

2021-06

Referral Practice and its Associated Factors Among Laboring Mothers Reffered to Public Hospitals of Bahir Dar City Northwest, Ethiopia

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BAHIR DAR UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH, DEPARTMENT Of Health System Management and Health
Economics

Referral Practice and its Associated Factors Among Laboring Mothers Referred to Public
Hospitals of Bahir Dar City Northwest, Ethiopia

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A THESIS TO BE SUBMITTED TO THE DEPARTMENT OF HEALTH SYSTEM
MANGAGEMENT AND HEALTH ECONOMICS, COLLEGE OF MEDICINE AND
HEALTH SCIENCES, BAHIR DAR UNIVERSITY IN PARTIAL FULFILLMENT OF THE
REQUIREMENT FOR MASTER OF HEALTH SYSTEM AND PROJECT MANGAGEMENT.

JUNE, 2021

BAHIR DAR, ETHIOPIA

ACKNOWLEDGMENTS

First and for most, I would like to express my deepest gratitude to my Advisors Desta Debalkie (MPH in HSM, ass. professor) and Habtamu Alganeh (MPH in HI, lecturer) for their constructive comments, timely response and unexplained contribution during the starting from topic selection to the completion of this thesis. Next, I would like to say thanks to Bahir Dar University College of medicine and health sciences school of public health, department of health system management and health economics for giving me this opportunity to undertake this research. I would also like to extend my deepest appreciation to Amhara region health Bureau, and Bahir Dar city hospitals for their cooperation in providing me all the necessary information and facilitating the data collection process.

ABBREVIATIONS

| | |
|------|-------------------------|
| AOR: | Adjusted Odds Ratio |
| CI: | Confidence Interval |
| COR: | Crude Odds Ratio |
| ETB: | Ethiopian Birr |
| HAD: | Health Development Army |
| PI: | Principal Investigator |
| SD: | Standard Deviation |

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ABSTRACT

Background: Referral is one of the strategies in place across all levels of health care settings for adequate use of health care services in time. Implementation of an appropriate maternal referral practice as per the Ethiopian national referral guideline could reduce the morbidity and mortality rate of mothers during labor and delivery. However, there is paucity of study on the maternal referral practices in Ethiopia and in Amhara region, in particular.

Objective: To determine the maternal referral practices and associated factors among laboring mothers referred to public hospitals of Bahir Dar city, northwest, Ethiopia.

Methods: A facility-based cross-sectional study was conducted from March 1 to 30/2021 in Bahir Dar city hospitals. A systematic random sampling technique was employed and a total of 358 mothers who came by referring for delivering at Bahir Dar city public hospitals was interviewed using an interviewer-administered and pre-tested questionnaire. Data was coded and entered to Epi-data version 3.1 software and analyzed using SPSS version 20.0. Descriptive statistics was computed and presented in tables and texts. Bivariable and multivariable logistic regressions was used to determine the determinant factors associated with poor maternal referral practice. Finally, p-value of < 0.05 was considered as statistically significant cut off value.

Results: A total of 353 study participants took part in the study. The level of poor maternal referral practice was 52.7% (95% CI 47%, 58%). The mean age of the respondents was 26.73 (\pm 5.45) years. About twenty eight percent of the mothers were illiterate. Unable to read and write (AOR=2.38, 95%CI: 1.15, 4.94), read and write only (AOR=6.59, 95%CI: 2.53, 17.17), monthly income < 1527 birr (AOR=4.55, 95%CI: 1.91, 10.84), monthly income between 1527-3000 birr (AOR=4.29, 95%CI: 1.76, 10.50), and monthly income between 3001-5305 birr (AOR=3.73, 95%CI: 1.49,9.33), referred from referral hospitals (AOR = 4.63, 95%CI: 1.94, 11.07), gave birth via cesarean section (AOR = 2.06, 95%CI: 1.22, 3.47), gave birth via assisted delivery (AOR = 4.77, 95%CI: 1.64, 13.91), and time spent more than one hour to arrive to Bahir Dar city public hospitals (AOR = 2.15, 95%CI: 1.07, 4.34) were significantly associated with poor maternal referral practice.

Conclusions: This study revealed that the maternal referral practice was poor. Maternal referral practice was influenced by demographic, social, environmental and obstetric factors. Mothers earn with low monthly income, not attending the formal education should be given maximal attention for improving the poor maternal referral practice during labor.

Keywords: Referral practice, laboring mother, Bahir Dar city, public hospital

1. INTRODUCTION

1.1. Background Information

Referral is a two way communication process in which a health worker at one level of the healthcare system, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the assistance of a better or differently resourced facility at the same or higher level to assist in, or take over the management of the client's case (1, 2), (3). It is a clear convey of health care message about the need and reasons for referring a patient/client (4). And it commences by the referring health professional communicating to the receiving health professional or specialist about relevant patient information like the reasons for referring (5).

When initiating a referral, communication on the reasons for referral with the receiving facility can reduce treatment delay, avoid system overload, and enable utilization of expertise at advanced clinical hubs (5). The patients / clients should be properly counseled on the reasons for referral and receive properly documented referral papers. The transferring health facilities are also expected to provide free ambulance services for referrals between facilities (7-9).

The Ethiopian ministry of health put a national referral network model showing a bi-directional hierarchy horizontally or vertically from lower level to a higher level of care or vice versa as per the severity of cases and the level of management (10). And the Ethiopian health care delivery system referral flow indicating that all patients/clients should pass to the next higher level of care with the guidance of the health professionals and should be given appropriate referral forms having written information of the cases why they are referring to the receiving health facility (11) (Annex 1).

The Amhara national regional state health bureau 2021 report revealed that the delivering mothers faced three delays different level. The report indicated nearly half (49%) of mothers delayed deciding to go to health facility. It is followed by second delay, which accounted 36%; and the third accounted 15% of maternal delay (12).

1.2. Statement of the problem

For decades, improving maternal health has been a worldwide priority component of global health and development community (13). In 2000 Millennium summit, reducing Maternal Mortality Ratio (MMR) by 75% between 1990 and 2015 was the fifth Millennium Development Goal (MDG5) (14).

Despite efforts towards attainment of sustainable developmental goals, Maternal Mortality (MM) is still at high levels especially in low- and middle-income countries such as Ethiopia. In fact, to achieve sustainable developmental goals, the Ethiopian government launched the National Safe Motherhood initiative in 1999 (13). According to the National Committee on Maternal Death, about 85% of direct obstetric deaths were classified as preventable or conditionally preventable (13) and were to a great extent, related to health care system factors such as the shortage of material (drugs, blood.. and laboratory facilities) or human resources and the inadequacy of the existing referral system. In fact, access to all levels of care system is considered as a key dimension in saving mothers' live (15).

All people deserve to have access of health care services regardless of their place of residence (16). Nevertheless, rural communities are still experiencing many of health problems as compared to their urban counterparts (16, 17). Primary health care is commonly used as the main strategy to satisfy the health needs of rural areas across the world (18). In order to improve the quality of patient care, building and improving a referral system should be the main objective (19).

A formalized maternity referral system lies within risk screening strategies during antenatal period, in which frontline health workers would attempt to identify women at high risk of obstetric complications to for specialized care (15).

In 2008, more than half of maternal deaths in the world occurred in six countries (Afghanistan, Democratic Republic of the Congo, Ethiopia, India, Nigeria and Pakistan) (14). These could be attributed to poor access to intra-partum care at primary level due to insufficient skilled manpower, resources, and transport problems. In addition the capacity of dealing with intra-

partum complications at primary level may be limited (20) due to inefficiencies and rising demand, and long waiting times (20).

A study in Iran showed that missed/inappropriate medical records might lead to repeated tests; information between medical institutions is poorly conveyed which in deed affects the effectiveness of the referral system (21).

Even though the Ethiopian maternal basic delivery care service access sharply increased almost in 48% (10-fold to 2001) by 2019, inadequate obstetric transfer was responsible for almost half of maternal deaths (48.38%) between 2008 and 2013(22) . Yet, the way of maternal referral practice implemented against the national referral system strategies of countries (23). Rapid screening and transfer in good conditions of high risk laboring mothers would theoretically reduce maternal mortality rate by half (24). Implementation of the maternal referral as per the Ethiopian health referral guideline will reduce the morbidity and mortality rate of mothers during labor and delivery. For a more effective planning of medical action for the laboring mother, it is advisable to assess the referral system effectiveness of the laboring mothers. However, there is paucity of study on the maternal referral practice related issues in the Ethiopia and in Amhara region, in particular. Therefore, the main aim of this study is to determine the level of maternal referral practice and associated factors among laboring mothers referred to public hospitals of Bahir Dar city, northwest, Ethiopia.

1.3. Significance of the study

The results of the study will be used to enhance maternal referral practice and to identify factors affecting it. This study will be designed to determine the level of maternal referral practice and associated factors in Bahir Dar city public hospitals of the Amhara regional state.

This study would help to understand maternal referral practice. It could indicate an intervention and possible recommendations the study could help to identify factors associated with maternal referral practices. This study will support health professionals to apply possible health care measures and handling of the laboring mothers who need to be referred for better intervention. Finally, this study will be served as a preliminary data to the researchers and interested stakeholders to do a research.

It can also help health system managers and planners to improve their understanding of the existing emergency referral system and its potential to contribute to maternal mortality reduction over the short, medium, and long term. This includes describing networks of sending and receiving facilities, identifying which facilities lack essential components of a well-functioning referral system (25).

2. LITERATURE REVIEW

2.1. The level of maternal referral practice and factors associated with maternal referral practices

The Ethiopian Ministry of Health has introduced a referral system as one of its strategies to make the best use of hospitals and primary healthcare services (26). The referral system of Ethiopia is comprised of three tiers of health care (27). The tertiary health facilities provide extensive primary and first referral care to clients mainly in urban settlements (19).

The national health system of Ethiopia provides for three tiers of health care; primary, secondary and tertiary (28). The three should enjoy patronage from clients and a good referral system is the main link between them (28). The first level is the primary health care unit (PHCU) comprised of health centers, each serving 15,000 to 40,000 people, and in rural areas, several satellite health posts serving a population of 3000 to 5000 each. Primary-level hospital care is provided by a primary hospital serving a population of 60,000 to 100,000 (29). The second tier is a general hospital which is expected to serve a population of 1.0 to 1.5 million and serves as a first referral center. The third tier comprises specialized referral hospitals serving a population of 3.5 to 5.0 million (29). These 3 levels are expected to interact through a referral system to allow exchange of information and patients.

The way of implementation of referral system has influence on quality of health care process. Despite the belief about the absolute efficacy of the referral system, it always has to cope with various challenges (30, 31). Quantitative studies have shown that the referral system has low effectiveness and efficiency and will thus need to be improved in terms of performance (31, 32).

Several authors have pointed out the importance of good referral letters as the best mode of transmitting information to promote the understanding of a problem or patient. This not only improves management but also aids the appropriate use of resources (33, 34). In Ethiopia, the referral system given to primary-care physicians is based on clear guidelines detailing the referral process. This includes the use of a predesigned, standardized referral form with important, relevant, clinical, and social information. In some emergencies, private transport is arranged at cost to the woman and her family. Some rural health care facilities have no

telecommunications facilities, and this made requesting an ambulance for intra-partum referrals difficult. The district hospital and some of the larger rural health facility had maternity waiting shelters for women to await labor on-site (35).

Overall, half (49 percent) of all facilities report that they refer clients outside the facility and also have referral forms or referral documents available (39). Health center (65 percent), and hospitals (63 percent) were more likely than maternity facilities (55 percent), dispensaries (50 percent), and clinics (35 percent) to report that they refer clients and also have referral formats (39). NGO facilities (61 percent) and government facilities (58 percent) are the most likely to have referral forms.

According to Kenya national bureau of statistics, 2011 report revealed that there was a variation in referring patients with referral forms across provinces (39). The higher proportion of these referral were seen in western (78%), and in Nairobi providences (73%). However, the lower was recorded in rift valley (38%) and North Eastern provinces (28%) (39).

According to a study carried out in Nigeria on tertiary level health facilities, the two-way referral system is advocated from the lowest level of health care to the highest (Village health worker to health post, to primary health care, to comprehensive health center and to state General Hospital), except in the case of an emergency when patients can be referred to any of the facilities for immediate treatment. As is the case in most developing countries, the study showed that only 127 (7.1 percent) of all the new patients that attended a referral hospital (the University of Ilorin Teaching Hospital) during that period had gone through the referral system (40).

A study conducted in Addis Ababa, Ethiopia revealed that 30.3 percent were diagnosed with obstetric complications and referred to hospital. Of which, 19.7 percent of the referrals were due to premature rupture of membrane. 77.8 percent of the referred mothers who had spontaneous labor and delivery could have been misclassified as not having labor upon referral (41). Moreover, more than 70% of the women referred during the labor period came with partograph which had been a valuable tool for tracking the progress of labor, making decisions as regards the wellbeing of the mother and the fetus (42). However, although it has been successfully

integrated into routine practice, the link between “use”, decision making, and successful referral action can still require attention (42).

Referral rates have been found to vary enormously between providers, independently of health system organization (43). The earliest study of referral from primary to secondary care in Europe found that higher rates of referrals were associated with gatekeeping, high specialist density and high GP workload, while lower rates were associated with strong GP training programs (43). Another study has found that (not surprisingly) rural GPs have lower rates of referral than urban GPs (44).

A study conducted in Kuwait revealed that physicians’ knowledge on patient referral was associated with referral practices of patients (45). A study done in Netherland revealed that long time to referral, insufficient information provided by referring doctors, poor quality of consultations by doctors could affect the referral system (46).

A study in Imbabura province, severity of the illness, need for permission to make the journey to clinic, juggling child care responsibilities, perceived quality of hospital care and health workers’ communication skills are important factors influencing adherence advice to proceed to hospitals (47).

In practice, the referral system in Uganda was not very effective due to Lack of ambulances, fuel, or both prevented patients from quickly transferring from one facility to another in the case of referrals (48). The referral mechanism also faced the challenges of poor road networks or terrain, and lack of referral forms, relevant emergency medicines, and supplies including blood for transfusion at the referral facility (48).

A study in south Sudan also revealed that severe lack of qualified staff; equipment and supplies in County and States Hospitals; long distance to facilities, poor roads and transport, limited number of ambulance services, dysfunctional referral system, cultural and financial barrier affected the referral practice of the health system (49).

Time is often of crucial importance in obstetric emergencies. The “three delays” model is a stepwise model that attempts to analyze reasons for postponement of treatment: decision-making,

accessing services and receipt of appropriate care once a health facility is reached. The third delay, although under-researched, is likely to be a source of considerable inequity in access to emergency obstetric care in developing countries (50).

According to studies carried out in Sub-Saharan Africa, transfer patterns were dominated by dystocia, hemorrhage, and also hypertensive complications, suggesting a lack of qualified staff in peripheral facilities (51) and the poor quality of antenatal follow-up (52).

On the other hand, studies carried out in developed countries, have cited a wide variety of reasons for transfer. For example, in the Netherlands, New Zealand and the United Kingdom, transfers were justified by prolonged labor, failure to progress during labor or fetal distress (53, 54). Whereas in Australia (55) and France (56), the most frequent reasons were premature rupture of the membranes and preterm labor or delivery.

2.1.1. Conceptual framework for maternal referral practice and its associated factors

The following conceptual framework illustrates the relationship of the independent variables on the maternal referral practices.

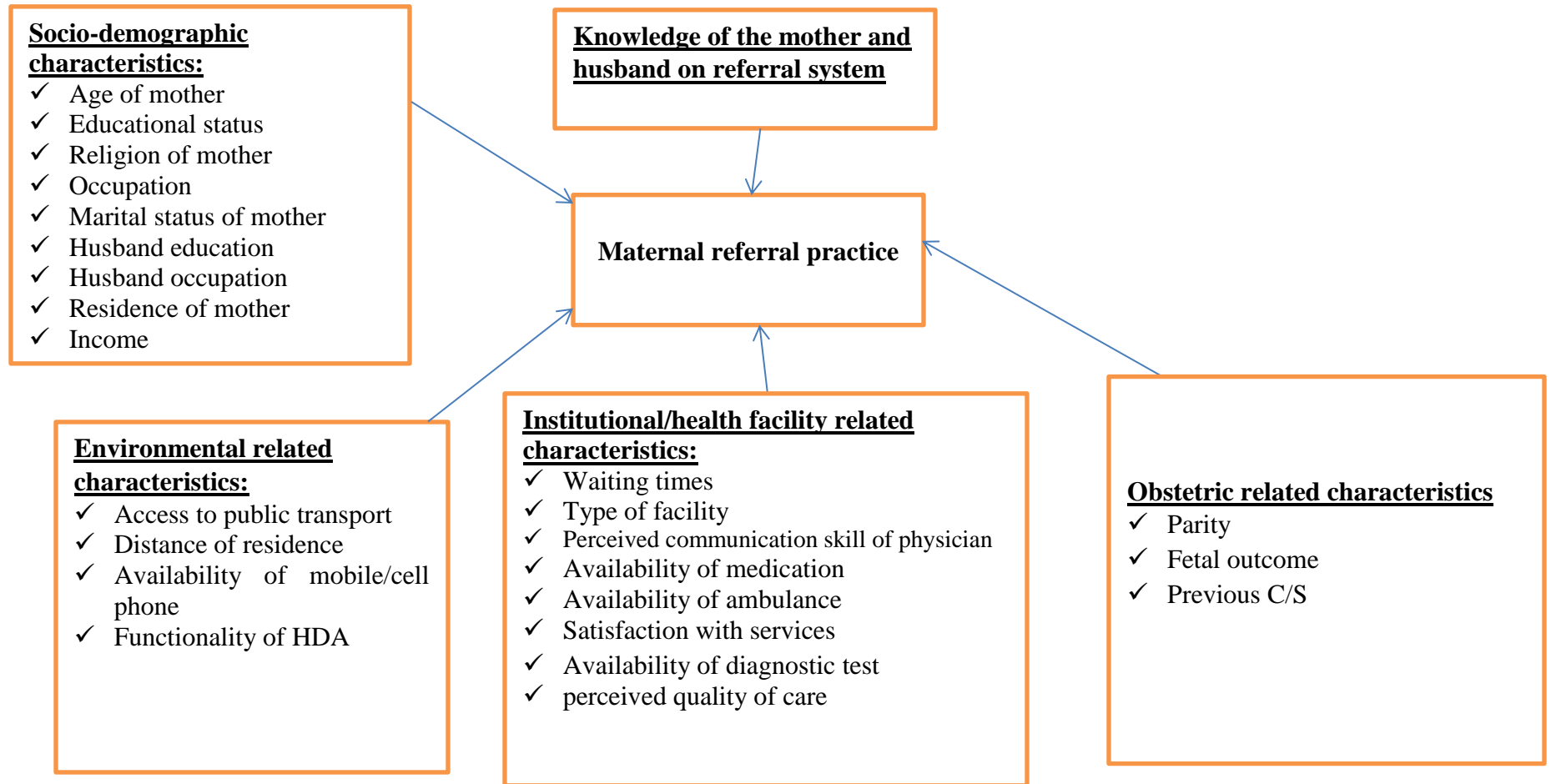


Figure 1: Conceptual framework for maternal referral practice among referred mothers to Bahir Dar city public hospitals, 2021 (25, 30, 57-59)

3. OBJECTIVE

3.1. General Objective

- ✚ To assess the maternal referral practice and its associated factors among laboring mothers referred to Bahir Dar city public hospitals, northwest, Ethiopia, 2021.

3.2. Specific Objectives

- ✚ To determine the level of maternal referral practice among laboring mothers referred to Bahir Dar city public hospitals, northwest, Ethiopia, 2021.
- ✚ To identify the factors associated with maternal referral practice among laboring mothers referred to Bahir Dar city public hospitals, northwest, Ethiopia, 2021.

4. METHODS

4.1. Study Area

The study was conducted in Bahir Dar city public hospitals. The city is located in Amhara Regional State North West Ethiopia, which is 565 km apart from Addis Ababa, the capital city of Ethiopia. There are 9 sub-cities in Bahir Dar city. According to the city health department, the health infrastructure of the city is organized by three public hospitals and ten health centers. The three public hospitals that are providing delivery care services are Felege-hiwot hospital, Tibebe-gion hospital, and Adisalem hospitals. The two specialized (Felege hiwot and Tibebe gion) hospitals have giving maternal health services for most mothers who would be referred from lower level health facilities. Though, Addis Alem hospital is a primary level, it has better delivery materials and man power including gynecologist. These three public hospitals gave a total of 1875 maternal delivery care services, (791 from Tibebe-gion, 953 from Felegehiwot hospital, and 131 from Adisalem hospitals, respectively) based on previous three months referrals received in the maternity department.

4.2. Study design and period

Facility based cross-sectional study was conducted from March 1/2021 to March 30/2021.

4.3. Population

4.3.1. Source Population

All laboring/delivering mothers referred to the three public hospitals of Bahir Dar city administration

4.3.2. Study population

All laboring/delivering mothers referred to the three public hospitals of Bahir Dar city during the data collection period.

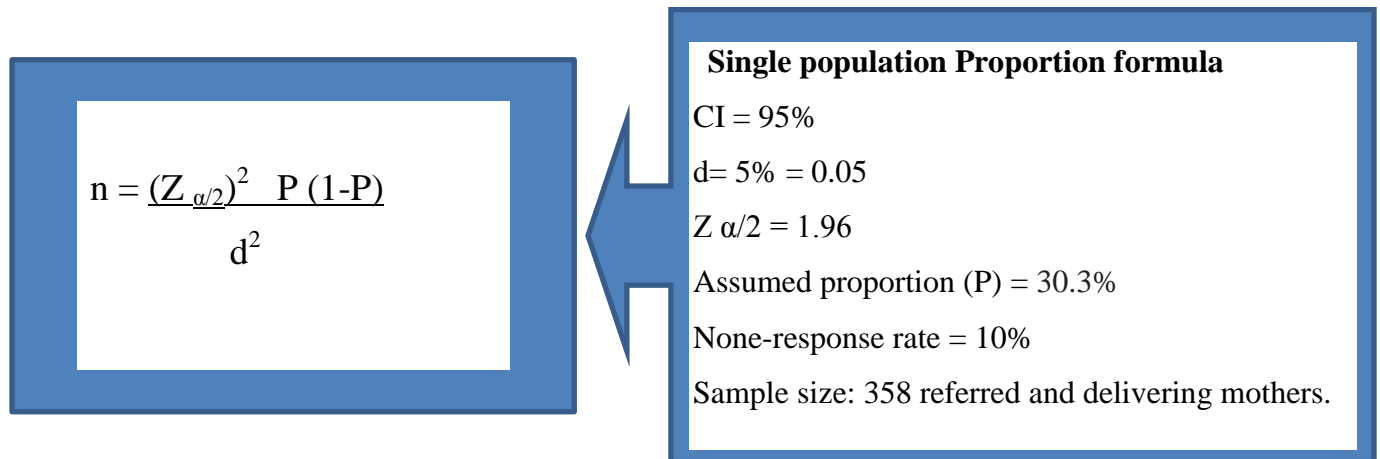
4.4. Exclusion criteria

Mothers who are unable to communicate verbally and mothers who come to the three hospitals without visiting the nearest health facility/having referral sheet were excluded.

4.5. Sample Size Determination

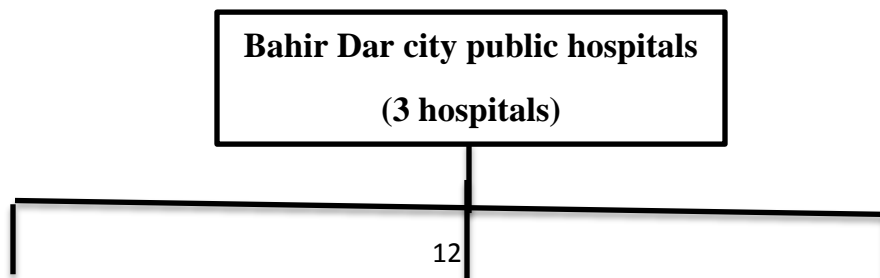
4.5.1. Sample size determination for first objective (maternal referral practice)

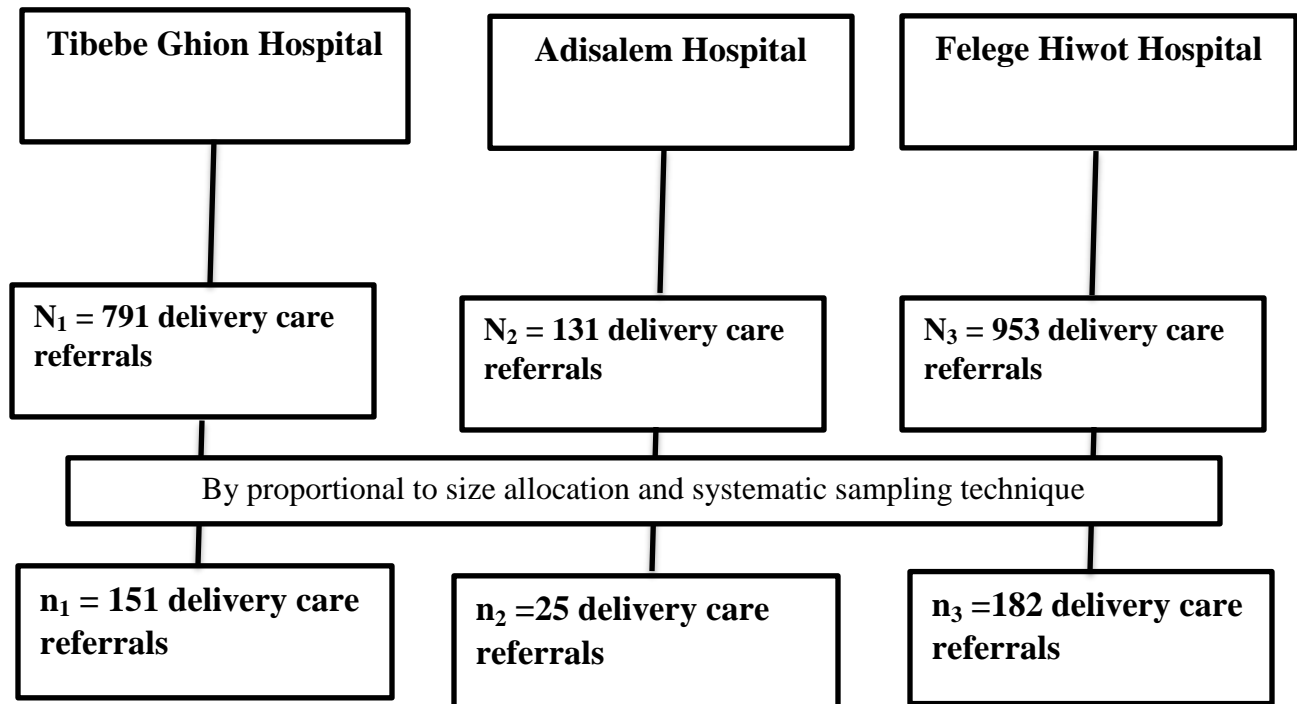
The sample size (for the first objective) is determined using a single population proportion formula by considering; 95% confidence level ($z_{\alpha/2}=1.96$), 5% margin of error, 30.3% proportion of obstetric referral in Addis Ababa (41) and 10% non-response rate.



4.6. Sampling Procedure

Study participants were selected from the three public hospitals of Bahir Dar city. Proportion to size allocation was made to determine the required sample size from each public hospital (791 delivering mothers were referred to Tibebe-gion hospital), (953 delivering mothers were referred to Felege hiwot hospital, and 131 delivering mothers were referred to Adisalem hospital, respectively) based on previous three months referrals received in the maternity department. A systematic random sampling technique was used to select each participant from each facility at the 5th interval. The first case was selected by lottery method. Then, a total of 358 delivering mothers were interviewed after they get referral hospitals delivery services. (Figure 2).





Legend:

N₁= 3 Months previous referral reports at Tibebe Ghion hospital, n₁ sample to be taken from Tibebe Ghion hospital
 N₂= 3 Months previous referral reports at Adisalem hospital, n₂ sample to be taken from Adisalem hospital
 N₃= 3 Months previous referral reports at Felegehiwot hospital, n₃ sample to be taken from Felegehiwot hospital

Figure 2: Schematic presentation of sampling procedure on maternal referral practice among delivering mothers referred to Bahir Dar city public hospitals, 2021.

4.7. Study Variable

4.7.1. Dependent variable

Maternal referral practice (Good, Poor)

4.7.2. Independent variables

Socio-demographic characteristics: Age, educational status, religion, occupation, marital status, husband education, husband occupation, residence, and income.

Previous obstetric history: Gravidity, parity, fetal outcome, still birth, previous antepartum hemorrhage, and post-partum hemorrhage, previous C/S, previous Eclampsia, blood transfusions

Knowledge: Adequate or inadequate knowledge

Institutional/health facility related characteristics: Waiting times, rank or type of facility, perceived communication skill of physician, availability of medication, respect, availability of ambulance, satisfaction with services, availability of diagnostic test, availability of enough health worker, perceived quality of care.

Environmental factors: Access to public transport road, proximity of the public transport to the health facility, distance of residence, availability of mobile/cell home, and functionality of the health development army.

4.8. Operational definitions

Maternal Knowledge: A referred mother was considered as having adequate knowledge about the Ethiopian health care referral system when she responds 'yes' to the ten knowledge questions mean and above of the score. Otherwise, she was considered as having inadequate knowledge(60).

Laboring mother: It is the process of delivering a baby and the placenta, membranes, and umbilical cord from the uterus to the outside world (60).

Maternal referral practice: Maternal referral practice by health professionals was considered as good when their level 1 response becomes greater or equal to mean of thirteen- referral practice assessment questions. Otherwise, it was considered as poor maternal referral practice. Mean was statistically computed using thirteen maternal referral questions.

4.9. Data collection procedure

The data was collected using structured questionnaire. The questionnaire was adopted from different descriptive studies (25, 30, 57-59). The questionnaire had questions of socio-

demographic characteristics, obstetrics related, knowledge, institutional/health facility related characteristics, and environmental and maternal referral practice assessing questions.

Questions related to referral practice were comprised from 15 items with bi and trichotomous response categories. Before the data collection, the questionnaire was translated to Amharic by independent translators and then back to English to check for consistency. Finally, Amharic version of the questionnaire was used to collect the data. The enumerators (four BSc midwives), and the two supervisors (BSc in public health) were trained for one day about the objectives of the study, data collection procedures, and the importance of the study in relation to the study objective. The study participants were interviewed during the post-partum period after they got rest and before they exit from the ward.

4.10. Data quality assurance

The data quality was maintained through careful design of Standardized questionnaires that translate from English to Amharic and back to English. The translation from Amharic back to English was done by other personnel to check the consistency of the questionnaire. Pretesting was done at 5% of sample size at Debre Tabor hospital to assess for clarity, length, and completeness. The data collectors and supervisors were provided the necessary introduction and instruction to the study objectives. The questionnaires were checked for the completeness immediately after data collection. Then after some adjustment made in the questionnaire and extra briefing was done to the data collectors. The data collection procedure was closely supervised for its consistency on the same day. The internal consistency (Cronbach alpha) the reliability level of the pretest was assessed using the internal consistency measuring tool (Cronbach alpha) which was 0.85.

4.11. Data Processing and Analysis

The collected data was checked for completeness and consistency by the investigator. The collected data was coded and entered to EPI- DATA software version 3.1, and then, exported into SPSS Version 20.0 for data cleaning and analysis. Descriptive statistics was computed such as mean, frequency, and standard deviations. Logistic regression model was used to identify the association between explanatory and outcome variables. The model fitness was checked using

Hosmer and Lemshow goodness of fit ($P > 0.05$). A p-value < 0.2 at bivariate analysis was considered for variables to be candidates for multivariable logistic regression analysis. Adjusted Odds ratio (OR) with 95% CI was used to measure the strength of association between explanatory variables and the outcome variable (referral practice). Variables with a p-value of < 0.05 was considered as statistically significant predictors of referral practice.

4.12. Ethical Consideration

Ethical clearance for the proposed research was obtained from the research Ethical Review Board of Bahir Dar University College of Medicine and Health Sciences. Letters of support was received from the Amhara regional health Bureau. Before the beginning of data collection, permission letter was obtained from Amhara National Regional State Institute of Public Health and from each concerned body prior to the data collection period. Medical directors of the three hospitals were informed about the purpose of the study that it contributes for the maternal and fetal health improvement. Before collecting the data, written informed consent was secured. Participant's full right to refuse, reject part or all the study was preserved. Names of the respondents will not use to ensure anonymity and confidentiality. All information obtained from the hospitals and the respondents was kept confidential.

5. RESULTS

5.1. Socio-demographic characteristics

A total of 353 mothers were recruited for the study with a response rate of 98.6%. The mean age of the respondents was 26.73 (± 5.45 SD) years. Sixty-seven percent of 31- 43 years old mothers got a poor maternal referral practice compared to 51% of 20- 30 years old mothers. About 71% of able to read and write mothers got a poor maternal referral practice compared to 39% of diploma and above graduated mothers (p-value=0.0001). Similarly, about 74% of unable to read and write husbands' wife got a poor maternal referral practice compared to 33% of husbands who attended 1-4 grade (p-value=0.0001). Nearly 62% of rural resident mothers got a poor maternal referral practice compared to 42% of urban resident mothers (p-value=0.032). Nearly 58% of < 3000 -birr monthly income mothers got a poor maternal referral practice compared to 28% of monthly earned > 5305 birrs (p-value=0.002) (**Table 1**).

Table 1: Socio-demographic characteristics of the study participants at Bahir Dar city public hospitals, Ethiopia, 2021 (n=353)

| Variables | Maternal referral practice | | X ² , P-Value |
|--|----------------------------|------------|--------------------------|
| | Good | Poor | |
| Age of the mother | | | |
| 15-19 Years | 10 (41.7) | 14 (58.3) | 1.865, 0.393 |
| 20-30 Years | 130 (49.4) | 133 (50.6) | |
| 31-43 Years | 27 (33.3) | 39 (66.7) | |
| Educational status of the mother | | | |
| Unable to read and write | 37 (38.1) | 60 (61.9) | 26.021, 0.0001* |
| Able to read and write | 9 (20.9) | 34 (79.1) | |
| Grade 1-8 | 28 (56) | 22 (44) | |
| Grade 9-10 | 39 (55.7) | 31 (44.3) | |
| Grade 11-12 | 6 (42.8) | 8 (57.2) | |
| Diploma and above | 48 (60.8) | 31 (39.2) | |
| Religion of the mother | | | |
| Orthodox Christian | 149 (48.4) | 159 (51.6) | 2.030, 0.566 |
| Others [¥] | 18 (40) | 27 (60) | |
| Occupation of the mother | | | |
| Governmental employee | 51 (46.8) | 58 (53.2) | 0.854, 0.931 |
| Merchant | 21 (50) | 21 (50) | |
| Housewife | 74 (46.3) | 86 (53.7) | |
| Others ^{¥¥} | 21 (50) | 21 (50) | |
| Marital status | | | |
| Currently married | 148 (46.4) | 171 (53.6) | 3.145, 0.370 |
| Currently unmarried | 19 (55.9) | 15 (44.1) | |
| Educational status of the husband | | | |
| Unable to read and write | 15 (25.8) | 43 (74.2) | 25.772, 0.0001* |
| Able to read and write | 17 (34) | 33 (66) | |
| Grade 1-4 | 16 (66.7) | 8 (33.3) | |
| Grade 5-8 | 21(50) | 21 (50) | |

| | | | |
|----------------------------------|------------|------------|-------------------|
| Grade 8-10 | 12 (37.5) | 20 (62.5) | |
| Grade 11-12 | 33 (57.9) | 24 (42.1) | |
| Diploma and above | 34 (60.7) | 22 (39.3) | |
| Occupation of the Husband | | | |
| Student | 9 (47.4) | 10 (52.6) | 8.261, 0.082 |
| Government employee | 42 (55.3) | 34 (44.7) | |
| Private employee | 45 (51.7) | 42 (48.3) | |
| Merchant | 35 (41.2) | 50 (58.8) | |
| Farmer | 17 (32.7) | 35 (67.3) | |
| Ethnicity | | | |
| Amhara | 162 (48.2) | 174 (51.8) | 3.201, 0.362 |
| Others ^{***} | 5 (29.4) | 12 (70.6) | |
| Residence | | | |
| Urban | 131 (50.8) | 127 (49.2) | 4.621, 0.032** |
| Rural | 36 (37.9) | 59 (62.1) | |
| monthly Income | | | |
| < 1527 birr | 58 (41.7) | 81 (58.3) | 14.454, 0.002 *** |
| 1527–3000 birr | 41 (41.4) | 58 (58.6) | |
| 3001–5305 birr | 35 (50.7) | 34 (49.3) | |
| > 5305 birrs | 33 (71.7) | 13 (28.3) | |

Others^{*} (Muslim, protestant and catholic), ^{**} (student, daily laborer), ^{***} (Oromo, Tigrie, Agew)

5.2. Obstetric-related characteristics

Sixty-two percent of mothers referred due to cephalo-pelvic disproportion have got poor maternal referral practice as compared to forty-two percent of mothers referred due to hypertension/PIH (P-value= 0.097). Sixty-four percent of post-term mothers got a poor maternal referral practice compared to forty-six percent of mothers who referred at term period of delivery (P-value=0.026). Nearly 74% of assisted delivery gotten mothers had a poor maternal referral practice compared to 45 % mothers gave birth via Spontaneous vaginal delivery (P-value=0.002) (**Table 2**).

Table 2: Obstetric-related characteristics of the study participants at Bahir Dar city public hospitals, Ethiopia, 2021 (n=353)

| Variables | Maternal referral practice | | X ² , P-Value |
|---|----------------------------|------------|--------------------------|
| | Good | Poor | |
| Parity | | | |
| Primipara | 93 (44.7) | 115 (55.3) | 1.370, 0.242 |
| Multipara | 74 (51.1) | 71 (48.9) | |
| Reason for referral | | | |
| Previous C/S | 22 (46.8) | 25 (53.2) | 7.845, 0.097* |
| Hypertension/PIH | 38 (57.6) | 28 (42.4) | |
| Cephalo-pelvic disproportion | 31 (38.3) | 50 (61.7) | |
| Abnormal presentation/position | 31 (41.3) | 44 (58.7) | |
| Others | 45 (53.6) | 39 (46.4) | |
| Previous C/S | 22 (46.8) | 25 (53.2) | |
| The current pregnancy wanted | | | |
| Yes | 142 (46.1) | 166 (53.9) | 1.407, 0.236 |
| No | 25 (55.6) | 20 (44.4) | |
| Gestational age | | | |
| Preterm | 58 (40.3) | 86 (59.7) | 7.282, 0.026* |
| Term | 101 (54) | 86 (46) | |
| Post term | 8 (36.4) | 14 (63.6) | |
| Mode of delivery of the current birth | | | |
| Spontaneous vaginal delivery | 107 (55.2) | 87 (44.8) | 12.456, 0.002** |
| Assisted delivery | 7 (25.9) | 20 (74.1) | |
| Cesarean delivery | 53 (40.2) | 79 (59.8) | |
| The fetal outcome of the current birth | | | |
| Alive | 160 (47.8) | 175 (52.2) | 0.539, 0.463 |
| Stillbirth | 7 (38.9) | 11 (61.1) | |
| Sex of the current baby | | | |
| Male | 113 (49.4) | 116 (50.6) | 1.084, 0.316 |

| | | | |
|---|------------|------------|--------------|
| Female | 54 (43.5) | 70 (56.5) | |
| Did you have ANC follow-up of the current birth | | | |
| Yes | 150 (46.7) | 171 (53.3) | 0.478, 0.490 |
| No | 17 (53.1) | 15 (46.9) | |
| Did you face bleeding before the birth of this current baby | | | |
| Yes | 30 (42.9) | 40 (57.1) | 0.694, 0.405 |
| No | 137 (48.4) | 146 (51.6) | |
| Did you face bleeding during delivery or later of this birth | | | |
| Yes | 55 (44.7) | 68 (55.3) | 0.509, 0.475 |
| No | 112 (48.7) | 118 (51.3) | |

5.3. Knowledge about Ethiopian health care referral system

By taking ten knowledge assessment questions on Ethiopian health care referral system, and determining the composite index value, and by dichotomizing the composite value, poor maternal knowledge about Ethiopian health care referral system was 52.1% (95% CI). About 55% of mothers who responded as ‘social/family support has a role to play in the referral system’ has got poor maternal referral as practice compared to 31% of mothers who don’t know the role of social/ family support on referral system (p-value=0.067). Fifty-nine percent of mothers who responded ‘preference of the client has a role to play in the referral system’ has got poor maternal referral practice as compared to 14% of mothers who don’t know about the role of client preference on the referral system (p-value=0.004) (Table 3).

Table 3: knowledge about Ethiopian health care referral system of the study participants at Bahir Dar city public hospitals, Ethiopia, 2021 (n=353)

| Variables | Maternal referral practice | | X ² , P-Value |
|--------------------------------------|----------------------------|------------|--------------------------|
| | Good | Poor | |
| Do you have mobile/telephone? | | | |
| Yes | 131 (47.9) | 142 (52.1) | 0.221, 0.366 |
| No | 36 (45) | 44 (55) | |
| Ever heard about referral | | | |

| | | | |
|--|------------|------------|----------------|
| Yes | 87 (46.5) | 100 (53.5) | 0.098, 0.754 |
| No | 80 (43.1) | 86 (56.9) | |
| Do you know about the Ethiopian health care referral pathway (n=187) | | | |
| Yes | 50 (42.4) | 68 (57.6) | 2.215, 0.137 |
| No | 37 (53.6) | 32 (46.4) | |
| The directionality of the referral in Ethiopian context (n=187) | | | |
| Lower to higher of care | 48 (52.2) | 44 (47.8) | 7.037, 0.030* |
| Higher to a lower of care | 27 (50.9) | 26 (49.1) | |
| Bi-directional | 12 (28.6) | 30 (71.4) | |
| The distance of facilities from one another can affect the obstetric referral | | | |
| Yes | 121 (50.6) | 118 (49.4) | 3.273, 0.195 |
| No | 30 (40.5) | 44 (59.5) | |
| Don't know | 16 (40) | 24 (60) | |
| The availability of referral forms/slips and other communication networks can influence the referral system | | | |
| Yes | 81 (51.6) | 76 (48.4) | 2.935, 0.231 |
| No | 64 (42.1) | 88 (57.9) | |
| Don't know | 22 (50) | 22 (50) | |
| Availability of ambulance in the referring health facility has a role in the referral system | | | |
| Yes | 61 (48) | 66 (52) | 0.135, 0.935 |
| No | 95 (46.6) | 109 (53.4) | |
| Don't know | 11 (50) | 11 (50) | |
| Social /family support has role to play in the referral system | | | |
| Yes | 53 (45.3) | 64 (54.7) | 5.416, 0.067* |
| No | 96 (45.7) | 114 (54.3) | |
| Don't know | 18 (69.2) | 8 (30.8) | |
| The preference of the client has a role to play in the referral system | | | |
| Yes | 94 (49.5) | 96 (50.5) | 11.066, 0.004* |
| No | 61 (40.9) | 88 (59.1) | |
| Don't know | 12 (85.7) | 2 (14.3) | |

| Counseling role of the referral officer could influence the referral system | | | |
|--|-----------|-----------|--------------|
| Yes | 80 (50.3) | 79 (49.7) | 3.069, 0.216 |
| No | 74 (43) | 98 (57) | |
| Don't know | 13 (59.1) | 9 (40.9) | |
| Community participation is important in referral system | | | |
| Yes | 77 (47.3) | 86 (52.7) | 0.523, 0.770 |
| No | 79 (46.5) | 91 (53.5) | |
| Don't know | 11 (55) | 9 (45) | |
| Financial ability of the client is a factor to be considered in the referral system | | | |
| Yes | 81 (48.2) | 87 (51.8) | 0.763, 0.683 |
| No | 76 (45.5) | 91 (54.5) | |
| Don't know | 10 (55.6) | 8 (44.4) | |

Other[¥] (Relatives, friends, kebele leaders)

5.4. Environmental related characteristics

Seventy-five percent of mothers responded as 'health development army was functional' have got poor maternal referral practice as compared to 50% of mothers who responded as 'health development army was not functional' (P-value=0.096). Seventy percent of mothers who spent more than an hour to arrive to Bahir Dar city public hospitals have got poor maternal referral practice as compared to 48% of mothers who spent less than half an hour (P-value=0.01) (Table 4).

Table 4: Environmental related characteristics of the study participants at Bahir Dar city public hospitals, Ethiopia, 2021 (n=353)

| Variables | Maternal referral practice | | X ² , P-Value |
|--|----------------------------|------------|--------------------------|
| | Poor | Good | |
| The road to your nearby health facility accessible for vehicles | | | |
| Yes | 152 (49.5) | 155 (50.5) | 4.585, 0.032* |
| No | 15 (32.6) | 31 (67.4) | |
| Is your village health developmental army functional | | | |
| Yes | 7 (50) | 7 (50) | 2.770, 0.096* |

| | | | |
|---|------------|------------|---------------|
| No | 8 (25) | 24 (75) | |
| Do village health developmental army prepare a local patient transfer bed? | | | |
| Yes | 5 (50) | 5 (50) | 0.423, 0.515 |
| No | 4 (66.7) | 2 (33.3) | |
| By what means you go to the nearby health facility? | | | |
| On foot | 7 (36.8) | 12 (63.2) | 1.648, 0.199 |
| By mule/donkey/horse | 3 (17.6) | 14 (82.4) | |
| Time taken to reach the nearby health facility | | | |
| < 30 minutes | 130 (47.9) | 141 (52.1) | 4.398, 0.111 |
| 30-60 minutes | 24 (38.7) | 38 (61.3) | |
| > 60 minutes | 13 (65) | 7 (35) | |
| Distance from home to nearby hospital | | | |
| < 5 km | 48 (50.5) | 47 (49.5) | 0.670, 0.715 |
| 5-10 km | 10 (50) | 10 (50) | |
| > 10 km | 109 (45.8) | 129 (54.2) | |
| Time taken to arrive to this hospital | | | |
| < 30 minutes | 120 (51.7) | 112 (48.3) | 9.027, 0.011* |
| 30-60 minutes | 29 (47.6) | 32 (52.4) | |
| > 60 minutes | 18 (30) | 42 (70) | |

5.5. Institutional/health facility related characteristics

Eighty-two percent of mothers responded as ‘kebele health extension worker examined them before referring to the nearby health facility’ have got poor maternal referral practice as compared to 39% of mothers who were not examined (p-value=0.0001). Nearly 71% of mothers referred from referral hospitals have got poor maternal referral practice as compared to 40% of mothers referred from health centers (p-value=0.005). Nearly 56% of mothers referred from a public health facility have got poor maternal referral practice as compared to 36% of mothers referred from private or NGO health facilities (p-value=0.001) (**Table 5**).

Table 5: Institutional/ health facility related characteristics of the study participants at Bahir Dar city public hospitals, Ethiopia, 2021 (n=353)

| Variables | Maternal referral practice | | X ² , P-Value |
|--|----------------------------|------------|--------------------------|
| | Good | Poor | |
| Did your kebele health extension workers examine you before they refer to the nearby health facility? | | | |
| Yes | 20 (18.1) | 91 (81.9) | 55.727, 0.0001* |
| No | 147 (60.7) | 95 (39.3) | |
| Level of the referring health facility | | | |
| Health center | 38 (60.3) | 25 (39.7) | 12.952, 0.005**** |
| Primary hospital | 89 (45.2) | 108 (54.8) | |
| General hospital | 26 (57.8) | 19 (42.2) | |
| Referral hospital | 14 (29.2) | 34 (70.8) | |
| Type of the referring health facility | | | |
| Public | 135 (44.5) | 168 (55.5) | 13.499, 0.001* |
| Others [¥] | 32 (64) | 18 (36) | |
| Time spent to be seen by a health worker | | | |
| < 10 minutes | 82 (42.5) | 111 (57.5) | 7.273, 0.026* |
| 10-30 minutes | 52 (48.1) | 56 (51.9) | |
| > 30 minutes | 33 (63.5) | 19 (36.5) | |
| How do you rate the communication skill of the referring health care worker | | | |
| Poor | 24 (85.7) | 4 (14.3) | 20.182, 0.0001** |
| No opinion | 18 (48.6) | 19 (51.4) | |
| Good | 125 (43.4) | 163 (56.6) | |
| How do you rate the quality of service you got from the referring health facility | | | |
| Very poor | 23 (54.8) | 19 (45.2) | 8.318, 0.081 |
| Poor | 22 (64.7) | 12 (35.3) | |
| No opinion | 26 (52) | 24 (48) | |
| Good | 57 (40.4) | 84 (59.6) | |
| Very good | 39 (45.3) | 47 (54.7) | |
| Do you get the prescribed medication in the referring hospital | | | |
| Yes | 126 (45) | 154 (55) | 2.895, 0.089 |

| | | | |
|---|------------|------------|-----------------|
| No | 41 (56.1) | 32 (43.9) | |
| Do the referring health worker respect you | | | |
| Yes | 145 (44.6) | 180 (55.4) | 11.924, 0.001* |
| No | 22 (78.6) | 6 (21.4) | |
| Does the referring health facility send you to this receiving hospital via ambulance | | | |
| Yes | 57 (27.9) | 147 (72.1) | 72.726, 0.0001* |
| No | 110 (73.8) | 39 (26.2) | |
| The reasons for not having ambulance service | | | |
| Lack of infrastructure | 29 (72.5) | 11 (27.5) | 3.612, 0.461 |
| Others ^{¥¥} | 30 (75) | 10 (25) | |
| Don't know | 51 (71.8) | 20 (28.2) | |
| Are you satisfied with the service you received in the referring hospital | | | |
| Yes | 127 (42.2) | 174 (57.8) | 21.455, 0.0001* |
| No | 40 (76.9) | 12 (23.1) | |
| Did you get the necessary laboratory diagnostic tests in the referring health facility | | | |
| Yes | 132 (45.4) | 159 (54.6) | 2.522, 0.112 |
| No | 35 (56.5) | 27 (43.5) | |
| Did you get the radiology service in the referring health facility | | | |
| Yes | 92 (40.5) | 135 (59.5) | 11.728, 0.001* |
| No | 75 (59.5) | 51 (40.5) | |
| Time spent to be seen by a health worker | | | |
| < 10 minutes | 108 (46.4) | 125 (54.6) | 0.523, 0.770 |
| 10-30 minutes | 41 (47.7) | 45 (52.3) | |
| > 30 minutes | 18 (52.9) | 16 (47.1) | |
| How do you rate the communication skill of the receiving hospital health care workers | | | |
| Poor | 24 (57) | 18 (43) | 5.247, 0.263 |
| No opinion | 19 (57.6) | 14 (42.4) | |
| Good | 124 (44.6) | 154 (55.4) | |

Others[¥] (private or NGO), Others^{¥¥} (lack of benzene/Nafta, lack of maintenance, or lack of driver).

5.6. Maternal referral practice and the reasons for referrals

By taking thirteen maternal referral practice assessing questions and determining the composite index value, and dichotomizing the composite value, maternal referral practice of mothers with good referral practice was 52.7% (95%CI) (Table 6).

Table 6: Maternal referral practice related characteristics of the study participants at Bahir Dar city public hospitals, Ethiopia, 2021 (n=353)

| Variables | Maternal referral practice | | X ² , P-Value |
|--|----------------------------|------------|--------------------------|
| | Good | Poor | |
| How do you rate the greeting and respect to you of the nearby health care workers | | | |
| Poor | 21 (70) | 9 (30) | 10.508, 0.015* |
| Good | 80 (49.1) | 83 (50.9) | |
| Very good | 66 (41.3) | 94 (58.7) | |
| Time spent to be seen by a health worker | | | |
| < 10 minutes | 90 (42.3) | 120 (57.7) | 12.758, 0.002* |
| 10-30 minutes | 50 (46.7) | 57 (53.3) | |
| > 30 minutes | 27 (75) | 9 (25) | |
| By what means you come to this hospital | | | |
| By ambulance | 44 (24.1) | 139 (75.9) | 83.714, 0.0001* |
| By public transport | 50 (67.6) | 24 (32.4) | |
| Private transport | 73 (76.1) | 23 (23.9) | |
| Was there a nurse/midwifery assisting during coming to this hospital | | | |
| Yes | 36 (20.7) | 138 (79.3) | 97.539, 0.0001* |
| No | 131 (73.2) | 48 (26.8) | |
| Do you have IV fluid secure during coming to this hospital | | | |
| Yes | 26 (17) | 127 (83) | 99.559, 0.0001* |
| No | 141 (70.5) | 59 (29.5) | |
| Have you been given referral sheet while you came to this hospital | | | |
| Yes | 126 (42.1) | 173 (57.9) | 20.944, 0.0001* |

| | | | |
|--|------------|------------|-----------------|
| No | 41 (75.9) | 13 (24.1) | |
| Were there any danger signs happen during transportation | | | |
| Yes | 39 (33.6) | 77 (66.4) | 13.005, 0.001* |
| No | 118 (53.9) | 101 (46.1) | |
| Don't know | 10 (55.6) | 8 (44.4) | |
| What danger sign happen | | | |
| Bleeding | 23 (31.1) | 51 (68.9) | 5.143, 0.076* |
| Other [¥] | 16 (38.1) | 26 (61.1) | |
| Did the receiving health facility triage give priority to you | | | |
| Yes | 35 (31.3) | 77 (68.7) | 16.972, 0.0001* |
| No | 132 (54.8) | 109 (45.2) | |
| Did the receiving health facility take vital signs/ physical examination as soon as you arrive to the health facility | | | |
| Yes | 114 (40.3) | 169 (59.7) | 40.413, 0.0001* |
| No | 47 (87.1) | 7 (12.9) | |
| Don't know | 6 (37.5) | 10 (62.5) | |

Others[¥] (loss of consciousness, severe headache)

5.7. Factors associated with maternal referral practice

Binary logistic regression analysis was conducted to identify predictors of maternal referral practice among mothers referred to Bahir Dar city public hospitals. On multivariable logistic regression model, maternal education, monthly income, level of the referring health facility, mode of child birth/delivery, and time taken to arrive to Bahir Dar city referral hospitals were significantly associated with maternal referral practice at a p-value of 0.05.

Accordingly, for mothers who have not able to read and write, the chance of getting poor maternal referral practice were about 2.3 (AOR=2.38, 95%CI: 1.15, 4.94) times higher as compared to those who have diploma and above. Similarly, mothers who are able to read and write only, the chance of getting poor maternal referral practice were about 6.6 (AOR=6.59, 95%CI: 2.53, 17.17) times higher as compared to those who have diploma and above.

Monthly income was the other independent determinant for maternal referral practice. Those mothers whose monthly income of less than 1527 birr, between 1527-3000 birr and between 3001-5305 birr were 4.55 (AOR=4.55, 95%CI: 1.91, 10.84), 4.3 (AOR=4.29, 95%CI: 1.76, 10.50), and 3.73 (AOR=3.73, 95%CI: 1.49, 9.33) times had a higher poor maternal referral practice compared to those mothers who earn more than 5305 birr, respectively.

The odds of poor maternal referral practice were 4.6 (AOR = 4.63, 95%CI: 1.94, 11.07) times higher among mothers who referred from referral hospitals compared to those mothers referred from health centers.

Similarly, mothers who gave birth by cesarean section and assistance were 2.06 (AOR = 2.06, 95%CI: 1.22, 3.47) and about 4.8 (AOR = 4.77, 95%CI: 1.64, 13.91) times had higher poor maternal referral practice as compared to those who were spontaneous vaginal delivery.

Mothers who spent more than an hour to arrive to this hospital, the odds of having a poor maternal referral practice were 2.15 (AOR = 2.15, 95%CI: 1.07, 4.34) times higher compared to those who spent less than 30 minutes (Table 7).

Table 7: Binary logistic regression on factors associated with maternal referral practice among mothers referred to Bahir Dar city public referral hospitals, north west Ethiopia, 2021

| Variable | Category | Maternal referral practice | | COR (95%CI) | AOR (95%CI) | P-value |
|--|--------------------------------|----------------------------|------|------------------------------|------------------------------|-----------|
| | | Good | Poor | | | |
| Educational status of the mother | Unable to read and write | 37 | 60 | 2.511 (1.365, 4.620) | 2.381 (1.149, 4.935) | 0.020* |
| | Able to read and write | 9 | 34 | 5.849 (2.469, 13.857) | 6.594 (2.533, 17.169) | 0.0001*** |
| | Grade 1-4 | 2 | 4 | 3.097 (0.535, 17.936) | 3.068 (0.489,19.250) | 0.232 |
| | Grade 5-8 | 26 | 18 | 1.072 (0.505, 2.273) | 0.976 (0.415, 2.298) | 0.956 |
| | Grade 8-10 | 39 | 31 | 1.231 (0.641, 2.365) | 1.248 (0.592, 2.634) | 0.560 |
| | Grade 11-12 | 6 | 8 | 2.065 (0.653, 6.525) | 1.100 (0.312, 3.879) | 0.882 |
| | Diploma and above ^R | 48 | 31 | 1.00 | 1.00 | |
| Residence | Urban ^R | 131 | 127 | 1.00 | 1.00 | |
| | Rural | 36 | 59 | 1.691 (1.045, 2.735) | 1.063 (0.539, 2.096) | 0.861 |
| Monthly Income | < 1527 birr | 58 | 81 | 3.545 (1.717, 7.319) | 4.552 (1.911,10.841) | 0.001 *** |
| | 1527–3000 birr | 41 | 58 | 3.591 (1.686, 7.649) | 4.294 (1.756, 10.502) | 0.001*** |
| | 3001–5305 birr | 35 | 34 | 2.466 (1.112, 5.470) | 3.733 (1.494, 9.327) | 0.005** |
| | > 5305-birr ^R | 33 | 13 | 1.00 | 1.00 | |
| Level of the referring health facility | Health center ^R | 38 | 25 | 1.00 | 1.00 | |
| | Primary hospital | 89 | 108 | 1.844 (1.035, 3.286) | 1.524 (0.803, 2.890) | 0.197 |
| | General hospital | 26 | 19 | 1.111 (0.510, 2.417) | 1.449 (0.595, 3.527) | 0.414 |

| | | | | | | |
|---|---|-----|-----|-----------------------------|------------------------------|----------|
| | Referral hospital | 14 | 34 | 3.691 (1.656, 8.226) | 4.633 (1.938, 11.075) | 0.001*** |
| Mode of delivery of the current birth | Spontaneous vaginal delivery ^R | 107 | 87 | 1.00 | 1.00 | |
| | Assisted delivery | 7 | 20 | 3.514 (1.420, 8.695) | 4.770 (1.636, 13.909) | 0.004** |
| | Cesarean delivery | 53 | 79 | 1.833 (1.171, 2.871) | 2.055 (1.216, 3.474) | 0.007** |
| Is the road to your nearby health facility accessible for vehicles? | Yes ^R | 152 | 155 | 1.00 | 1.00 | |
| | No | 15 | 31 | 2.027 (1.052, 3.905) | 1.776 (0.818, 3.855) | 0.146 |
| Time taken to arrive to the nearby health facility from your home | < 30 minutes | 130 | 141 | 2.014 (0.780, 5.204) | 2.786 (0.894, 8.682) | 0.077 |
| | 30-60 minutes | 24 | 38 | 2.940 (1.028, 8.415) | 3.162 (0.918, 10.227) | 0.063 |
| | > 60 minutes ^R | 13 | 7 | 1.00 | 1.00 | |
| | 30-60 minutes | 29 | 32 | 1.182 (0.672, 2.079) | 1.035 (0.552, 1.942) | 0.914 |
| | > 60 minutes | 18 | 42 | 2.500 (1.359, 4.598) | 2.151 (1.066, 4.341) | 0.033* |

Note: ^R reference category, * significant at p -value<0.05, ** significant at P -value<0.01, *** significant at P -value <0.001

6. DISCUSSION

About fifty three percent of maternal referral practice was poor. Mother's educational status, monthly income, being referred from referral hospital, mode of delivery, and time taken to arrive the hospital were the identified factors associated with poor maternal referral practice.

The result of the current study showed that, there was poor maternal referral practice which was 52.7% (95% CI: 47%, 58%). The current study finding was higher than other study done in Tanzania among children (37). The possible justification for this higher level of poor maternal referral practice could be due to different measurement tools, different study population, different sample size, study setting, and socio- cultural norms. This difference might be attributed from the current study was done in higher city referral hospitals of which, the communities could have information access to health-related issues while the later are done at the rural areas of Tanzania of which low health information access could be available.

This study reported that maternal education was significantly associated with poor maternal referral practice. The uneducated mothers were more likely to face poor maternal referral practice than educated mothers. The possible justification for this could be, as not attending formal education could have limited mothers understanding about maternal referral practice and might not give attention for the referral services, they got from the referring health facility. In contrast, diploma and above educated mothers could see everything carefully and could easily understand the services they got and identify what they got and what is expected from that referring health facility. As a result, the educated mothers could request to health professionals if they didn't get expected services from health facilities while the uneducated might not. And this could render the service they supposed to gain and might enforce them to gain poor practice than that of educated mothers. And also, there could be some form of discrimination on the base of low educational status and income that would show them below the level.

Income was also identified as the other predictor for maternal referral practice. The current study revealed that having low monthly income was significantly associated with poor maternal referral practice than having higher monthly income. The possible justification for this could be as having low monthly income could enhance the mothers to gain poor maternal referral practice.

The other justification for this could be though all maternity related services are waived and free of charge, the ambulance service in all health facilities are not actively working. This renders the mothers to use a public transport in their out-of-pocket money and this attributes to poor maternal referral practice and birth outcome.

The level of the referring health facility could significantly contribute to the maternal referral practice. The current study identified mothers referred from referral hospitals were about 4.6 times of having a high chance of poor maternal referral practice than referred from health centers. The possible justification for this could be, as referred from the well-equipped health centers (like Bahir Dar health center of vision clinic) could have the tendency of applying the national standard referral procedures and the clients could be better satisfied on their referral approach as compared to referred from referral hospital with huge patient/client flow as the health professionals in the huge patient flow might become exhausted and careless this might lead to have a poor maternal referral practice.

Similarly, mothers who gave birth using cesarean section and assisted delivery were about 2.06 and about 4.8 times could had high chance of poor maternal referral practice as compared to those who gave birth via spontaneous vaginal delivery, respectively. The possible justification for this could be assisted and cesarean section deliveries can be done due to poor maternal referral practices. And they might be in dilemma and simply refer the mothers without giving attention on the referral procedures after the mothers exhausted as they perceived and feared if the mother faced complications/ the health care workers could be present in the court of law and could be arrested for longer duration of time. Which might attribute to poor maternal referral practice.

Time spent to arrive to the receiving hospitals was also significantly associated with maternal referral practice. Mothers who spent more than one hour had a 2-fold chance of having a poor maternal referral practice than who spent lower. The possible justification for this finding could be poor maternal referral practice could be by referring facility and one factor for maternal death/loss (61). Health facilities distant from the Bahir Dar city public hospitals, to reduce the maternal morbidity and loss, the health care workers might decide to perform a poor maternal referral practice as of the national standard and might not communicate to receiving health

facility as he/she is referring a client/patient for early diagnosis better service at arrival. This might negatively affect the maternal referral practice.

6.1. Limitation of the study

Even though this study has provided valuable evidence regarding maternal referral practice and possible associated factors, it could not avoid the chicken-egg dilemma. And it couldn't be supported or triangulated by qualitative study that may bring strong evidence via in depth interview and focus group discussion.

7. CONCLUSION

This study revealed that maternal referral practice was poor. Maternal referral practice was determined by demographic, social, environmental and obstetric factors. Mothers earn with low monthly income, not attending the formal education should be given maximal attention for improving the poor maternal referral practice during labor.

8. RECOMMENDATIONS

Based on the finding, the following recommendations are given:

- ✓ Information dissemination should be given routinely about referral
- ✓ Better to give continuous training on referral system for lower-level health facilities.
- ✓ Facilities should regularly monitor and evaluate referral practices
- ✓ Federal ministry of health and regional health bureau should give special attention about transportation of referred laboring mothers.
- ✓ Federal ministry of health and regional health bureau should construct health facilities that have adequate equipment and educated man power.

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10. ANNEX

10.1. National referral network model

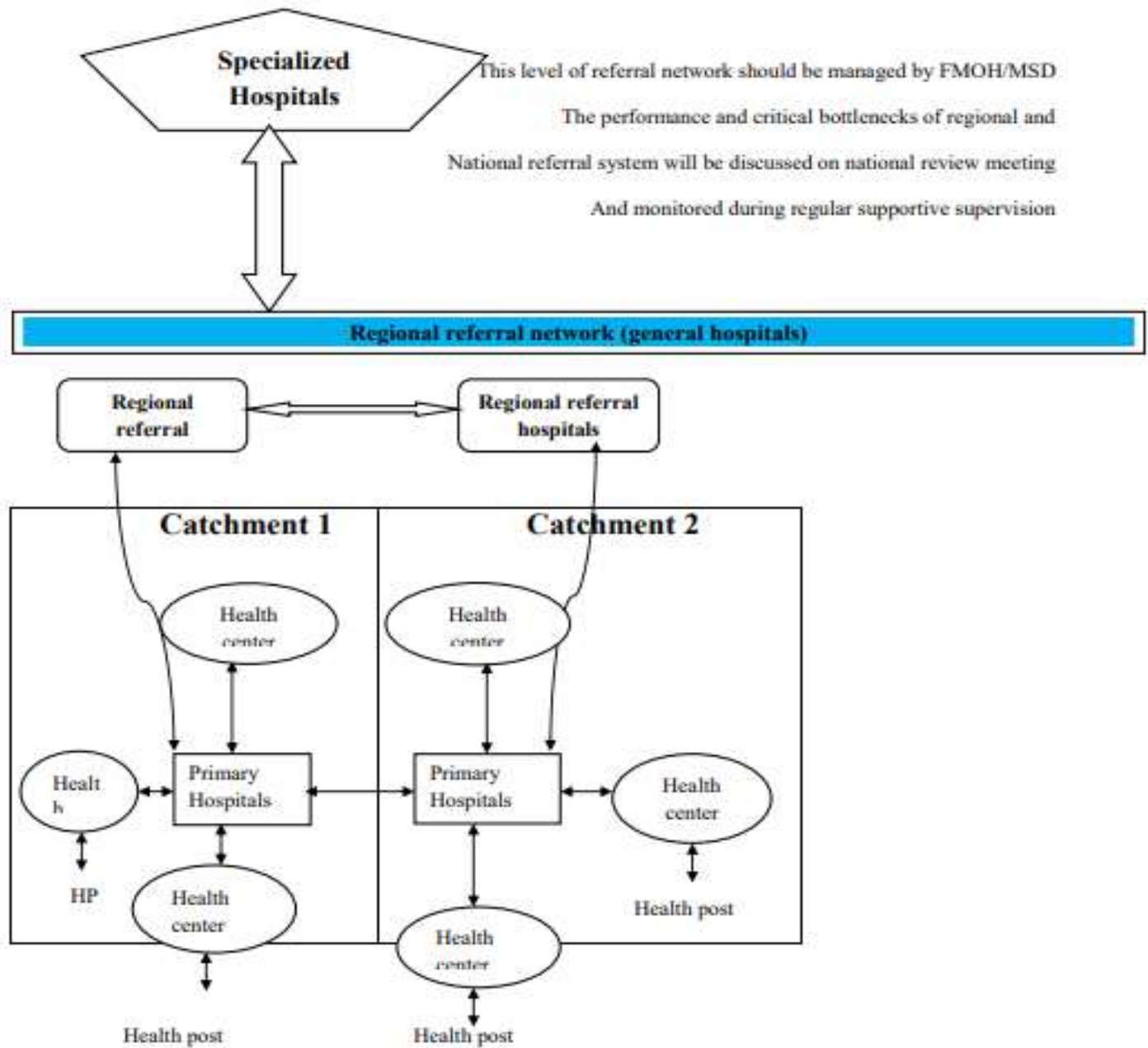


Figure 3: Depicting the national referral network model of the Ethiopian health care delivery system

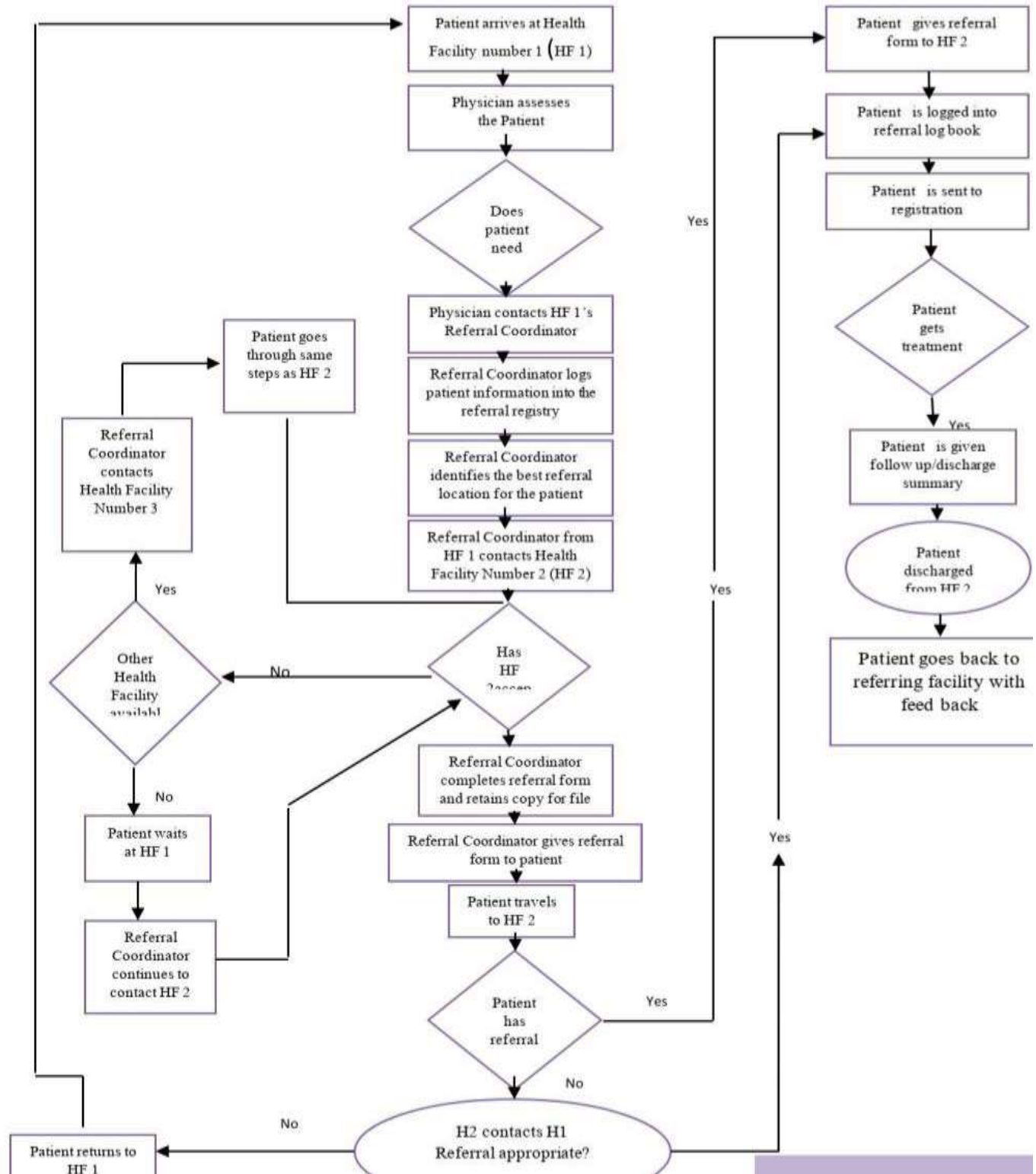


Figure 4: Depicting the referral flow of the Ethiopian health care delivery system

10.2. Information sheet and informed consent form

A. Information sheet:

This sheet is to be read for the participants of the study.

Good morning/afternoon, my name is ----- and I am one of the data collectors for the study being conducted by Bahir Dar University, College of Medicine & Health Science, and Department of health system management and health economics on maternal referral practice and associated factors among laboring mothers referred to Bahir Dar city public hospitals. The study is carrying out with the representative sample of mothers referred to the above listed hospitals for advanced maternity service. You are selected scientifically to be participant of this study if you give me consent after you have understood the following information sheet:

Title of the study: Maternal referral practice and associated factors among laboring mothers referred to Bahir Dar city public hospitals.

Background of the study: Referral is one of the strategies in place across all levels of health care settings for adequate use of health care services in time. Implementation of the appropriate maternal referral practice could reduce the morbidity and mortality rate of mothers during labor and delivery.

Objective of the study: To determine the level of maternal referral practice and associated factors among laboring mothers referred to public hospitals of Bahir Dar city, northwest, Ethiopia.

Benefit of the study: The participant will not get any direct benefit for being participant.

1. The result can be used as a baseline for further studies in the referral practice.
2. The result will be used to design appropriate strategies that help to reduce maternal and neonatal morbidity and mortality.
3. The result will be disseminated to the Amhara Regional Bureau and Amhara Public health institute.

Harm of the study: The study has no harm except that participant will spend up to 30 minutes in the interview.

Rights of the participant: Participation is the full right, not participating is the full right, the participant can stop participating in the study at any time, the participant can skip question which she does not want to respond, during the interview, the participant can ask questions which are not clear.

Confidentiality: The secrecy of any information forwarded will be maintained.

B. Informed consent form

I ----- have well understood the study information sheet read above.

And now I am in a position to participate in the study by giving information.

To be voluntary sign below and conduct interview

Not to be voluntary----- go to the next household.

Signature of the interviewer -----

(Signature of the interviewer certifies that written informed consent has been given by the respondent)

Questionnaire identification number _____

Name of the Interviewer _____ Signature _____ date _____

Name of the supervisor _____ Signature _____ date _____

Address of the investigator:

Amare Fenta (BSc, MPH-health system, and project management fellow)

Cell phone: +251- 911681970

Email: amarefenta30@gmail.com

For further question/ information use the address of the Bahir Dar University health system management and health economics department.

Bahir Dar University, college of medicine and health science, school of public health, department of health system management and health economics

Phone number = 0918411426

Email= aynisha5@gmail.com

10.3. English Version Questionnaire

Part one: Socio-demographic characteristics of the respondents

| Code | Socio demographic characteristics | Response | Skip |
|------|-----------------------------------|---|------------------|
| Q101 | Age of the mother | _____ years | |
| Q102 | Educational status of the mother | <ol style="list-style-type: none"> 1. Unable to read and write 2. Able to read and write 3. Grade 1-4 4. Grade 5-8 5. Grade 8-10 6. Grade 11-12 7. Diploma and above | |
| Q103 | Religion of the mother | <ol style="list-style-type: none"> 1. Orthodox Christian 2. Muslim 3. Protestant 4. Catholic 5. Others _____ | |
| Q104 | Occupation of the mother | <ol style="list-style-type: none"> 1. Student 2. Governmental employee 3. Merchant 4. Housewife 5. Others, specify _____ | |
| Q105 | Marital status of the mother | <ol style="list-style-type: none"> 1. Single 2. Married 3. Divorced 4. Widowed | 1, 3 or 4 → Q108 |
| Q106 | Educational status of the husband | <ol style="list-style-type: none"> 1. Unable to read and write 2. Able to read and write 3. Grade 1-4 4. Grade 5-8 5. Grade 8-10 | |

| | | | |
|------|--|---|--|
| | | 6. Grade 11-12 7. Diploma and above | |
| Q107 | Occupation of the Husband | 1. Student 2. Government employee 3. Private employee 4. Merchant 5. Farmer | |
| Q108 | What is your ethnicity? | 1. Amhara 2. Oromo 3. Tigrie 4. Other | |
| Q109 | Place of Residence | 1. Urban 2. Rural | |
| Q110 | How much is your average monthly income? |ETB | |
| Q111 | Level of the referring health facility | 1. Health center 2. Primary hospital 3. General hospital 4. Referral hospital | |
| Q112 | Type of the referring health facility | 1. Public 2. Private 3. NGOs | |
| Q113 | Do you have mobile/telephone? | 1. Yes 2. No | |

Part two: Obstetric-related characteristics

| Code | Question | Category | Skip |
|------|---------------------------------|------------------------------|--------|
| Q201 | Parity | 1. Primipara 2. Multipara | 1→Q203 |
| Q202 | Did you have previous C/S scar? | 1. Yes 2. No | |

| | | | |
|------|---|---|--|
| Q203 | What was the reason to be referred to this Hospital by now? | 1. Previous C/S 2. Hypertension/PIH 3. Cephalo-pelvic disproportion 4. Abnormal presentation/position 5. Blood transfusion 6. Others, specify_____ | |
| Q204 | Was the current pregnancy wanted? | 1. Yes 2. No | |
| Q205 | What was the gestational age of the current birth? |Weeks | |
| Q206 | What was the mode of delivery of the current birth? | 1. Spontaneous vaginal delivery 2. Assisted delivery 3. Cesarean delivery | |
| Q207 | What was the fetal outcome of the current birth? | 1. Alive 2. Stillbirth | |
| Q208 | What was the sex of the baby of the current birth? | 1. Male 2. Female | |
| Q209 | Did you have ANC follow-up of the current birth? | 1. Yes 2. No | |
| Q210 | Did you face bleeding before the birth of this current baby? | 1. Yes 2. No | |
| Q211 | Did you face bleeding during delivery or later of this birth? | 1. Yes 2. No | |

Part three: Knowledge about Ethiopian health care referral system measuring questions

| Code | Knowledge assessing questions | Category | Skip |
|------|------------------------------------|---|---------------|
| Q301 | Have you ever heard about referral | 1. Yes 2. No | 2→Q303 |
| Q302 | What is the source of information? | 1. Television 2. Radio 3. Health worker | |

| | | | |
|------|---|---|---------------|
| | | 4. Other specify _____ | |
| Q303 | Do you know about the Ethiopian health care referral pathway? | 1. Yes 2. No | 2→Q305 |
| Q304 | If your answer is 'yes' for 'Q303', what is the directionality in Ethiopian context that? | 1. Lower to higher of care 2. Higher to a lower of care 3. Bi-directional | |
| Q305 | The distance of facilities from one another can affect the obstetric referral | 1. Yes 2. No 3. Don't know | |
| Q306 | The availability of referral forms/slips and other communication networks can influence the referral system | 1. Yes 2. No 3. Don't know | |
| Q307 | Availability of ambulance in the referring health facility has a role in the referral system | 1. Yes 2. No 3. Don't know | |
| Q308 | Social /family support has role to play in the referral system | 1. Yes 2. No 3. Don't know | |
| Q309 | The preference of the client has a role to play in the referral system | 1. Yes 2. No 3. Don't know | |
| Q310 | Counseling role of the referral officer could influence the referral system | 1. Yes 2. No 3. Don't know | |
| Q311 | Community participation is important in referral system | 1. Yes 2. No 3. Don't know | |
| Q312 | Financial ability of the client is a factor to be considered in the referral system | 1. Yes 2. No 3. Don't know | |

Part four: Environmental related characteristics assessing questions

| Code | Environmental characteristics assessing questions | Category | Skip |
|------|---|---------------------------------------|----------|
| Q401 | Is the road to your nearby health facility accessible for vehicles? | 1. Yes 2. No | 1-->Q405 |
| Q402 | Is your village health developmental army functional? (It is to be requested for those who has no vehicle access) | 1. Yes 2. No | 2-->404 |
| Q403 | If your answer to 'Q402' is 'Yes', do they prepare a local patient transfer bed? | 1. Yes 2. No | 1-->Q405 |
| Q404 | If your answer to Q402 is 'No', by what means you go to the nearby health facility? | 1. On foot 2. By mule/donkey/horse | |
| Q405 | How much time it takes to reach the nearby health facility from your home? | _____minutes | |
| Q406 | How is your residence far from the nearby health facility? | _____meter | |
| Q407 | How long it takes to arrive to this hospital from the referring health facility? | _____minutes | |

Part five: Institutional/health facility related characteristics assessing questions

| Code | Institutional/health facility assessing questions | Category | Skip |
|------|--|---|------|
| Q501 | How many minutes you stay before being seen by the referring health care worker? | _____minutes | |
| Q502 | How do you rate the communication skill of the referring health care worker? | 1. Very poor 2. Poor 3. No opinion 4. Good 5. Very good | |
| Q503 | How do you rate the quality of service you got from the referring health | 1. Very poor 2. Poor 3. No opinion | |

| | | | |
|------|---|---|---------------|
| | | 4. Good 5. Very good | |
| Q504 | Do you get the prescribed medication in the referring hospital? | 1. Yes 2. No | |
| Q505 | Do the referring health worker respect you? | 1. Yes 2. No | |
| Q506 | Does the referring health facility send you to this receiving hospital via ambulance? | 1. Yes 2. No | 2→Q511 |
| Q507 | If your answer to Q506 is 'No', what was their reason? | 1. Lack of Nafta/Benzene 2. Lack of maintenance 3. Lack of driver 4. Lack of infrastructure 5. Don't know | |
| Q508 | Did you satisfied with the service you received in the referring hospital? | 1. Yes 2. No | |
| Q509 | Did you get the necessary laboratory diagnostic tests in the referring health facility? | 1. Yes 2. No | |
| Q510 | Did you get the radiology service in the referring health facility? | 1. Yes 2. No | |
| Q511 | How many minutes you stay before being seen by this hospital health care worker? | _____minutes | |
| Q512 | How do you rate the communication skill of this hospital health care workers? | 1. Very poor 2. Poor 3. No opinion 4. Good 5. Very good | |
| Q513 | Do you satisfied with the service you received in this hospital? | 1. Yes 2. No | |

Part six: Maternal referral practice assessing questions

| Code | Provider Characteristics | Category | Skip |
|------|---|---|---------------|
| Q601 | Did your kebele health extension worker examine you and refer to the nearby health facility? | 1. Yes 2. No | |
| Q602 | How do you rate the greeting and respect to you of the nearby health care workers? | 1. Very poor 2. Poor 3. Satisfactory 4. Good 5. Very good | |
| Q603 | For how long you waited to see a doctor or nurse before being referred by the nearby health facility? | _____ minutes | |
| Q604 | Did the nearby health care worker inform you as he/she is going to refer you to this hospital? | 1. Yes 2. No | |
| Q605 | By what means you come to this hospital? | 1. By ambulance 2. By public transport | |
| Q606 | Was your privacy kept during referral? | 1. Yes 2. No | |
| Q607 | Was there a nurse/midwifery assisting during coming to this hospital? | 1. Yes 2. No | |
| Q608 | Do you have IV fluid secure during coming to this hospital? | 1. Yes 2. No | |
| Q609 | How much time you spent to arrive this hospital during transportation? | _____ hours | |
| Q610 | Have you been given referral sheet while you came to this hospital? | 1. Yes 2. No | |
| Q611 | Were there any danger signs happen during transportation? | 1. Yes 2. No 3. Don't know | 2→Q614 |
| Q612 | If your answer is 'yes' to Q612, what danger | 1. Bleeding | |

| | | | |
|------|--|---|--|
| | sign happen? | 2. Loss of consciousness 3. Others, specify_____ | |
| Q613 | Did the receiving health facility triage give priority to you? | 1. Yes 2. No 3. Don't know | |
| Q614 | Did the receiving health facility take vital signs/ physical examination as soon as you arrive to the health facility? | 1. Yes 2. No 3. Don't know | |
| Q615 | Did the physician examine you within 5 minutes of arrival? | 1. Yes 2. No 3. Don't know | |

Thank you very much for your active participation.

10.4. አማረኛ መጠይቅ

ክፍል አንድ፡ ማህበራዊና ኢኮኖሚያዊ ጉዳዮችን መዳሰሽያ መጠይቅ

| ኮድ | ማህበራዊና ኢኮኖሚያዊ ጉዳዮችን መዳሰሽያ | ምላሽ | እለፍ |
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| ቁ101 | የእናት-የዋ እድሜ | _____ ዓመት | |
| ቁ102 | የእናት-የዋ የትምህርት ደረጃ | 8. ማንበብና መጻፍ የማትችል 9. ማንበብና መጻፍ ብቻ የምትችል 10.ከ 1-4 የተታተለች 11.ከ 5-8 የተታተለች 12.ከ 8-10 የተታተለች 13.ከ 11-12 የተታተለች 14.ዲፕሎማና በላይ | |
| ቁ103 | ሃይማኖት | 6. ኦርቶዶክስ ክርስቲያን 7. ሙስሊም 8. ፕሮቴስታንት 9. ካቶሊክ 10.ሌላ ካለ ይገለጽ _____ | |
| ቁ104 | የእንት-የዋ ስራ | 6. ተማሪ 7. የመንግስት ስራተኛ 8. ነጋዴ 9. የቤት እመቤት 10.ሌላ ካለ ይገለጽ _____ | |
| ቁ105 | የጋብቻ ሁኔታ | 5. ያላገባች 6. ያገባች 7. የፈታች 8. የሞተባት | 1, 3 or 4→ ቁ108 |
| ቁ106 | የባለቤቷ የትምህርት ደረጃ | 8. ማንበብና መጻፍ የማይችል 9. ማንበብና መጻፍ ብቻ የማይችል 10.ከ 1-4 የተታተለ | |

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| | | 11.ከ 5-8 የተታተለ 12.ከ 8-10 የተታተለ 13.ከ 11-12 የተታተለ 14. ዲፕሎማና በላይ | |
| ቁ107 | የባለቤቷ የስራ ሁኔታ | 6. ተማሪ 7. የመንግስት ሰራተኛ 8. የግል ሰራተኛ 9. ነጋዴ 10. አርሶ አደር | |
| ቁ108 | ብሄርዎ? | 5. አማራ 6. ኦሮሞ 7. ትግሬ 8. ሌላ ካለ ይገለጽ _____ | |
| ቁ109 | የመኖሪያ አካባቢ | 3. ከተማ 4. ገጠር | |
| ቁ110 | አማካይ ወሃዊ ገቢዎ ምን ያህል ነው? |ብር | |
| ቁ111 | ሪፈር የላከዎ ጤና ተቋም ደረጃ | 5. ጤና ጣቢያ 6. የግል ሆስፒታል 7. ጠቅላላ ሆስፒታል 8. ሪፈራል ሆስፒታል | |
| ቁ112 | ሪፈር የላከዎ ጤና ተቋም ባለቤትነቱ የማን ነው ? | 4. የመንግስት 5. የግል 6. የተራዶ ድርጅት | |
| ቁ113 | የራስዎ መገናኛ መሳሪያ/ስልክ አለዎ? | 3. አዎ 4. የለም | |

ክፍል ሁለት: ከወሊድ እና ተያያዥ ጉዳዮችን መዳሰሻ መጠይቅ

| ኮድ | መጠይቅ | ምላሽ | እለፍ |
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| ቁ201 | ይህ ወሊድ ስንተኛዎ ነው? | 3. የመጀመሪያ 4. ከአንድ ጊዜ በላይ | 1→ቁ203 |
| ቁ202 | ከአንድ ጊዜ በላይ ወልደው ከሆነ፣ በቀዶ ጥገና ወልደው ያውቃሉ? | 3. አዎ 4. የለም | |
| ቁ203 | ወደ እዚህ ሆስፒታል ሪፈር እንዲደረጉ ያደረገዎት ምክንያት ምንድነው? | 7. የበሬት በቀዶ ጥገና መውለዴ 8. የደም ግፊት 9. የማህጸን በር እና የጽንሱ ራስ አለመመጣጠን 10. የተዛባ የጽንሱ አመጣጥ 11. ለደም ልገሳ 12. ሌላ ካለ ይገለጽ | |
| ቁ204 | የአሁኑ እርግዝን የተፈለገ ነበር? | 3. አዎ 4. የለም | |
| ቁ205 | የአሁኑ የጽንሱ የእድገት ደረጃ ስንት ሳምንቱ ነበር? |ሳምንት | |
| ቁ206 | የአሁኑን ልጅዎን በም አይነት ዘዴ ነበር የወለዱት? | 4. በተለመደው በማህፅን 5. በመሳሪያ የታገዘ ወሊድ 6. በቀዶ ህክምና | |
| ቁ207 | የጽንሱ ሁኔታ ምን ይመስል ነበር? | 3. በህይወት የተወለደ 4. ሞቶ የተወለደ | |
| ቁ208 | የህጻኑ ጻታ ምንድን ነበር? | 3. ወንድ 4. ሴት | |
| ቁ209 | ለአሁኑ እርግዝና የነፍሰ ጡር ክትትል ነበረዎት? | 3. አዎ 4. የለም | |
| ቁ210 | በአሁኑ እርግዝናዎ ጊዜ የመድማት አደጋ አጋጥሞዎት ነበር? | 3. አዎ 4. የለም | |

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| ቁ211 | የአሁኑን ልጅዎን ሲወልዱ/ ከወለዱ በኋላ የመድማት አደጋ ገጥሞዎት ነበር? | 3. አዎ 4. የለም | |
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ክፍል ሶስት: ስለ ኢትዮጵያ ጤና ክብካቤ ሪፈራል ስርዓት ያለዎት ግንዛቤ

| ኮድ | ግንዛቤ መለኪያ መጠይቅ | ምላሽ | እለፍ |
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| ቁ301 | ስለ ጤና አገልግሎት ሪፈራል ሰምተው ያውቃሉ? | 3. አዎ 4. የለም | 2→ቁ303 |
| ቁ302 | የመረጃ ምንጭዎ ምንድነው? | 5. ቴሌቪዥን 6. ራዲዮ 7. ጤና ባለሙያ 8. ሌላ ካለ ይገለጽ _____ | |
| ቁ303 | ስለ ኢትዮጵያ ጤና አገልግሎት ሪፈራል ስርዓት ሰምተው ያውቃሉ? | 3. አዎ 4. የለም | 2→ቁ305 |
| ቁ304 | ለጥያቄ ቁ303 መልስዎ አዎ ከሆነ የሪፈራል ሁነቱ እልደት ነው? | 4. ከታች ወደ ላይ 5. ከላይ ወደ ታች 6. በሁለቱም መልኩ | |
| ቁ305 | ከአንድ ጤና ተቋም ወደ ሌላ ጤና ተቋም ለመድረስ ያለው እርቀት ከወሊድ ጋር ተያያዝ የሆነን ሪፈራል ተጽእኖ ይፈጥራል | 4. አዎ 5. የለም 6. አላውቅም | |
| ቁ306 | የሪፈራል ወረቀት እና ሌላ የመገናኛ ዘዴ መኖር ከወሊድ ጋር ተያያዝ የሆነን ሪፈራል ተጽእኖ ይፈጥራል | 4. አዎ 5. የለም 6. አላውቅም | |
| ቁ307 | ሪፈር ከሚያደርጉ ጤና ተቋማት የአንቡላንስ መኖር ከወሊድ ጋር ተያያዝ የሆነን ሪፈራል ተጽእኖ ይፈጥራል | 4. አዎ 5. የለም 6. አላውቅም | |
| ቁ308 | የዘመድ/የቤተሰብ ድጋፍ መኖር ከወሊድ ጋር ተያያዝ የሆነን ሪፈራል ተጽእኖ ይፈጥራል | 4. አዎ 5. የለም 6. አላውቅም | |

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| ቁ309 | የወላጁ የሪፈራል ምርጫ ከወሊድ ጋር ተያያዝ የሆነን ሪፈራል ተጽእኖ ይፈጥራል | 4. አዎ 5. የለም 6. አላውቅም | |
| ቁ310 | ሪፈር የሚለው ባለሙያ የምክር አሰጣጥ ከወሊድ ጋር ተያያዝ የሆነን ሪፈራል ተጽእኖ ይፈጥራል | 4. አዎ 5. የለም 6. አላውቅም | |
| ቁ311 | የማህበረሰብ ተሳትፎ ከወሊድ ጋር ተያያዝ በሆነ ሪፈራል ስርዓት ላይ ተጽእኖ አለው | 4. አዎ 5. የለም 6. አላውቅም | |
| ቁ312 | የወላጁ የሃብት ሁኔታ/ የገንዘብ መጠን ከወሊድ ጋር ተያያዝ በሆነ ሪፈራል ስርዓት ላይ ተጽእኖ አለው | 4. አዎ 5. የለም 6. አላውቅም | |

ክፍል አራት: አካባቢያዊ የሆኑ ጉዳዮችን መዳሰሻ መጠይቅ

| ኮድ | አካባቢያዊ የሆኑ ጉዳዮችን መዳሰሻ መጠይቅ | ምላሽ | እለፍ |
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| ቁ401 | ከአካባቢዎ ወዳለው የጤና ተቋም ለመድረስ መንገዱ ለመኪና ምቹ ነው? | 3. አዎ 4. የለም | 1-->ቁ405 |
| ቁ402 | የቀበሌያችሁ የጤና ቡድን ተግባራዊ ነው/ተገቢውን ስራ ይሰራል? (ይህንን ጥያቄ የሚመልሱት ከአካባቢያቸው ወዳለው የጤና ተቋም ለመድረስ መንገዱ ለመኪና ምቹ ካልሆነ ነው) | 3. አዎ 4. የለም | 2-->ቁ404 |
| ቁ403 | ለጥያቄ 'ቁ402' መልስዎ አዎ ከሆነ፤ በማህበረሰቡ የተዘጋጀ የህሙማማ ማመላለሻ አልጋ አለ? | 3. አዎ 4. የለም | 1-->ቁ405 |
| ቁ404 | ለጥያቄ 'ቁ402' መልስዎ የለም ከሆነ፤ በምንድን ነው ወደ አቅራቢያዎ ጤና ተቋም የተወሰዱት? | 3. በእግራ 4. በጋማ ከብት | |
| ቁ405 | ከቤትዎ ወደ አቅራቢያዎ ጤና ተቋም ለመድረስ ምን ያህል ሰዓት ይወስዳል? | _____ ደቂቃ | |
| ቁ406 | ከቤትዎ ወደ አቅራቢያዎ ጤና ተቋም ለመድረስ ምን ያህል ሜትር ይርቃል? | _____ ሜትር | |

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| ቁ407 | ሪፈር ካለው ጤና ተቋም ወደ እዚህ ጤና ተቋም ለመድረስ ምን ያህል ሰዓት ይወስዳል? | _____ ደቂቃ | |
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ክፍል አምስት: ጤና ተቋም የተመለከቱ ጉዳዮችን መዳሰሻ መጠይቅ

| ኮድ | ጤና ተቋም የተመለከቱ ጉዳዮችን መዳሰሻ መጠይቅ | ምላሽ | አለፍ |
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| ቁ501 | ሪፍር ከመደረግዎ በፊት ሪፈር ባደረገዎት ጤና ተቋም በጤና ባለሙያ ሳይታዩ/ሳይመረመሩ ምን ያህል ሰዓት ቆዩ? | _____ ደቂቃ | |
| ቁ502 | ሪፈር ያለዎትን ባለሙያ የተግባቦት ሁኔታ እንዴት ያዩታል? | 6. በጣም ደካማ 7. ደካማ 8. ምንም አይልም 9. ጥሩ 10. በጣም ጥሩ | |
| ቁ503 | ሪፈር ያለዎትን ጤና ተቋም የአገልግሎት አሰጣጥ ሁኔታ እንዴት ያዩታል? | 1. በጣም ደካማ 2. ደካማ 3. ምንም አይልም 4. ጥሩ 5. በጣም ጥሩ | |
| ቁ504 | ሪፈር ባለዎት ቴና ተቋም የታዘዘልዎትን መድኃኒት አግኝተዋል? | 3. አዎ 4. የለም | |
| ቁ505 | ሪፈር ያለዎት ባለሙያ አስፈላጊውን ክብር ሰጥቶታል? | 3. አዎ 4. የለም | |
| ቁ506 | ሪፈር ያለዎ ጤና ተቋም ወደእዚህ ጤና ተቋም የላከዎት በአምቡላነስ ነው? | 3. አዎ 4. የለም | 2→ቁ511 |
| ቁ507 | ለጥያቄ ቁ506 መልስዎ የለም ከሆነ፤ ምክኒያቱ ምንድን ነበር? | 6. የነዳጅ አለመኖር 7. የጥገና ችግር 8. ሹፌር አለመኖር 9. ምቹ መገገድ አለመኖር 10. አላውቅም | |

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| ቁ508 | ሪፈር ባለወት ጤና ተቋም የአገልግሎት አሰጣጥ ሁኔታ እረክተዋል? | 3. አዎ 4. የለም | |
| ቁ509 | ሪፈር ባለዎት ጤና ተቋም የላቦራቶሪ አገልግሎት አግኝተዋል? | 3. አዎ 4. የለም | |
| ቁ510 | ሪፈር ባለዎት ጤና ተቋም የአልተትራሳውንድ አገልግሎት አግኝተዋል? | 3. አዎ 4. የለም | |
| ቁ511 | በእዚህ ጤና ተቋም በጤና ባለሙያ ሳይታዩ /ሳይመረመሩ ምን ያህል ሰአት ቆዩ? | _____ ደቂቃ | |
| ቁ515 | እዚህ ጤና ተቋም አገልግሎት የሰጠዎት ጤና ባለሙያ የተግባቦት ሁኔታ እንዴት ያዩታል? | 6. በጣም ደካማ 7. ደካማ 8. ምንም አይልም 9. ጥሩ 10. በጣም ጥሩ | |
| ቁ516 | በእዚህ ጤና ተቋም የአገልግሎት አሰጣጥ ሁኔታ እረክተዋል? | 3. አዎ 4. የለም | |

ክፍል ስድስት: የእናቶች የወሊድ አገልግሎት ሪፈራል ትግበራን በተመለከተ መዳሰሻ መጠይቅ

| ኮድ | የእናቶች የወሊድ አገልግሎት ሪፈራል ትግበራ | ምላሽ | እለፍ |
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| ቁ601 | በእዚህ የወሊድ አገልግሎት ወቅት ቀበሌያኔ ሆኖ ጤና ኤክስፔንሽን ባለሙያዎች መርምረው ወደ አቅራቢያ ጤና ተቋም ልክዎት? | 3. አዎ 4. የለም | |
| ቁ602 | በአቅራቢያዎ ሆኖ የጤና ባለሙያዎችን ትህትና እና ለእርሱም የሰጡትን ክብር እንዴት ይገልጹታል? | 6. በጣም ደካማ 7. ደካማ 8. ምንም አይልም 9. ጥሩ 10. በጣም ጥሩ | |
| ቁ604 | ሪፍር ከመደረግዎ በፊት ሪፈር ባደረገዎት ጤና ተቋም በጤና ባለሙያ ሳይታዩ/ሳይመረመሩ ምን ያህል ሰአት ቆዩ? | _____ ደቂቃ | |

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| ቁ605 | ሪፈር ያለውት ባለሙያ ወደ ሌላ ተቋም ሊልክዎት እንደሆነ አሳውቆዎት ነበር ? | 3. አዎ 4. የለም | |
| ቁ606 | በምን መንገድ ነው እዚህ ሆስፒታል የመጡት? | 3. በአምቡላንስ 4. በህዝብ ትራንስፖርት | |
| ቁ607 | በሪፈራል ወቅት አካላዊ ክብርዎ ተጠብቋል? | 3. አዎ 4. የለም | |
| ቁ608 | ሪፈር በተደረጉበት ወቅት በአምቡላነሱ ወስጥ እርሱዎን የሚያግዝ ባለሙያ አብሮውት ተልኮ ነበር? | 3. አዎ 4. የለም | |
| ቁ609 | በሪፈር ወቅት የምግብ መርፌ ተተክሎልዎት ነበር? | 3. አዎ 4. የለም | |
| ቁ610 | እዚህ ሆስፒታል ለመድረስ ምን ያህል ጊዜ ፈጀብዎት? | _____ ሰዓት | |
| ቁ611 | ወደ እዚህ ሆስፒታል ሪፈር ሲደረጉ የሪፈራል ወረቀት ተሰጥቶውት ነበር? | 3. አዎ 4. የለም | |
| ቁ612 | ወደ እዚህ ሆስፒታል ሪፈር ሲደረጉ የእርግዝና/የወሊድ አደገኛ ምልክቶች ተከስቶብዎት ነበር? | 4. አዎ 5. የለም 6. አላውቅም | 2→ቁ614 |
| ቁ613 | ለጥያቄ ቁጥር 612 መልስዎ አዎ ከሆነ፤ ምን አይነት አደገኛ ምልክት ተከስቶ ነበር? | 4. መድማት 5. ራስ መሳት 6. ሌላ _____ ካለ ይገለፅ _____ | |
| ቁ614 | እዚህ ሆስፒታል እንደደረሱ የጤና ባለሙያዎች ቅድሚያ ሰጥተዎት ነበር? | 4. አዎ 5. የለም 6. አላውቅም | |
| ቁ615 | እዚህ ሆስፒታል እንደደረሱ የጤና ባለሙያዎች ቅድሚያ ወሳኝ የአካል ምርመራ አድርገውልዎት ነበር? | 4. አዎ 5. የለም 6. አላውቅም | |

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| ቁ616 | እዚህ ሆስፒታል እንደረረሱ የጤና ባለሙያዎች በ 5 ደቂቃ ውስጥ የአካል ምርመራ አድርገውልዎት ነበር? | 4. አዎ 5. የለም 6. አላውቅም | |
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በጥናቱ በመሳተፍዎ በጣም አመሰግናለሁ!!

10.5. DECLARATION

I, THE UNDERSIGNED STUDENT DECLARE THAT THIS THESIS IS MY ORIGINAL WORK, HAVE NEVER PRESENTED IN THIS OR ANY OTHER UNIVERSITY, AND THAT ALL RESOURCES AND MATERIALS USED FOR THE RESEARCH HAVE BEEN FULLY ACKNOWLEDGED.

INVESTIGATOR: AMARE FENTA ABEBE

SIGNATURE_____

PLACE OF SUBMISSION: BAHIR DAR UNIVERSITY PUBLIC HEALTH DEPARTMENT

DATE_____

FIRST ADVISOR: Mr. DESTA DEBALKIE (MPH IN HSM, ASS. PROFESSOR)

SIGN_____DATE_____

SECOND ADVISOR: Mr. HABTAMU ALGANEH (MPH IN HI, LECTURER)

SIGN_____DATE_____

INTERNAL EXAMINER: Mr. MUHAMMED HUSSIEN

SIGN_____DATE_____