category	Freq.	%
ANC is provided by a health professional	Yes	401	80.2
	No	99	19.8
A woman will have six to eight ANC visits	Yes	199	39.8
	No	301	60.2
Women should receive respectful & individualized ANC care	Yes	367	73.4
	No	133	26.6
Women initiate ANC visit in the first three month	Yes	229	45.8
	No	271	54.2
ANC helps to prevent complications in pregnancy	Yes	355	71
	No	145	29
ANC helps to be aware of danger sign of pregnancy	Yes	351	70.2
	No	149	29.8
A woman needs support from her family during ANC visits	Yes	217	43.4
	No	283	56.6
ANC supports to get information on pregnancy related issues	Yes	212	42.4
	No	288	57.6
ANC can be provided for all women irrespective of their religion and place of residence	Yes	369	73.8
	No	131	26.2
ANC continue after delivery	Yes	154	30.8
	No	346	69.2
Frequency of composite variable of knowledge	Good	236	47.2
	Poor	264	52.8

Health Facility Related Characteristics

About 404 (80.8%) of the study women declared that there is a health facility within their camps and 339 (67.8%) of the study women indicated that health facilities are located within 1 km distance from their respective camps. Moreover, 412 (82.4%) of the study women indicated that the camps have a referral and linkage system to higher level health facilities. Half 250 (50%) of study women believed that IDP camps are moderately supporting the administration and the referral system. The majority 445 (89%) of the study women affirmed that health facilities have a health professional to provide ANC services. Only 73 (14.6%) of the participants have access to media (TV and radio) and newspaper. In our study, majority 451 (90.2%) of the study women feel safe and comfortable going to the health facilities for antenatal care services and above half 260 (52%) had family support to make the ANC visits. (Table 4)

Table 4: Health system related characteristics of Internally Displaced Amhara Women in North-Shewa zone of Amhara Region in Northern East Ethiopia, 2023. (n=500)

Variable	Frequency	Percent (%)
Availability of health facilities in camp		
Yes	404	80.8
No	96	19.2
Distance of health facility from camp		
Within 1km	339	67.8
< 5km	151	30.2
>5km	10	2.0
Availability of health professional		
Yes	445	89
No	55	11
Feel safe and comfortable going to ANC		
service	451	90.2
Yes	49	9.8
No		
Having family support		
Yes	260	52
No	240	48
Autonomy to decide on maternal health service		
Yes	341	68.2
No	159	31.8
Availability of referral and linkage system		
Yes	412	82.4
No	88	17.6
Support of admin in referral system		
Very low	51	10.2
Low	80	16
Moderate	250	50
Good	85	17
Very good	34	6.9

Obstetric Related Characteristics

The majority of study women were multipara 445(89.4) and nearly half 272 (54.4%) had pregnancy-related complications. And 333 (66.6%) of the respondents replied that their pregnancy was not wanted and planned (Table 5)

Table 5: Obstetric characteristics of the respondents in Internally Displaced Amhara Women in the North-Shewa zone camps of Amhara Region, North East Ethiopia, 2023. (n=500)

Variable	Frequency	Percent (%)
Gravidity		
1	31	6.2
>=2	469	93.8
Parity		
1	53	10.6
>=2	447	89.4
Previous history of Pregnancy related complications		
Yes	272	54.4
No	228	45.6
Pregnancy (wanted and planned)		
Yes	167	33.4
No	333	66.6
Time of ANC initiation		
First trimester	106	41.3
Second trimester	120	46.7
Third trimester	31	12.1
Place of ANC received		
health facility in the camp	147	57.2
Nearby health center	62	24.1
Nearby primary/ general hospital	48	18.7

5.2 ANC Service Utilization among Displaced Women

Two hundred fifty-seven (51%) (95% CI: 45.1-54.1) received ANC services during pregnancy from a health facility found in the camp and out of camp (Figure 3).

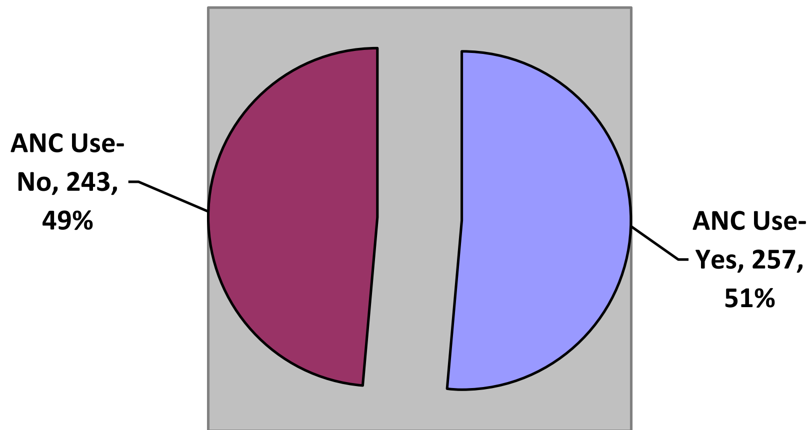

Figure 3: ANC service utilization among Internally Displaced Amhara Women in North-Shewa zone camps of Amhara Region, Northern East Ethiopia, 2023.

5.3 Number of ANC Visits

The mean number of ANC visit in our study were 2 with the minimum number of visit of 1 and a maximum number of visits was 5 with SD 1.34. About half of women 243 (49%) didn't have any visits while nearly a quarter 115 (23%) had two visits. Only a small proportion of women had the recommend number of four and more visits 26 (5.2%) (Figure 5)

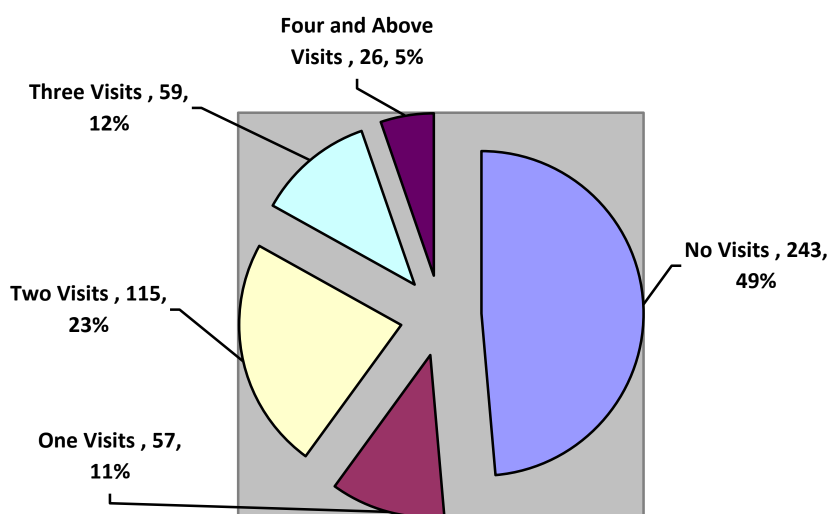

Figure 4: Number of ANC Visits among IDWs in Semen-Shewa zone, Amhara Region, Northern Ethiopia, 2023.

One way ANOVA on the mean number of ANC visits

As depicted in Table 6 below, women (2.51) in the age group 30-34 have more mean number of visits followed by those in the younger age group (2.35) (less than 25 years of age) though the difference is not statistically significant. The mean number of ANC visits is significantly higher among those women who attained primary plus level of education. And also one factor of analysis of variance has shown the mean number of ANC visits is significantly higher among those women who has good knowledge about ANC than their counterparties. One factor analysis of variance has shown that the mean number of visit is significantly among women who has autonomy to decide than those who doesn’t. Women (2.46) who has access TV, radio and newspaper have more number of ANC visit than those who doesn’t have but the difference is not statistically significant.

Table 6; one way ANOVA on the mean number of ANC visits among Internally Displaced Amhara Women in North-Shewa zone camps of Amhara Region, Northern East Ethiopia, 2023. (n=500)

Variables	Mean	Standard Error	P-value
Age of respondent:			
<25	2.35	1.44	0.09
25-29	2.06	1.36	
30-34	2.51	1.38	
35-49	2.29	1.39	
Education status:			
Can't read and write	1.98	1.31	0.00
Primary and above	2.68	1.4	
Husband Education status:			
Can't read and write	1.91	1.34	0.00
Primary and above	2.7	1.38	
Respondent income (ETB):			
<2500	1.9	1.27	0.00
2500-4000	2.72	1.425	
>=4000	2.59	1.35	
Respondent autonomy to decide			
Yes	2.67	0.94	
No	1.34	1.36	0.00
Knowledge about ANC			
Good	1.67	1.17	0.00
Poor	2.89	2.33	
Access to Tv, radio and newspaper			
Yes	2.46	1.2	
No	2.21	1.41	0.15
Availability of health facility in the camp			
Yes	2.5	1.4	
No	1.14	0.5	0.00
Distance to health facility			
Within 1km	2.52	1.42	
More than 5km	1.5	1.08	0.00
Within 5km	1.67	1.11	
Number of parities			
<=1	2.21	1.38	0.8
>=2	2.26	1.39	
Number of pregnancies			
<=1	2.03	1.28	0.37
>=2	2.26	1.39	
Pregnancy complication			
Yes	2.48	1.38	0.00
No	1.96	1.35	
Wanted pregnancy			
Yes	3.06	1.22	0.00
No	1.84	1.29	

5.4 Factors Associated with ANC service Utilization

Factors Associated with at least 1st ANC visit service Utilization

To identify factors, bi-variable and multi-variable binary logistic regression analysis was carried out for twelve explanatory variables. In multi-variable analysis (seven); educational status of the husband, pregnancy complications, wantedness of pregnancy, distance to health facility and knowledge about ANC have significant association with ANC service utilization (**Table 7**).

Women whose husbands have attained primary and above level of education were about 2.56 times more likely to utilize at least 1st visit of antenatal care services than those women whose husband can't read and write [AOR: 2.56, 95% CI: (1.24-5.27)].

In the multivariable analysis, distance from the residence camp to the nearest health facility of internally displaced Amhara women is found to be associated with at least 1st visit of antenatal care service utilization. Mothers who lived at a walking distance of less than 1km [AOR = 4.45 (2.07-9.45)] times were more likely to use at least 1st visit of ANC services compared with those who lived at a walking distance of more than 5kms.

Besides, women who had pregnancy complications were [AOR: 4.09, 95% CI: (**2.07-8.07**)] times more likely to utilize at least 1st visit antenatal care services than those who don't have such complications.

In addition to this, women whose pregnancies were either wanted or planned were [AOR: 8.1, 95% CI: (3.97-16.55)] times more likely to utilize at least 1st visit antenatal care services than those who doesn't have wanted or planned pregnancy.

The odds of at least 1st visit ANC services utilization were [AOR: 5.67, 95% CI: (2.93-10.99)] times higher among internally displaced Amhara Women who had a good knowledge compared with those with a poor knowledge.

Table 7: Bi-variable and multi-variable binary logistic regression analysis output of factors associated with ANC service utilization among Internally Displaced Amhara women in the North-Shewa zone camps of Amhara Region 2023. (n=500)

Variables	ANC service utilization among IDPs			
	Categories	**COR (95%CI)**	**AOR (95%CI)**	**P>|z|**
Age of respondent	<25years	1		
	25-29	0.56[32-98]	0.45[0.18-1.12]	0.86
	30-34	1.1[0.57-2.12]	1.09[0.37-3.26]	0.87
	35-49	0.84[0.48-1.47]	0.96[0.37-2.51]	0.94
Husband education	Can't read and write	1		
	Primary and above	4.08[2.66-6.24]	**2.56[1.24-5.27]**	**0.01**
Educational status of mother	Can't read and write	1		
	Primary and above	2.77[1.9-4.04]	1.07[0.55-2.09]	0.83
Respondent income (ETB)	<2500	1	1	
	2500-4000	3.00 [2.02-4.44]	1.41 [0.71-2.79]	0.32
	>4000	3.43[1.67-7.06]	0.73[0.21-2.34]	0.58
Knowledge about ANC	Good	8.49 [5.66-12.73]	**5.67[2.93-10.99] ****	**0.00**
	Poor	1	1	
Distance to health facility	Within 1km	15.4 [7.5-31.4]	**4.45[2.07-9.45] ****	**0.00**
	More than 5km	1	1	
Access to Tv, radio and newspaper	Yes	3.13 [1.798-5.46]	1.12[0.42- 2.99]	0.81
	No	1	1	
Pregnancy complication	Yes	2.7 [1.88 -3.88]	**4.09 [2.07-8.07] ****	**0.00**
	No	1	1	
Wanted pregnancy	Yes	11.45 [7.05 - 18.64]	**8.1[3.97-16.55] ****	**0.00**
	No	1	1	

(COR, crude odds ratio; AOR, adjusted odds ratio; CI, confidence interval)

5.5 Factors Associated with Number of Visits

On the other hand, an attempt was done to model number of ANC visits in Poisson regression with twelve explanatory variables. In the multi-variable analysis four variables including availability of health facilities in the camp, women's autonomy to decide, the wantedness of the pregnancy and knowledge about ANC service have a significant association with the number of ANC service utilization.

The incidence of frequent number of ANC visits have been (AIRR=1.29: 95% CI [1.09-1.53]) times higher among internally displaced Amhara women with a good knowledge compared with those with a poor knowledge of ANC services. And, the study has also shown the frequency of ANC services were (AIRR=1.75: 95% CI [1.32-2.35] times higher among internally displaced Amhara women who have a health facility in their camp compared with those IDP women who do not have such health facilities in their camp. Moreover. IDP Amhara women who had autonomy to decide on their health care service utilization have (AIRR=1.30: 95% CI [1.07-1.59]) times increased incidence rate of number of antenatal care visits compared with those who doesn't have.

In addition to this, the study has revealed that IDP Amhara women who wanted their pregnancies has AIRR=1.27: 95% CI [1.09-1.48] times more frequent visits to ANC services compared with those women who had a pregnancy without their will.

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Table 8: Poisson regression analysis output of factors associated with number of ANC visits among Internally Displaced Amhara Women in North-Shewa zone camps in Amhara Region, North East Ethiopia, 2023. (n=500) (n=500)

Variables	CIRR [95% CI]	AIRR [95% CI]	P>|z|
Age			
<25	1.00	1.00	
25-29	0.88[.73-1.05]	0.90 [0.72-1.13]	0.39
30-34	1.06[.86-1.31]	0.94[0 .73-1.22]	0.66
35-49	0.97[.81-1.17]	0.93[0.74-1.18]	0.59
Education status			
Can't read and write	1.00	1.00	0.95
Primary and above	1.36[1.21-1.52]	1[0 .89-1.20]	
Husband Education			

status Can't read and write Primary and above	1.00 1.41[1.23-1.62]	1.00 1.1[0 .93-1.31]	 0.25
Respondent income (ETB) <2500 2500-4000 >=4000	 1.00 1.43[1.27-1.62] 1.36[1.1-1.68]	 1.00 1.02[0 .88-1.19] 0.91[0 .7-1.18]	 0.7
Respondent autonomy to decide Yes No	 1.99[1.72-2.31] 1.00	 **1.30[1.08-1.6]** 1.00	 **0.01****
Knowledge about ANC Good Poor	 1.72[1.53-1.94] 1.00	 **1.29[1.09-1.53]** 1.00	 **0.00****
Access to Tv, radio and newspaper Yes No	 1.11[.95-1.31] 1.00	 0.83[0 .68-0.01] 1.00	 0.07
Availability of health facility in the camp Yes No	 2.19[1.79-2.67] 1.00	 **1.72[1.29-2.28]** 1.00	 **0.00****
Distance to health facility Within 1km More than 5km	 1.51[1.31-1.73] 1.00	 1.00[0 .81-1.21] 1.00	 0.98
Number of parities <=1 >=2	 1.00 1.02[.84-1.24]	 1.00 1.06[0 .78-1.44]	 0.71
Number of pregnancies <=1 >=2	 1.00 1.11[.86-1.43]	 1.00 1.16[0 .72-1.87]	 0.54
Pregnancy complication Yes No	 1.26[1.12-1.42] 1.00	 1.14[1.98-1.32] 1.00	 0.09
Wanted pregnancy Yes No	 1.67[1.48-1.87] 1.00	 **1.27[1.09-1.48]** 1.00	 **0.00****

(CIRR, crude incidence rate ratio; AIRR, adjusted incidence rate ratio; CI, confidence interval)

Discussions

Globally, magnitude of displaced population is increasing due to multiple and complex factors. In the meantime, women and girls are vulnerable to different SRH problems during the trip and at the camps where they stay (16).

According to our study finding nearly half number (49.6%) of women has no any ANC visit and only 5% of women has four and more visit. There are factors affecting ANC visit and frequency of visit from those husband education, knowledge about ANC, distance to nearest health facility, having history of pregnancy complication and wanted pregnancy factors affect ANC visit. And regarding too number of visit women autonomy to decide on maternal health service, availability of health facility in the camp, knowledge about ANC and wanted pregnancy affects frequency of ANC visit.

Our study found that only 51.4% received at least 1st ANC services during pregnancy from a health facility found in and out of the camps. This finding is lower than a study Democratic Republic of Congo (59%)(21) And in Syria (82%)(9). Syrian respondents were mostly refugees and not selected randomly (by convenience sampling) which might result in a higher level of service utilization. Moreover, refuges are slightly more organized and structured than IDP as they received foreigners and countries focus on them. On the contrary IDP got attention and place where there's a high displacement due to different reasons. Displacement causes disruption of the services and all actors need to availing health facility in the camps and ensure delivery of quality and exempted services to prevent adverse pregnancy outcomes like low birth weight, preterm labor and infant death (53).

A number of sociodemographic factors influence ANC services utilization among Amhara IDPs. Maternal education was one of the factor in studies conducted in Ethiopia(44), Nigeria(20), and Yemen(28), but not in our study. The reason might that most were uneducated women displaced from rural part of Ethiopia. However, our study found that husband education was positively associated with ANC service utilization among IDP women and is in line with a study in Lebanon and Iraq (36). This might be related to the fact that educated men than women are more likely to present their cause to access and give support to variety of maternal health services. So it implies that husbands education has a great role on providing women ANC service visit. This finding demonstrates addressing the formal education for IDPs and design appropriate strategies to improve ANC service utilization would help to better ANC service utilization among IDPs women.

Having wanted and planned pregnancy and pregnancy complications were associated with the utilization of ANC services and was consistent with other studies done in Ethiopian (37) (40)(54) and Nigeria (20), respectively. These could be due to the fact that women with unwanted pregnancy might have the pregnancy in a desperate situation during the displacement which made them hopeless to take care of themselves and the pregnancy; moreover, the pregnancy could be due to violence's occurred during displacement and in IDP camp. So MOH and other responsible stakeholder should provide free contraception method and abortion service and other SRH service to prevent unwanted pregnancy and also better protection for women and girls to prevent violence against women. And also those who had previous complications might be and informed on the consequences and frustrated and alerted for subsequent pregnancies for not having related problems. So midwifes, health extension workers and other health professionals should give adequate and clear information for the pregnant mother during her ANC visit.

Women who reside close to the health facility were four 4 times more likely to utilize ANC services than those who reside more than five kilometers. This was in line with a study done in Konso(40), Nigeria (20) and other review (42). Most IDPs were displaced in a traumatizing conflict and they were new to the current area of residence. Therefore, they might fear to walk further distances and also couldn't afford transportation for the services. Availability of maternal health service in the camp could ease accessibility and affordability.

Women who had good knowledge on ANC services were 5.6 times more likely to utilize antenatal care services. These could be due to women who have good knowledge about ANC has better understanding about the importance of ANC services and the consequence of missing the service. This finding is consistent with a literature review that indicated women who have good knowledge about ANC has 3 times more likely to utilize ANC service compared with those who have poor knowledge(42). This implies that knowledge about ANC has a great role to utilize ANC services, all actors should work aggressively on advocacy and promotion activities to aware displaced women and the need for SRH service at IDPs camps.

Despite WHO recommendation, at least a minimum of eight ANC visit, most pregnant women at IDP received below four visits. The problem is worse for a woman who were displaced because of their fear, lack of money to cover medical expenses and other costs, absence of family members to give the required social and economic services, and the less commitment of the government and development partners in providing services to IDPs. Number of ANC visits have a positive effect on reducing pregnancy related complications. Women who have more than 4 ANC visits have less pregnancy related complications than those who had less or no visit. Women who has less frequency of visit of below WHO recommendation has poor birth outcome, low birth weight, neonatal death and/or fetal death(29)

In our study, utilization of the recommended number of ANC visit was very low. Nearly half (48.6 %) didn't have any visits and was higher than Syria (17%) (32). the difference might be due to different sociodemographic characteristics of the respondents; most of respondent in our study comes from rural part of Ethiopia where most of them doesn't attend formal education and limited knowledge about ANC service. Moreover, only a small proportion of women had four visits (5.2%) and was low a study in Nigeria (28%) (20) and could be due to health facility distance and unavailability in the camp. So health extension worker other health professional and responsible organization should create strengthening continuum of ANC visit for those marginalized group of population.

The incidence of number of visits increased by 97% for a woman who has an autonomy to decide on their utilization of health services than those who doesn't have. This study was

consistent with a systemic literature review done in Ethiopia that revealed that the incidence of the number of ANC visits increased by 75% and 49% of a women who have autonomy to decide and those who do not have such an autonomy on maternal health service utilization, respectively(44)(43). This indicates the importance of women empowerment not only in household management and related issues but also in seeking maternal health services. They can decide by themselves about their health needs without asking any permission either from their husband or any of their family members. So ministry of women, and other responsible stakeholders should work on empowering women in different aspects like economic empowerment, participating on decision making on her MHS utilization.

According to our study finding the incidence of number of visits increased by 71% for a mother who have good knowledge about ANC service compared with those who have poor knowledge. This might be due to having good knowledge and understanding about ANC service helps a mother to continue the recommended number of visit by health professionals because they are well understand about missing ANC visits and its consequence. This finding is consistent with the findings of a systematic literature review done in different countries(42). This implies that women who has good knowledge about ANC have a better understanding about the consequences of missing the visits on the pregnant mother and her child. So heath extension worker, midwifes and other health professional and responsible stakeholder should create awareness and understanding about use of ANC during their ANC visits and also in community.

The incidence of number of visits increased by 28% for those for those a women who lives in a camp which have health facility. This could be related to financial reasons for traveling to a distant health facility and availability of health facilities within the camp makes it easier for women to utilize. This finding also supported by another study done Ethiopia(55). So it implies that availability of health facility in each IDP camp helps a women to accesses and utilize ANC service; therefore all responsible stakeholders including volunteer organization should provide and make available health center in their camps.

The incidence of frequency of ANC visit was lower by 27% for those women whose pregnancy was unwanted and unplanned compared to those whose pregnancy was both wanted and planned. Our finding was consistent with the finding of a systemic literature

review done in Africa and another study done in Ethiopia (55)(54)(23). This might be due to the fact that most displaced women become pregnant due to rape during the incidence of ethnic induced displacement which was also supported by a study done in DRC and in Nigeria; according to these studies in most IDP camps most women have been exposed to frequent and forced unprotected sex (41). It implies that violence, unwanted pregnancy and low access to SRH services among IDP setting made women to less utilization of ANC services. So, in the IDP setting. Displaced women need better protection and available ANC service and other SRH services.

Strength and Weakness of Study

Strengths

- Our study population is one of the marginalized populations groups
- We collected our data using Kobo Toolbox and minimize missing values.
- We triangulate analysis using two outcome variables (at least 1st ANC visit service utilization and number of ANC visits)
- Limiting the time frame for inclusion criteria to minimize recall bias

Weaknesses

We share the limitation of cross-sectional study design.

Conclusions

Our study found that a significant proportion of women do not utilize at least 1st ANC visit services during their pregnancy. Regarding number ANC visit nearly half (49%) didn't have any visit, while only a small proportion of women had the recommend four and above vests (5.2%). Knowledge about ANC, sociodemographic (husband educational status and knowledge about ANC) and obstetric factors (Pregnancy complication, wanted pregnancy) and availability of health facility in the camp have significant association with ANC

utilization. Number of visits also associated with all the above except husband education and pregnancy complication. Respondent autonomy is also associated with number of visits.

Recommendations

To public health practitioners

- Providing information and education for both women in IDP camp could help them to be aware of the available services and utilize them.
- Moreover, inviting and educating husbands to support women while they went to health facilities could result to have a healthy relationship with the family.

To the health system

- SRH related programmes and policies should encompass address IDP setting.
- A health facility should be available in the camps and provide SRH services including ANC.
- Contraceptives should be made available to prevent unwanted pregnancy and protection against gender based violence's.

For the other researcher

- A qualitative study is required to further explore the barriers and facilitators for utilization of ANC among IDPs women and the whole setting.

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Annexes

Annex me: English version Information Sheet

Introduction: Hello, my name is …………, and I am working as a data collector for the study being conducted in this IDP camp by Hana Meseret (BSc in public health), who is studying for her master's degree at Addis Ababa University's College of Health Sciences, School of Public Health, and Department of Reproductive, Family, and Population Health. I respectfully request your attention so that I may explain the study and your selection as a study participant.

Research Title: "Prevalence of Antenatal care service utilization and associated factors among internally displaced reproductive age group women (15-45) in Amhara region, Northern Ethiopia. Cross-sectional study

Aim: The aim of the study is to assess the prevalence of antenatal care service utilization and its associated factors among internally displeased reproductive age women in Amhara region, Ethiopia, 2023.

Purpose: Therefore, the information obtained from this study may be used by MOH, organizations supporting services, researchers and local health planners for promotion of utilization of antenatal care service utilization and prevention of factors influencing their utilization in general. Moreover, the main aim of this study is to write a thesis as a partial requirement for the fulfillment of Master's Degree program in Reproductive, Family and Population Health.

Procedure and duration: First of all, you were selected by lottery method. I will be interviewing you using a questionnaire to provide me with pertinent data about antenatal care service utilization and associated factors that are helpful for the study. There are about 30 questions to answer where I will fill the questionnaire by interviewing you. The interview will take about 20-30 minutes, so I kindly request you to spare me this time for the interview.

Risks: The risks of taking part in this study are very low, and it will only take a few minutes of your time. Aside from that, the interview will cause no physical or psychological harm to you or your family.

Benefit: There would be no direct payment for taking part in this study. However, the findings of this study could provide important information to local health planners in order to improve ANC service utilization.

Confidentiality: There will be no information that can be used to identify you. The study's findings will be general for the study population and will not be specific to individual people or housing. The questioner will be coded to avoid revealing names, and no references to participants in oral or written reports will be made.

Rights: This study's participation is entirely voluntary. You have the right to declare your willingness to participate in this study on behalf of your family and community. You have the right to refuse to answer any question or to end the interview at any time. However, we hope you will answer the questions so that the services you provide and the nation benefit.

Contact address:

If you have any questions or concerns about the study, please contact the principal investigator at any time.

PI: **Name**: Hana Meseret

Phone number: +251919214853/+2519 16894237

Email address: hanameseret69@gmail.com

Annex II: Statement of Consent (English version)

Statement of Consent (English version)

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

Participant's signature ________________date______/______/2015

Interviewer's name and signature ________________date _____/______/2015

May I begin the interview? Yes ☐ No ☐

Annex III: English version questionnaire

Part I: Socio-demographic and economic information

	Question	Response
001	Name of kebele the camp found	___________
002	Camp name	1.china camp 2.weiynshet camp 3.Sefereselam camp
003	Where is your place of residence before reaching IDP camp	1.urban 2.Rural
004	For how long have you been living in this camp?	…………in month
005	Age of respondent	………… in years
006	What is your religion?	1.Orthodox 2. Muslim 3. Protestant 4. Other specified…………..
007	What is your ethnicity?	1.Amhara 2.Oromo 3.Tigre 4. Other specified…………..
008	What is your educational status?	1.can read and write 2.can't read and write 3.primary and above education

009	Marital status	1.single 2.Mairred 3.Divorced 4.Wedowed 5.Separated
010	What is the educational status of your husband?	1.can read and write 2.can’t read and write 3.primary education above education
011	What is your monthly income	__________
012	Do you have access to TV, radio and newspaper?	1.Yes 2.No

Part II: Health Facility and other related factors question

013	Is there available health facility in your camp?	1.Yes 2.No
014	How far the health facility from your camp?	1.Within 1km 2.Less than 5km 3.More than 5km
015	Is there available health professional who give ANC service in health center?	1.Yes 2.No
016	Do you feel safe and comfort to visit health facility for ANC service?	1.yes 2.no
017	Does your partner (anyone from your family) support you on utilization of ANC?	1.yes 2.no
018	Do you have an autonomy to decide to utilize ANC service?	1.Yes 2.No
019	Are there the referral and linkage to health facilities for ANC service?	1.Yes 2.No
020	Support of admin on referral and linkage to health facilities for ANC service	1.Very low 2.Low 3.Moderate 4.Good 5.Very good

Part III: Obstetric related question

021	Number of gravidities?	--------------
022	Number of parities?	---------------
023	Have you ever had a pregnancy-related	1.Yes

	complication before?	2.No
024	A pregnancy occurred during displacement or at camp was both desired and planned?	1.Yes 2.No
025	Do you have ANC visit for a pregnancy occurred during displacement or at camp?	1.Yes 2.No
	If your answer is "No" skip the next two questions	
026	When did you initiate ANC your visit?	1. first trimester 2. second trimester 3.third trimester
027	How many ANC visits did you have during your most recent pregnancy?	1.One 2.two 3. three 4. four and above

Part IV: Knowledge related question

028	ANC is a care provided by skilled health professionals during pregnancy to ensure the health condition of the mother and her baby.	1.yes 2.No
029	A women will have six to eight visits during her pregnancy.	1.yes 2.No
030	A women should receive a respectful individualized and a women-centered care during her pregnancy.	1.yes 2.No
031	A women can initiate her ANC visit starting from three month of her pregnancy.	1.yes 2.No
032	ANC will help to prevent pregnancy related complications on the women and her baby.	1.yes 2.No
033	ANC can help the women to be aware of danger signs during pregnancy	1.yes 2.No
034	A woman needs support of her husband and/or family during ANC visit.	1.Yes 2.No
035	Does ANC support pregnant women in obtaining information about the place of their delivery and other postpartum services?	1.Yes 2.No
036	ANC can be provided for all women irrespective of their place of residence, religion and other disparities that exists.	1.Yes 2.No
037	The care for pregnant women will continue after delivery	1.yes 2.No

Thank you for your participation!

Annex IV: Amharic version Information Sheet

የመረጃ ቅጽ

መግቢያ :ጤና ይስጥልኝ፣ ስሜ --------------------------------ይባላል፡፡ እኔ በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ በስነ-ተዋልዶ የቤተሰብ እና የማህበረሰብ ጤና ት/ቤት የድህረ ምረቃ ትምህርቷን ለምትከታተለው ለሃና መሰረት(ጤና መኮንን) በዚህ መጠለያ ካምፕ በምካሄደዉ ጥናት እንደ መረጃ ሰብሳቢ ሆኘ እየሰራሁ ነው፡፡ ስለዚህ ስለጥናቱ እና እርሰዎ የተመረጡበትን ምክንያት ስገልጽሎት በጥሞና እንዲከታተሉኝ በታላቅ አክብሮት አጠይቆታለው፡

የጥናቱ ርእስ: በሰሜን ኢትዮጵያ በደ/ብርሃን ተፈናቃይ ሴቶች የቅደመ ወሊድ እንክብካቤ አገልግሎት ልምድ እና ተያያዥ ችግሮች፡፡

የጥናቱ አላማ :የዚህ ጥናት አላማ በአማራ ክልል በሰሜን ሸዋ ዞን ደ/ብርሃን ወረዳ በሃገር ውስጥ በተፈናቃይ ሴቶች የቅደመ ወሊድ እንክብካቤ ለማማሻሻል፡፡ ከዚህም በተጨማሪ በአዲስ አበባ ዩኒቨርሲቲ ጤና ሳይንስ ኮሌጅ በስነ-ተዋልዶ የቤተሰብ እና የማህበረሰብ ጤና ለድህረ ምረቃ ትምህርት ክፍል በከፊል ማሟያነት ያገለግላል፡፡

የጥናቱ ሂደት እና ጊዜ :በመጀመርያ እርሶ የተመረጡት በዕጣ ነው፡፡ አሁን የምጠይቆት በዚህ መጠለያ ካምፕ ውስጥ የቅድመ ወሊድ አገልግሎት አጠቃቀም ልምድን በተመለከተ ጥናቱን የሚረዳ ትክክለኛውን መረጃ እንድሰጡኝ ነዉ፡፡ ጥያቄዎቹ 30 ሲሆኑ ጠቅላላ 20-30 ደቂቃ ሊፈጁ ይችላሉ እናም መጠይቁን የምሞላው ጥያቀዎቹን እየጠየኩ ነው፡፡ ስለሆነም ይህንን መረጃ ለመስጠት ጊዜዎትን በመስጠት እንዲተባበሩኝ በአክበሮት እጠይቃለሁ፡፡

ጉዳት :በዚህ ጥናት በመሳተፍዎ ያለው ጉዳት በጣም አነስተኛ ነው፡፡ ከእረፍት ሰዓቶ ላይ ጥቂት ደቂቃ ሊውሰድ ይችላል፡፡ ከዚህ በተረፈ ጥናቱ በእርሶም ሆነ በቤተሰቦ ላይ ምንም ጉዳት አያደርስም፡፡

ጥቅም : በዚህ ጥናት በመሳተፍዎ ቀጥተኛ ክፍያ ላያገኙ ይችላሉ ግን የጥናቱ ዉጤት የቅድመ ወሊድ አገልግሎትን ለማሻሻል የመንግስት ስትራቴጂዎችን ለማዘጋጀት ስለሚረዳ በዚህ ጥናት ላይ እንደሚሳተፉ ተስፋ እናደርጋለን።

ሚስጢር አጠባበቅ- የሚሰጡን መረጃ ሚስጢርነቱ የተጠበቀ ነው። ለዚሁም አርሶነትዎን የሚገልጽ ምንም ነገር የለም። የጥናቱ ውጤት ለግለሰብ ወይም ደግሞ ለቤት ብቻ ሳይሆን ለአጠቃላይ ህብረተሰብ የሚውል ይሆናል። ጥያቄው በሚስጢር ፅሁፍ ስለሆነ ምንም የእርሶን መልስ ከእረሶ ጋር በቃል ወይም በጽሁፍ የሚያያይዝ ነገር አይኖርም።

የተሳታፊው መብት- በዚህ ጥናት ለመሳተፍ ሙሉ በሙሉ በፈቃደኝነት ነው። በዚህ ጥናት መሳተፍዎን ለቤተሰብዎ የመግለጽ መብት አለዎት። ማንኛዉም ጥያቄ አለመመለስ ወይም ለመሳተፍ ካልፈለጉ ደግሞ በማንኛውም ጊዜ ራስዎን ከጥናቱ ማቋረጥ ይችላሉ። ሆኖም ግን ለእርሶ እና ለህዝብ ጥቅም ሲሉ ጥናቱ ላይ እንደሚሳተፉ ተስፋ እናደርጋለን።

ከዚህ ጥናት ጋር በተመለከተ ማንኛዉም ጥያቄ ካሎት የጥናቱን ባለቤት በሚከተሉት አድራሻ ማግኘት ይችላሉ

ስም፡ ሃና መሰረት ስ.ቁ: 0919214853/0916894237 እና Email hanameseret69@gmail.com

Annex V: Statement of Consent (Amharic version)

የስምምነት ማ ረ ጋ ገጫ ፎርም

የተሳታፊው መረጃ ፎርም አንብቤዋለሁ (ተነበልኛል)። የጥናቱ ዓላማ ፣ ያለውን ጉዳት እና ጥቅም ፣ ምስጢር አጠባበቅ፣ የመሳተፍ እና ያለመሳተፍ መብት እንዲሁም ችግር ካለ (ቢፈጠር) ከማን ጋር መገናኘት እንዳለብኝ ሁሉ ተገልጾልኝ ጥያቄ ካለኝ ደግሞ እንድጠይቅ እድል ተሰጥቶኝ በመሀል ደግሞ ጥናቱን ለማቆም ከፈለኩኝ በማንኛውም ጊዜ ከጥናቱ/ከተሳታፊነት/ መውጣት እንደምችል በመጨረሻም መመለስ የማልፈልገውን ጥያቄ አለመመለስ መብት እንዳለኝ ከተረዳሁኝ በኋላ በሙሉ ፈቃደኝነት በዚህ ጥናት ለመሳተፍ የወሰንኩኝ መሆኔን ከዚህ በታች በተቀመጠው ፊርማዬ አረጋግጣለሁ።

የተሳታፊው ፊርማ__________________ ቀን _______/______/2015

የመረጃ ሰብሳቢ ስም እና ፊርማ_______________ _____________ቀን _____/_____/2015

ጥያቄዎችን መጠየቅ ልጀምር? አዎን [ ] አይ [ ]

Annex VI: Amharic version questionnaire

መጠይቅ

ክፍል አንድ፤ የተጠያቂዉ አጠቃላይ የማህበራዊ መረጃ

ተ.ቁ ጥር	**ጥያቄ**	**አማራጭ**
001	ካምፑ የሚገኝበት የቀበሌዉ ስም	....
002	የመጠለያ ካምፑ ስም	1. ቻይና ካምፕ 2.ወይንሸት ካምፕ 3. ሰፈረሰላም ካምፕ
003	እዚህ የመጠለያ ካምፕ ከመምጣቶት በፊት የመኖሪያ ቦታዎ የት ነው?	1. ከተማ 2. ገጠር
004	በዚህ የመጠለያ ካምፕ ምንያህል ጊዜ ቆዩ?	----------ወር
005	እድሜዎ ስንት ነው?	--------------
006	ሀይማኖትዎ ምንድን ነዉ?	1. ኦርቶዶክስ 2. ሙስሊም 3. ፕሮቴስታንት 4. ሌላ ካለ (እባኮዎትን ይጥቀሱ) -----------
007	ብሔርዎ ምንድን ነዉ?	1. አማራ 2. ትግሬ

		3. ኦሮሞ 4. ሌላ ካለ (እባኮዎትን ይጥቀሱ)-----------
008	የትምህርት ደረጃዎ ምንድን ነው?	1. ማንበብና መጻፍ የማይችል 2. ማንበብና መጻፍ የሚችል 3 የመጀመሪያ ደረጃ እና ከዛ በላይ
009	የጋብቻ ሁኔታዎ ምንድን ነው?	1. ያላገባች 2. ያገባች 3. አግብታ የፈታች 4. ባልዋ የሞተባት
010	የባለቤትዎ የትምህርት ደረጃ ምንድን ነዉ?	1. ማንበብና መጻፍ የማይችል 2. ማንበብና መጻፍ የሚችል 3 የመጀመሪያ ደረጃ እና ከዛ በላይ
011	የወር ገቢዎት ስንት ነው?	______________
012	ቲቪ፣ ሬድዮ እና ጋዜጣ የማግኘት አጋጣሚ አሎት ?	1.አዎ 2.የለም

ከበጤና ተቋም ጋር እና ለሎች ተያያዥ ሁኔታዎች

013	በእርስዎ ካምፕ ውስጥ የሚገኝ የጤና ተቋም አለ ?	1.አዎ 2.የለም
014	የጤና ተቋሙ ከእርስዎ ካምፕ ምን ያህል ይርቃል?	1.በ1 ኪሜ. ውስጥ 2. በ5 ኪሜ. ውስጥ 3. ከ5 ኪሜ. በላይ ይርቃል
015	በጤና ተቋሙ ውስጥ የቅድመ ወሊድ አገልግሎት የሚሰጥ የጤና ባለሙያ አለ?	1.አዎ 2.የለም

016	የቅድመ ወሊድ አገልግሎት ለመውሰድ ወደ ጤና ተቋም ሲሄዱ ደህንነት ይሰማዎታል?	1.አዎ 2.የለም
017	የትዳር አጋርዎ (ከቤተሰብዎ የመጣ ማንኛውም ሰው) በቅድመ ወሊድ አጠቃቀም ላይ ድጋፍ ያደረሎ ታል ?	1.አዎ 2.የለም
018	የለቅድመ ወሊድ እንክብካቤን አገልግሎት ለመጠቀም ከፈለጉ በራሶት የመወሰን መብት አሎት ?	1.አዎ 2.የለም
019	በመጠለያ የሚገኘው የጤና ተቋም ወደ ሌላ ጤና ተቋም ሪፈር የማድረግ አለ?	1.አዎ 2.የለም
020	ለቅድመ ወሊድ አገልግሎት በጤና ተቋም የሚገኘው ሪፈር የሚያረገው ባለሙያ	1በጣም ዝቅተኛ 2 ዝቅተኛ 3 መካከለኛ 4 ጥሩ 5 እጅግ በጣም ጥሩ

ክፍል ሁለት፡ ከእርግዝና ጋር የተያያዙ ጥያቄዎች

021	ስንት እርግዝና አለ?	--------
022	ስንት ጊዘ ወልደዋል?	--------
023	በቀድሞ እርግዝናዎ ላይ ከእርግዝና ጋር የተያያዘ ችግር አጋጥሞዎታል?	1.አዎ 2.የለም
024	ከተፈናቀሉ በኋላ የተፈተረው እርግዝናዎ የተፈለገ እና የታቀደ ነው?	1.አዎ 2.የለም

25	ከተፈናቀሉ በኋላ ለተፈተረው በእርግዝናዎ ወቅት የቅድመ ወሊድ እንክብካቤን አገልግሎት አሎት?	1.አዎ 2.የለም
	መልሶ የለም ከሆነ የሚቀጥሉትን 2 ጥያቄ ይዝለሉት	
026	በየትኛው የእርግዝና ዎራት የቅድመ ወሊድ እንክብካቤን አገልግሎት ጀመሩ?	1በመጀመሪያዎቹ ሶስት ወራት 2በሁለትኛው ሶስት ወራት 3በመጨረሻው ሶስት ወራት
27	በአሁኑ እርግዝናዎ ውስጥ ስንት ጊዜ የቅድመ ወሊድ እንክብካቤን አገልግሎት ጎበኙ ?	1.አንድ ጊዜ 2. ሁለት ጊዜ 3.ሶስት ጊዜ 4. አራት እና ከዚያ በላይ

ክፍል ሶስት፡ የቅድመ ወሊድ እንክብካቤ እውቀትን የተመለከተ መጠይቅ

028	የቅድመ ወሊድ እንክብካቤ አገልግሎት በ እርግዝና ወቅት የእናትየዋን እና የጽንሱን ጤና ለመጠበቅ በሰለጠነ በጤና ባለሙያ የሚሰጥ አገልግሎት ነው።	1.አዎ 2.አይደለም
029	አንዲት ሴት በእርግዝና ወቅት ከስድስት እስከ ስምንት ጊዘ የቅድመ ወሊድ እንክብካቤ ማድረግ አለባት።	1.አዎ 2.አይደለም
030	አንዲት ሴት በእርግዝና ጊዜ ክብካቤ የተሞላበትና እሷን ያማከለ የቅድመ ወሊድ ክትትል ማግኘት አለባት።	1.አዎ 2.አይደለም

031	አንዲት ሴት ከሶስት ወር ጀምሮ የእግዝና ክትትል ማድረግ ትችላለ።	1.አዎ 2.አይደለም
032	የእርግዝና ክትትል በእርግዝና ጊዜ በእናቶች እና በጽንሱ ላይ የሚደርሰውን ውስብስብ ችግሮች ለመከላከል ይረዳል።	1.አዎ 2.አይደለም
033	የእርግዝና ክትትል ማድረግ በእርግዝና ወቅት የሚከሰቱ አደገኛ ምልክቶች ለማወቅ እና ለመገንዘብ ይረዳል።	1.አዎ 2.አይደለም
034	አንዲት ሴት በእርግዝና ክትትል ወቅት የባለቤቷን እንዲሁም የቤተሰቧን ድጋፍ ትፈልጋለች ።	1.አዎ 2.አይደለም
035	የእርግዝና ክትትል ማድረግ አንዲት ሴት የት መውለድ እንዳለባት እና ከወሊድ በኋላ ስለሚደረጉ ክትትሎች መረጃ ለማወቅ ይጠቅማል	1.አዎ 2.አይደለም
036	የእርግዝናን ክትትል ማድረግ መኖሪያ ቦታን ፣ሀይማኖትን እና ሌሎች ልዩነቶች መሰረት ባላደረገ መንገድ ለሁሉም ሴቶች የሚሰጥ አገልግሎት ነው።	1.አዎ 2.አይደለም
037	ለአንድ ነፍሰጡር ሴት የሚደረግ የክብካቤና የከትትል አገልግሎት ከወሊድ በኋላም ይቀጥላል።	1.አዎ 2.አይደለም

ስለትብብሮ ከልብ አመሰናለሁ!