



**INSTITUTE OF MEDICINE AND COLLEGE OF HEALTH SCIENCE
DEPARTMENT OF PUBLIC HEALTH.**

**MAGNITUDE OF PRETERM BIRTH AND ASSOCIATED FACTORS
AMONG MOTHERS GAVE BIRTH IN DEBRE BERHAN
COMPRHENSIVE SPECIALIZED HOSPITAL, NORTH SHOA, AMHARA,
ETHIOPIA**

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**DEBRE BERHAN UNIVERSITY COLLEGE OF MEDICINE AND
HEALTH SCIENCE DEPARTMENT OF PUBLIC HEALTH**

**MAGNITUDE OF PRETERM BIRTH AND ASSOCIATED FACTORS IN
DEBRE BERHAN COMPRHENSIVE SPESSIALISED HOSPITAL NORTH
SHOA, AMHARA, ETHIOPIA 2020.**

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ACRONYMS AND ABBREVIATIONS

ANC	Anti Natal Care
AOR	Adjusted Odds Ratio
APH	Anti-Partum Hemorrhage
CI	Confidence Interval
CM	Centimeter
COR	Crude Odds Ratio
CS	Cesarean Section
DBCSH	Debre Berhan Comprehensive Specialized Hospital
DM	Diabetic Mellitus
FMOH	Federal Ministry of Health
GA	Gestational Age
Hgb	Hemoglobin
LNMP	Last Normal Menstrual Period
MUAC	Mid Upper Arm Circumference
NICU	Neonatal Intensive Care Unit
PIH	Pregnancy Induced Hypertension
PROM	Premature Rupture Of Membrane
PTB	Preterm Birth
SPSS	Statistical Package for Social Science.
SPTB	Spontaneous Preterm Birth
SVD	Spontaneous Vaginal Delivery
USAID	United States Agency for International Development
UTI	Urinary Tract Infection
WHO	World Health Organization

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ABSTRACT

Background: Globally, preterm birth is major public health problem which has high burden of health impacts, economic costs and also lost of productivity due to long time Neonatal Intensive Care Unit Admission.

Objective: The aim of this study was to assess the magnitudes of preterm birth and its associated factors in Debre Berhan Comprehensive Specialized Hospital, North Shao Zone, and Amhara, Ethiopia.

Methods: An institution based cross-sectional study was conducted in Debre Berhan Comprehensive Specialized Hospital from February to April, 2020. Systematic random sampling was used to select 325 study participants. The data were collected using both face to face interview and chart review with a pretested semi-structured questioner. Epi data version 3.1 and SPSS version 20 were used for data entry and analysis. Bivariate logistic regression analysis was used to identify candidate variables at P-values <0.2 and in multivariate logistic regression model variables with p-value<0.05 were considered a statistically significant.

Result: The study involved 316 mothers and their mean age was 28.86 years with a standard deviation ± 6.3 years. The magnitude of preterm birth Debre Berhan Comprehensive Specialized Hospital was 16.1%. During multivariate logistic regression analysis Cesarean section [AOR= 2.412; 95%CI (1.154, 5.0370)], twins pregnancy [AOR=3.524; 95%CI (1.114, 11.150)] and maternal anemia during pregnancy [AOR=3.124; 95%CI (1.417, 6.887)] were statistically significant association with premature birth.

Conclusion and Recommendation: The magnitude of preterm birth in the study area was high as compared to Global Action Report for Sub-Saharan Africa which was 12.3%. Efforts should be strengthened to reducing provider or self-initiated Caesarean Delivery without clear evidence of maternal-fetal benefits and to supplement iron with folic acid for all pregnant mothers as early as possible is considered as recommendation.

Keywords: prevalence, risk factor, Preterm birth, case definition gestational age, delivered mothers.

1. INTRODUCTION

1.1. Background

Based on the World Health Organization (WHO) definition, preterm birth is any live birth that occurs before 37 completed weeks of gestation, or less than 259 days since the first day of a woman's Last Normal Menstrual Period (LNMP). It is further sub categorized according to gestational age (GA): late preterm birth, very preterm birth and extremely preterm birth (32 –less than 37 weeks), (28– less than 32 weeks) and less than 28 completed weeks of gestation, respectively (1).

Globally, an estimated 15 million (11.1%) of preterm birth occurs among all live birth babies with high burden of economic costs and lost productivity due to long time Neonatal Intensive Care Unit Admission and also long-life health needs increased due to permanent disabilities were a major challenges (2). Two third of Preterm birth occurs with spontaneous onset of labor and one third by induction of labor due to medical indication of fetal or maternal reasons (3).

Based on World Health Organization recent estimates indicated that actual rates of preterm birth in Africa and Asia are increased more than expected (4). The burden of preterm birth was higher in developing countries, especially in sub-Saharan Africa, which results the greater impact on the future life of the new born babies like: developmental delay, long life health risks and high burden of socioeconomic impacts including in their family(5). According to the 2016 Ethiopian Demographic health survey (EDHS) preterm birth was the major cause of neonatal morbidity and mortality, which was 29 deaths/1000 live births, however, it is preventable health issues(6).

1.2. Statement of the Problem

Preterm birth created the worst life situation in the world which causes for large economic and psychosocial impacts in the UK, 75% of Neonatal Intensive Care Unit (NICU) admissions were occupied due to preterm infants (7). In sub Saharan Africa more than 60% burden of premature birth occur, which have large impacts in productivity lost and long life health conditions; however, still now preventing the burden of prematurity among the new born babies were greater challenges specially, in developing countries (8).

Preterm babies were more exposed for other illness and it was the second leading cause of child death so, efforts should strengthen with routine health service system to prevent prematurity (9). Preterm birth was major cause of respiratory distress, jaundice, temperature instability, delayed brain development, cerebral palsy, deafness, blindness and also unmeasurable emotional and psychosocial impact which results poor quality of life including their families (10). Born Too Soon health report in 2013 indicated that preterm birth prevention and care did not reach in the poor and the most disadvantaged populations where the burden was highest (11).

In Ethiopia different study indicate that maternal socio demographic characteristics, obstetrics history, medical related factors and newborn biological characteristics like twin pregnancy and congenital anomaly are the most possible cause of preterm birth, however one third of neonatal deaths occurs due to preterm birth which needs further investigation to reduce the burden of this problem (12). Due to limited studies in the study area little is known about the burden of preterm birth and its associated factors are believed to be different from one context to other context. Moreover, as I have seen in my work exposure it serves for many high risk pregnancy, which comes from different remote areas. According to 2019 annual report of NICU admission preterm birth in this area was 14.6%, which needs careful planning to reduce the problem is a critical issue. Therefore, the objective of this study was to assess the magnitude of preterm birth and its associated factors in order to finding out solution based on context. The results of this study may give a baseline evidence for stake holders to address the problem especially, in the study area.

1.3. Significance of the study

This study is useful to assess the magnitude of preterm birth and its associated factors among mothers who gave birth in the study area and also it gives a clue for concerned administration to prioritize and intervene accordingly. In addition, it is also important for governmental and non-governmental organization to widen their scope of intervention which helps to improve health seeking behavior and create awareness. The result of this study indicate the way how to approach the prevention strategies through integrating the associated factor screening in the routine maternal ANC service program. This study may give a clue for continuum of care in preventive service and may use as baseline information for further large scale studies on the same problem.

2. LITERATURE REVIEW

2.1. Magnitude of preterm birth

Globally Preterm birth has been the leading cause of neonatal mortality with more than one million deaths per year. The 1st national estimates of 184 countries preterm birth prevalence indicate that 11% of the world's babies, resulting in 15 million babies born too soon. The problem is shared to all countries. The United States and Brazil both rank among the top 10 countries with the highest number of preterm births. While 60% of preterm births occur in Sub-Saharan Africa (13). A cross-sectional study conducted in Iran and Brazil revealed that the prevalence of preterm birth was 5.1% and 11.5 % respectively (14,15). Another cross-sectional study done in Brazil found that the prevalence of preterm birth increased with corresponding GA increased, less than 28 weeks (7.4%), 28 to 31 weeks (13.8%) and from 32 to 36 weeks (78.8%) (16). A study conducted in Kenyatta National Hospital prevalence of preterm birth among live births was 18.3% (17).

The study conducted in Jimma University Specialized Hospital prevalence of preterm birth among neonate was 25.9% (18). The study done in Shire Suhl General Hospital, and also Another study done in Axum and Adwa Town Public Hospitals, indicate that the magnitude of preterm birth was 16.9% and 13.3% respectively (19,20). A cross sectional study conducted in Addis Ababa Public Hospitals reveals that prevalence of preterm birth was 16.15% and magnitudes of preterm birth increased among late preterm births (extremely preterm 12.2%), very preterm 32.3%, and late preterm 55.5% (21).

2.2. Factor associated with preterm birth

2.2.1. Socio-demographic characteristics

Brazilian Multicenter cross-sectional study revealed that mothers living without partner were significantly associated with preterm birth but Paid work during pregnancy were negatively associated with preterm birth (16). A Cross-Sectional study done in Cameroon Hospital showed that single marital status had a risk for prematurity due to the fact that single women lacks psychological and economical support to ensure adequate follow up (22). A study conducted in Kenya and Gaza strips revealed that mothers in their advanced age (≥ 35 years), become weak and the uterine environment become less favorable for the growing fetus thus predisposes them

to be born before the due date. It is also the uterine muscles become weak to hold pregnancy to term. Old mothers (≥ 35) are also at risk of having preterm deliveries because they are more likely to have other chronic conditions (23,24) The study conducted in Jimma University Specialized Hospital revealed that rural place of residency, and mothers who are illiterate was significantly associated with preterm birth (18). The study conducted in Dodola Town showed that monthly income less than USD 91.3 per month and having more than four household members were three times more likely to have preterm birth as compared to mothers, who have less than four family members (25). The study conducted in central zone of Tigray revealed that being unmarried mother had four times greater risk of preterm birth than the married one (26). The study conducted in Gondar Town health institutions showed that residency and religion did not have any significant association to preterm birth (27).

2.2.2 Maternal obstetric factors

A study conducted in the Gaza Strip showed that history of still birth and ANC visits less than four times were significantly associated with preterm birth (24). The study conducted in Egypt and Kenya revealed that history of abortion, history of preterm birth and C/S delivery were a risks for premature birth, respectively (23,28). A case control study done in Ghana showed that APH and PROM were also significantly associated with preterm birth (29). The study done in Jima has shown that history of gravidity, history of abortion, history of still birth, APH and PIH were potential risk factors of preterm birth among the women gave birth in Jima University Specialized Hospitals during the study period(18). A cross-sectional study done in Axum and Adwa Town found that previous history of preterm birth, PROM, induced Onset of labor and C/S delivery were significantly associated with preterm birth (20).

2.2.4 Medical related factors

A study conducted in Ardabil, Iran showed that history DM and UTI were the major risk for preterm birth(14). A study done in Tanzania revealed that mothers who has UTI during the current pregnancy was almost three times has a risk for preterm birth(30). A cross-sectional study conducted in Axum and Adwa showed that exposed for malaria during pregnancy, presence of chronic diseases like DM and Heart problem were more than four times significantly associated for preterm birth (20). Another study done in Debre Tabor health institution indicate

that being anemic, HIV positive, MUAC less than 24cm were statistically significant for preterm birth in the current pregnancy (31).

2.2.5 Fetal characteristics of the respondents

A study conducted in Brazil 2016 indicate that multiple gestation was more than sixteen times risk for prematurity as compared from singleton (15). A cross-sectional study in Cameroon revealed that congenital anomaly was almost three times risk for prematurity (22). The study conducted in Malaysia males babies delivered before 37 but female babies mostly delivered between 38 and 40 completed weeks of gestation and this gender difference can be due to the influence of sex-linked biochemical processes with possibility of estrogen production from androgen precursors (32). The study conducted in Kenya revealed that being male babies are risk for preterm birth compared to females (23). The study conducted at Shire Suhl General Hospital revealed that delivered congenital anomaly babies had a risk of preterm birth (19). The study done in Axum Public Hospitals showed that mothers with multiple gestation outcomes were almost six times more likely to have preterm birth compared with mothers who gave birth singleton (20).

2.3. Conceptual frame work

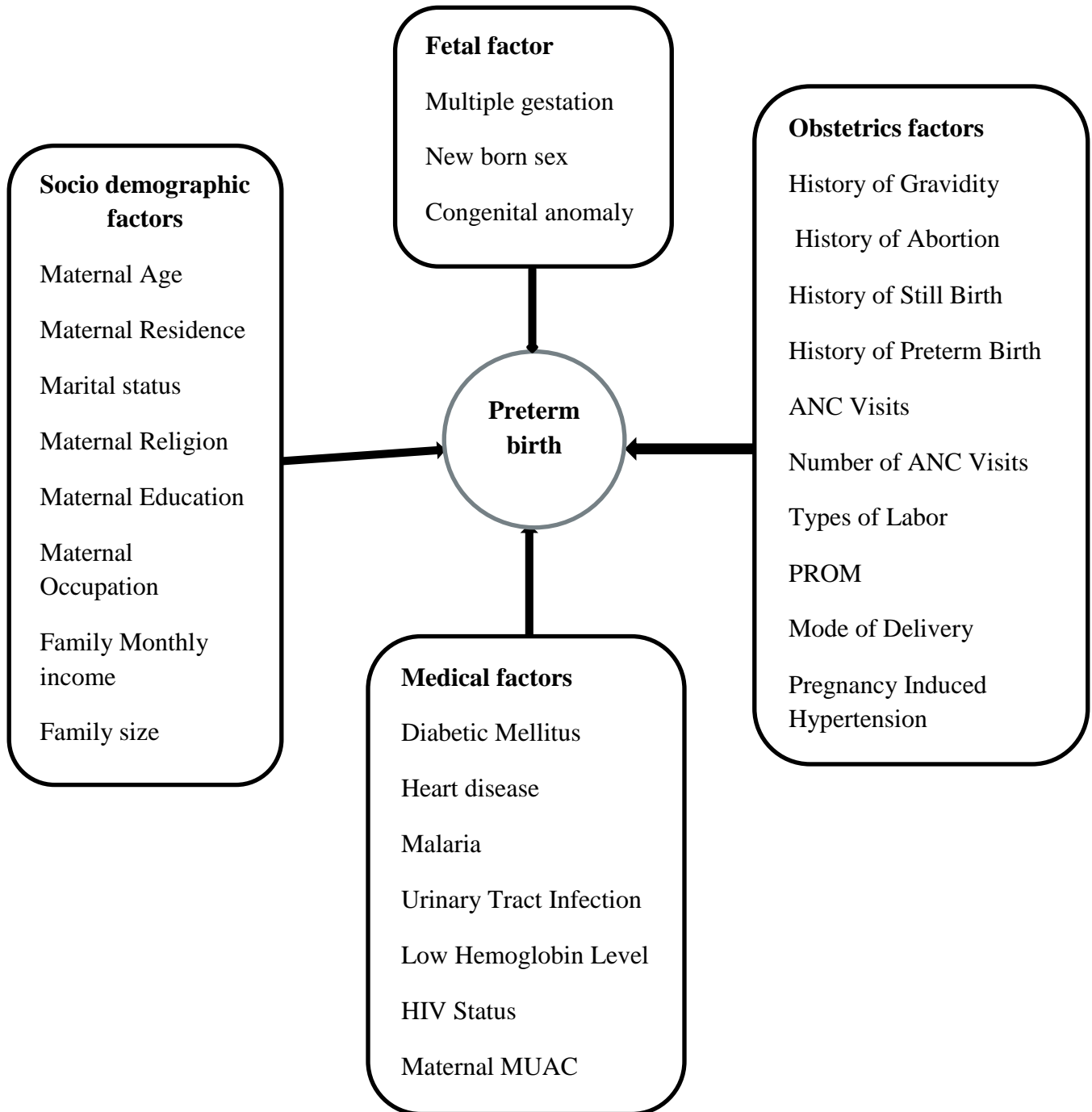


Figure 1: Conceptual frame work shows that the relation between dependent and independent variables attempt from different literatures (16, 18–20, 22, 27, 30).

3. OBJECTIVES

3.1. General objective

To assess the magnitude of preterm birth and its associated factors among mothers who gave birth in Debre Berhan Comprehensive Specialized Hospital, North Shoa Administration Zone, Ethiopia from February to April, 2020.

3.2. Specific objectives

1. To determine the magnitude of preterm birth, and
2. To identify factors associated with preterm birth among mothers gave birth in Debre Berhan Comprehensive Specialized Hospital during the study period.

4. METHODS AND MATERIALS

4.1. Study Area

The study was conducted in Debre Berhan Comprehensive Specialized Hospital which was found in Debre Berhan town North Shoa Zone Administration, Amhara National Regional State, Ethiopia. The town is the capital city of North Shoa Zone and it was located 695 Kms and 130Kms away from Bahir Dar (Capital City of Amhara National Regional States) and Addis Ababa (the capital city of Ethiopia), respectively. Debre Berhan Comprehensive Specialized Hospital is one of the oldest public hospitals established in 1929 and currently it is the only Comprehensive Specialized Hospital in the North Shoa Zone administrative, which was providing services for approximately 3; million catchment populations with 652 total numbers of staffs; (426 are health professionals including 20 specialists and 226 administration staff). It has 170,800 outpatient, 8,640 inpatients, and 3,661 deliveries indicated in 2018/2019 Hospital annual report. The Hospital had about eight wards which had 154 inpatient beds. Obstetrics ward is one of the wards in the hospital had 13 post natal beds, four 1st stage beds and four 2nd stage coaches with 35 different health professionals including four gynecologists.

4.2. Study Design and Period

An institution based cross-sectional study was conducted from 1st February to end of April, 2020.

4.3. Populations

4.3.1. Sources Population

All mothers who gave birth in Debre Berhan Comprehensive Specialized Hospital.

4.3.2. Study Population

All Mothers who gave birth in Debre Berhan Comprehensive Specialized Hospital during the study period.

4.4. Inclusion and Exclusion Criteria.

4.4.1 Inclusion Criteria

All mothers who gave birth in Debre Berhan Comprehensive Specialized Hospital during the study period.

4.4.2. Exclusion Criteria

Mothers who could not respond to the interview due to severe illness.

Mothers with unknown LNMP and absent 1st trimester ultrasound results.

4.5. Sample size determination

To determine the sample size for this study, a single population proportion formula was used. Considering the proportion of preterm birth from previous similar study conducted in Jimma, Sothorn, Ethiopia $p=25.9\%$ (18) at 95% confidence level and 5% margin of error.

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

Where,

- n = desired sample size
- Z = 95% Confidence limit i.e. 1.96
- P = 25.9% (proportion of population which was taken from previous study in Jimma)
- d = is margin of error or degree of accuracy desired (0.05)
- 10% = is non respondent rate

By using single population proportion formula; sample size was calculated as:

$n = (1.96) (1.96) 0.259 (1-0.259) / (.05)^2 = 294.9 \approx 295$, then, add 10% none response rate= $29.5 \approx 30$, then by Adding a non-response rate, the total sample size = $295+30= \underline{\underline{325}}$

4.6. Sampling technique and procedure

Average number of mothers delivered daily during data collection time was considered to estimate the length of the data collection time and the sampling value. To estimate the average birth per day the delivery registration book was reviewed at the time of data collection and calculated to be 10 deliveries per day. Within three months of data collection period the estimated average number of delivery will be 900. Therefore, the Sample was selected by systematic random sampling technique with a sampling interval (K^{th}) value ($k=N/n$). Where, 'N' was the total population by considered the study period ($N= 900$) and the minimum sample size which was ($n=325$). Then, the value of $K= N/n = 900/325= 2.77 \approx 3$, every third delivery was taken to the sample by systematic random sampling technique until the total minimum required sample was achieved. The selected mother was interviewed immediately after birth based on the order of birth registers and the first mother to be included in the study was chosen randomly by blindly picking one of three mothers in each day.

4. 7. Study Variables

4.7.1 Dependent Variable:

Preterm birth refers to mothers who gave birth with gestational age < 37 completed weeks or 259 days.

4.7.2 Independent Variables

Socio-demographic characteristics: maternal age, residence, marital status, maternal religion, maternal educational status, maternal occupation, average house hold income and family size.

Maternal Obstetric factors: like history of gravidity, previous abortion, previous still birth, previous preterm birth, history of ANC follow-up, number of ANC follow-ups, onset of labor, PROM, modes of delivery, pregnancy induced hypertension (PIH) and vaginal bleeding during the current pregnancy (APH).

Maternal medical history: such as diabetic mellitus (DM), history of heart disease, malaria during pregnancy, urinary tract infection (UTI), maternal recent hemoglobin level, maternal MUAC during the recent pregnancy and maternal current sero-status.

Fetal factors: multiple gestation, sex of babies and Congenital anomalies of the current baby.

4.8. Operational Definitions:

Preterm Birth: preterm is defined as a newborn neonate born before 37 completed weeks of gestation but after viability (>28 weeks of gestation) (1).

Last Normal Menstrual Period: A Guidelines developed for Reproductive Health defined as the date of starting the last normal menstrual period at the time of women index pregnancy(33)

Still Birth: according to WHO is defined as, a dead fetus after 28 completed weeks of gestation or third trimester still birth i.e. more or equal to 1000 g at birth (34).

Anemic Pregnant Women: based on WHO guideline prepared in 2018, anemic pregnant women is defined as the hemoglobin label checkup result less than 11gm/dl (35).

Malnutrition: based on USAID meta-analysis study, malnutrition in pregnant women defined as a MUAC measurement score of less than 24 cm was taken as a cutoff point in this study (36).

Congenital Anomalies: can be defined as structural or functional anomalies with single or multiple defects that occur during intrauterine life and identified at birth, which has impacts on infant's survival and development (37).

4.9. Data Collection Methods and Tool

The data were collected through face-to-face interview by using pre-tested semi-structured questionnaire on a daily basis from sampled mother in post natal ward. Maternal nutritional status was assessed by measuring the left middle upper arm circumference by using non-stretchable world food program MUAC tapes and a MUAC of < 24 cm was chosen for this study. Record review was done to collect data on the relevant variables regarding the mother and neonatal health conditions. Finally gestational age was determined by using LNMP and first-

trimester ultrasound result but ultrasound done in the 1st trimester was more reliable rather than the recent results by plus or minus one week. All neonates born greater than 28 weeks and less than 37 completed weeks of gestation were taken as preterm birth. Data collection tools were developed after review of relevant Literatures. It includes socio demographic factors, maternal obstetrics factors, maternal medical history and fetal related factor questions which is adapted from previous similar studies (15,17–19,31). The questioner was being prepared in English and translated to Amharic language and then re-translated back to English to check the consistency of the questioner. Two diploma midwives and one Degree midwife were participated as data collectors and supervisor respectively.

4.10. Data Quality Control method

Adequate training was given for both data collectors and supervisor for two days concerning the significance of the study, objective of the study, sampling technique and how to collect data to establish good report. The questionnaire was pre-tested on 5% of a sample size in Deneba Primary Hospital among eligible mothers to assess the reliability of data collection tool, to check the kipping pattern and content of the questioner. The findings were discussed among data collectors and supervisor so that the tool was modified before actual data collection started, and then the final interview was conducted at a convenient time by using the modified questionnaire. Continuous follow up and supervision was done by principal investigator and supervisor to check completeness of the data daily throughout the data collection period and also corrective measures was taken when the difficulty was identified.

4.11. Data Processing and Analysis

The collected data checked manually for the completeness of relevant information and the data cleaned to ensure the validity of data. Then, the data coded and entered to Epi-data version 3.1 and exported to SPSS version 20 software for further analysis. Descriptive statistics and logistic regression computed. A bivariate logistic regression analysis done first to check associated factors for preterm birth. Then, variables with ‘p’ value less than 0.2 taken to select variables run in multivariate logistic regression analysis to control confounding variable and to determine

potential predictors of preterm birth. Crude odds ratio (COR) and adjusted odds ratio (AOR) analyzed with a 95% confidence interval (CI) and p-value <0.05 considered to declare a statistically significant association with preterm birth. Finally, the result presented in text description, in the form of table and figures by using frequencies, percentages and other summary statistics such as mean and standard deviation to describe the study population in relation to relevant variables.

4.12. Ethical Consideration

Ethical approval obtained from Research and Ethics Committee of Debre Berhan University for appropriateness and scientific content of the study. The study participants gave consent voluntarily after all relevant information and the rights of the participants were explained in details for all study participants by data collectors and verbal consent were obtained before questioner was administered to the eligible and volunteer participants. Confidentiality and Privacy of the entire study participants were assured. Therefore, throughout the study the right of respondents were maintained by performing the following activities such as: keeping the right to refuse participation, accepting their response what they want to say, not writing their names, anywhere on the questioner and other personal information must be keep in secrete.

4.13. Dissemination of the Result

The Result of the study will be submitted to Debre Berhan University, College of medicine and Health Science, Department of Public Health, and also disseminate to other stakeholders like: Debre Berhan Comprehensive Specialized Hospital, North Shao Zone Health Department, North Shao Zone Administrative Office and other concerned stakeholders working in the area. Further attempts will be tried to publish it on peer reviewed international journals.

5. RESULTS

5.1 Socio-demographic characteristics of the respondents.

A study intended to involve a total of 325 mothers, however 316 mothers were enrolled in the study with response rate of 97.2. All the participants' age was within the range of 15-48 years old and their mean age was 28.86 years with a SD ± 6.3 years. Majority 281 (88.9%), 265 (83.9%) and 212 (67.1%) of the study participants were married, Orthodox Christen followers and live in urban residence, respectively. More than half 172 (54.4%) and 166 (52.5%) of mothers attended secondary and above level of education and also unemployed, respectively. Two hundred twenty (69.6%) of the respondents house hold monthly income was ≤ 5000 Ethiopian Birr and about 202 (63.9%) of the respondents had \geq four family members in the household (see table 1).

Table 1: Socio demographic characteristics of the respondents in Debre Berhan Comprehensive Specialized Hospital, North Shoa, Amhara, Ethiopia, 2020 (n=316).

Variables	Frequency	Percent %
Age of the mothers		
≥ 35	67	21.2
< 35	249	78.8
Maternal residency		
Rural	104	32.9
Urban	212	67.1
Maternal marital status		
Single	35	11.1
Married	281	88.9
Maternal religion		
Orthodox	265	83.9
Muslim and others	51	16.1
Maternal education		
Primary or less	144	45.6
Secondary and above	172	54.4

Maternal occupation		
Unemployed	166	52.5
Employed	150	47.5
Monthly household income		
≤5000	220	69.6
>5000	96	30.4
Family size		
≥4	202	63.9
<4	114	36.1

5.2 Maternal Obstetric History.

Out of 316 mothers, two hundred five (64.9%) of them were multigravida and almost all 294 (93%) of the respondents had history of ANC follow-up and from those more than half 196 (62.0%) had four and above ANC visits. Majority of the study participants 249 (78.8%), 272 (86.1%) and 289 (91.5%), never had previous history of abortion, still birth, preterm birth, respectively. Regarding the types of labor and mode of delivery majority of them had spontaneous onset of labor 274 (86.7%) and spontaneous vaginal delivery 200 (63.3). The rest mothers had induced onset of labor 42(13.3%) and delivered via caesarean section 116 (36.3%). Nearly all of the delivered mothers never had Anti Partum Hemorrhage, Pregnancy Induce Hypertension and PROM during the current pregnancy 312 (98.7%), 284 (89.9%) and 232 (73.4%), respectively (see table 2).

Table 2: Maternal obstetrics related factors of the respondents in Debre Berhan comprehensive specialized hospital, North Shoa, Amhara, Ethiopia, 2020 (n=316)

Variables	Frequency	Percent (%)
History Of pregnancy		
Yes	205	64.9
No	111	35.1

History Of Abortion		
Yes	67	21.2
No	249	78.8
History Of Still Birth		
Yes	44	13.9
No	272	86.1
History Of Preterm Birth		
Yes	27	8.5
No	289	91.5
History of ANC Visits		
Yes	294	93.0
No	22	7.0
Number of ANC Visits		
<4	120	38.0
≥4	196	62.0
Types Of Labor Started		
Induced	42	13.3
Spontaneous	274	86.7
Pre Rupture Of Membrane		
Yes	84	26.6
No	232	73.4
Mode of delivery		
C/S	116	36.7
SVD	200	63.3
Pregnancy Induced Hypertension		
Yes	32	10.1
No	284	89.9
Anti-Partum Hemorrhage		
Yes	4	1.3
No	312	98.7

5.3. Medical related factors of the mothers

Almost all of the participants did not have history of Diabetic Mellitus (99.7%) and Heart Disease (98.4%). Out of the 316 delivered mothers 60 (19%) have urinary tract infection. Concerning HIV status of the mother all of them were tested for HIV infection and 23 (7.3%) were positive for the infection and only seven mothers (2.2%) were attacked by malaria during the current pregnancy regardless malnutrition of all respondents measured their left Mid Upper Arm Circumference and one hundred five (33.2%) mothers were malnourished and all participants were checked up their hemoglobin level and out of them 49 (15.5%) mothers had anemia (see table 2).

Table 3: Medical related factors of the study participants in Debre Berhan Comprehensive Spessialised hospital, North Shoa, Amhara, Ethiopia, 2020 (n=316).

Variables	Frequency	Percent %
Diabetic Mellitus		
Yes	1	0.3
No	315	99.7
History Of Heart Disease		
Yes	5	1.6
No	311	98.4
Malaria During Pregnancy		
Yes	7	2.2
No	309	97.8
Urinary Tract Infection		
Yes	60	19.0
No	256	81.0
Maternal Hgb Level		
<11	49	15.5
≥11	267	84.5
Maternal HIV Status		

Positive	23	7.3
Negative	293	92.7
Maternal Left MUAC		
<24	105	33.2
≥24	211	66.8

5.4 Newborn Characteristics

Majority of the newborns were singleton 298 (94.3%), the rests 18(5.7%) were twins and 32(10.1%) of the newborns had some sorts of congenital anomalies. With regard to sex of the newborn more than half one hundred and seventy six (55.7%) were male babies. Majority of the new born babies 265 (83.9%) were not preterm (see figure 3).

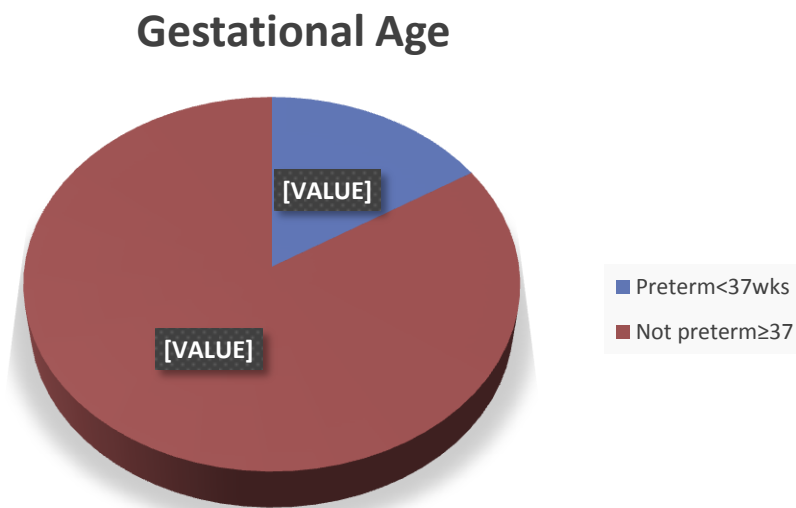


Figure 2: Gestational age distribution among of newly born neonate in Debre Berhan Comprehensive Specialized Hospital, North Shoa, Amhara, Ethiopia, 2020 (n=316).

Table 4. Fetal characteristics among delivered mothers in Debre Berhan Comprehensive specialised hospital, Ethiopia (n=316).

Variables	Frequency	%
Type of pregnancy		
Multiple	18	5.7
Singleton	298	94.3
New Born Sex		
Male	176	55.7
Female	140	44.3
Congenital Anomaly		
Yes	32	10.1
No	284	89.9

5.5 Factors Associated with Preterm Birth.

All independent variables were analyzed by using binary logistic regressions model and those variables with p-value <0.2 were fitted to run in multivariate logistic regression. During the multivariate logistic regression analysis mode of delivery (C/S), types of pregnancy (twin pregnancy) and maternal anemia were identified as having a statistically significant association with preterm birth at p-value<0.05. Hosmer lemeshow goodness of fit was checked for fitting of these model (0.189) and chi-square (.063)

Mothers who delivered by Cesarean section were 2.4 times more likely to have preterm birth than those who delivered by Spontaneous Vaginal Delivery (AOR= 2.416; 95%CI: 1.154-5.037). Mothers who had twin pregnancy were more than 3.5 times more likely to give preterm birth as compared to singleton pregnancy (AOR=3.524, 95%CI: 1.114-11.150). Anemic pregnant mothers were more than 3.5 times more likely to have preterm birth as compared to mothers who were not anemic [AOR= 3.124; 95%CI: 1.417-6.887] (table 5).

Table 5: Bivariate and Multivariate analyses among selected factors associated with preterm birth mothers who delivered in DBCSH, North Shoa, Amhara, Ethiopia, 2020 (n=316).

Variables	Preterm Birth		COR (95% CI)	AOR (95%CI)
	Yes	No		
Residency				
Rural	22(7%)	82(25.9%)	1.693[.918-3.123]	0.877[.385-2.002]
Urban	29(9.2%)	183(57.9%)	1.0	1.0
History Of Abortion				
Yes	16(5.1%)	51(16.1%)	1.918[.986-3.732]	1.394[.626-3.105]
No	35(11.1%)	214(67.7%)	1.0	1.0
History Still Birth				
Yes	11(3.5%)	33(10.4%)	1.933[.904-4.136]	0.841[.297-2.381]
No	40 (12.7%)	232(73.4%)	1.0	1.0
History Of Preterm				
Yes	7(2.2%)	20(6.3%)	1.949[.778-4.883]	0.849[.266-2.705]
No	44(13.9%)	245(77.5%)	1.0	1.0
ANC Follow Up				
Yes	45(14.2%)	249(78.8%)	0.482[.179-1.298]	0.547[.166-1.809]
No	6(1.9%)	16(5.1%)	1.0	1.0
No of ANC follow up				
<4	25(7.9%)	95(30.1%)	1.721[.941-3.147]	1.911[.854-4.273]
≥4	26(8.2%)	170(53.8%)	1.0	1.0
Mode Of Delivery				
C/S	25(7.9%)	91(28.8%)	1.839[1.004-3.366]	2.412[1.154-5.037] *
SVD	26(8.2%)	174(55.1%)	1.0	1.0
History of PIH				
yes	11(3.5%)	21(6.6%)	3.195[1.432-7.129]	2.500[.986-6.337]
no	40(12.7%)	244(77.2%)	1.0	1.0
Heart disease				

yes	2(0.6%)	3(0.9%)	3.565[.580-21.891]	5.412[.787-37.229]
no	49(15.5%)	262(82.9%)	1.0	1.0
Pregnancy type				
Multiple	7(2.2%)	11(3.5%)	3.674[1.351-9.988]	3.524[1.114-11.150] *
Singleton	44(13.9%)	254(80.4%)	1.0	1.0
Hemoglobin				
<11	16(5.1%)	33(10.4%)	3.214[1.604-6.439]	3.124[1.417-6.887] *
≥11	35(11.1%)	232(73.4%)	1.0	1.0
MUAC				
<24	21(6.6%)	84(26.6%)	1.508[.816-2.789]	1.744[.859-3.545]
≥24	30(9.5%)	181(57.3%)	1.0	1.0

1.0 =Reference category, * =statistically significant at P<0.05

6. DISCUSSION

This study was intended to assess magnitude of preterm birth and its association factors in Debre Berhan Comprehensive Specialized Hospital during the study period. Gestational age of the newborn neonate less than 37 completed weeks of gestation but after viability (>28wks) was used as a cut of point to identify outcome variable. This study found that prevalence of preterm birth was 16.1% with 95%CI: (11.4-19.9) and it is higher than the Global Action Report for Sub-Saharan Africa which was 12.3% (38). The result of this study was in consistence with another cross-sectional study conducted in Addis Ababa public hospitals and shire general hospital, which reported the prevalence of preterm birth was (16.15%) and (16.9%), respectively (19,21).

However, the finding of this study was higher than the study conducted in Brazil (2016), Dodola, Axum and Gondar town health institution shows that (11.5%), (13%), (13.3%) and (4.4%), respectively (15,20,25,27). This discrepancy might be due to the exclusion and difference study area. The study conducted in Gondar excludes multiple gestation which is a known predisposing factor depends on the number of fetus in uterus have a significant clinical association to cause for varied results and a study done in Dodola exclude mothers who had previous recent history of abortion, the fact that due to surgical evacuation of the uterus mechanically stretches the cervix which predisposes such mothers to preterm birth in the consecutive pregnancies. Other possible reasons of this difference might be related with quality health services well addressed for pregnant mothers in Brazil better as compared to this study area.

The finding of the current study was lower than a cross-sectional study conducted in Kenya National Hospital(2017) and Jemma University Specialized Hospital (2017), which reported the prevalence of preterm birth was 20.2% and 25.9%, respectively (17,18) This variations might be due to the difference in the study time which reflects currently FMOH has improved maternal health care service than previous. Other possible reason for this variation might be due to difference in study area, the study done in Kenya and Jimma determined indicate that high prevalence of alcohol consumption and substance intake during pregnancy another contributing factors for increased magnitudes of preterm birth.

This study found that delivery via caesarean section was statistically significant association with preterm birth. Mothers who delivered by caesarean section 2.4 increased risk of having preterm birth as compared to those mothers who delivered by Spontaneous Vaginal Delivery [AOR= 2.412; 95%CI =1.154-5.037]. This finding was in consistence with the study conducted in Brazil (2016) and Kenya (2018) (15,17). Even if, operative delivery clinically has no direct causal relationship with preterm birth, but as a result of medical indication for maternal or fetal reason requires pre-labor caesarean delivery was the main cause of preterm birth was observed in this study. Some of the maternal or fetal pathologies need urgent action as a lifesaving measure also considered as a possible reasons for increased burden of pre-labor caesarean delivery.

In this study twin pregnancy was significantly associated with preterm birth. Mothers who had twin pregnancy 3.5 increased odds of preterm delivery than those mothers who delivered singleton (AOR=3.524; 95%CI: [1.114-11.150]). This study was consistent with the finding of the studies in Malaysia, Cameron, Kenya and Axum, respectively (17,18,20,32). Multiple pregnancy is a known predisposing factors of premature birth. Uterine over destination and stretching the myometrium encourage to induce oxytocin receptors leads to early onset of uterine contractions and start spontaneous preterm birth. Obstetrics complications like pregnancy induced hypertension and APH are common problems in twin pregnancy, which requires surgical delivery and increased the risk of preterm birth (39).

Being anemic mothers were more than three times more likely to give preterm birth as compared to non-anemic mothers [AOR=3.124; 95%CI: 1.417-6.887]. This figure was in line with the studies finding in Shire and Debre Tabor (19,31). This might be due to decreased amount of blood flow to the placenta which results placental insufficiency. Physiologically hemoglobin transfer from mother to the fetus through the interface of placenta but when blood supply decreased, the placenta detached from uterine wall and leads to premature labor and delivery. Biologically, hemoglobin used as mines of oxygen transportation throughout body, so low Hgb level can cause hypoxia that increased maternal and fetal stress which stimulate production of corticotrophin-releasing hormone and induced spontaneous preterm labor. Generally during pregnancy concentration of hemoglobin dramatically decreased in order to balance the blood volume and to accommodate iron need of the fetus (35).

7. LIMITATION OF THE STUDY

The study has the following limitation

- Magnitude of preterm birth might be under or over-estimated due to possible effects of seasonal variability since the study was conducted for short period of time.
- In this study, the appropriateness of caesarean section for interruptions of gestation was not evaluated in this study.
- Absence of 1st trimester ultra sound result and maternal recall bias to remember her LNMP were challenges to finding out the gestational age of pregnant women.
- Cross-sectional nature of the study design did not allow to establishing the causal relationship between dependent and independent variables.
- Facing incomplete maternal and newborn charts to use as additional data sources related to maternal and newborn health conditions.
- UTI during pregnancy was assessed based on mother's self-report symptoms and not on laboratory confirmation was considered as limitation in this study.

8. CONCLUSION

This study showed that the magnitude of preterm birth was high as compared to Global Action Report for Sub-Saharan Africa which was 12.3%. The evidence from this study found that, mode of delivery, multiple gestation, and maternal anemia during recent pregnancy were significantly associated with preterm birth. Generally the finding of this study showed that prematurity is a major public health issue.

9. RECOMMENDATION

To Amhara Regional Health Bureau and North Shoa Health Office

- Design clinical protocols need for appropriate indication of provider-initiated C/S by considering waiting until term.
- Avail blood banks accesses used to manage complication of anemia as early as possible.

To Debre Berhan Comprehensive Specialized hospital

- Address iron and folate supplement for all mothers as early as possible before and during pregnancy.
- Strengthen early screening of anemia and high risk pregnancy like multiple gestation.
- Give Update training for health professionals about clear evidence of cesarean section.

To Health Professional

- Give special attention for multiple gestation to reduce risk of preterm.
- Responsible to reduce health provider-initiated caesarian section without its clear evidence.

To The Researchers

- Need further study by incorporate other variables like maternal falling accident, carrying heavy materials and physical violence during pregnancy.
- Need large scale study to minimized limitation of seasonal variation
- The appropriateness of caesarean section for early interruptions of gestation need further evaluation.

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ANNEXES

I: Informed Consent

Information sheet reads the statements of the respondent

(Data collectors, please read the following statement to the respondents before you administer the questionnaire.)

Dear participant!

Good morning/afternoon? I am..... And I am one of the data collectors on behalf of the investigator. The investigator conducting the study on Magnitude of preterm birth and associated factors among mothers delivered in Debre Berhan Comprehensive Spessialised Hospital, this study aimed to determine the magnitude of preterm birth and its associated factors. The result can be used by the government and other stake holders to develop appropriate strategies to prevent this problem. You have been chosen randomly to participate in this study. The questionnaire takes about 20 minutes longer to complete. Your participation is voluntary and you have the right to refuse participation. Your name and other personal identity will not be used, and hence the information we will collect from you will be kept completely confidential. Do you have any question you want to ask us? May I now begin the interview? Would you please cooperate in responding to the following questions?

If Yes-----Continue administering questionnaire

If No-----Give thanks to the participant and proceed to the next participant

Name of data collector -----Signature-----Date-----

Name of Supervisor -----Signature -----Date-----

II: English Version Structured Questionnaire

Debre Berhan University, College of Medicine and Health Science, Department of Public Health.

Questionnaire for the study participant to determine the magnitude of preterm birth and its associated factors among mothers who gave birth in DBCSH, 2020.

Identification related information:

Data collector's name..... Signature..... Date.....

Supervisor's name..... Signature..... Date.....

Questioner Code NO..... MRN..... Hospital Name.....

Section I: Questions about social-demographic and socioeconomic information.

Participant identification number

ID code	Questions	variables
101.	How old are you?	_____ (In years)
102.	Where is your place of residence?	1. Urban 2. Rural
103.	What is your marital status?	1. Married 2. Single 2. Divorced 3. Widowed.
104.	Which religion are you following?	1. Orthodox 2. Muslim 3. Protestant 4. Other

105.	Which highest educational level did you attain?	1. Illiterate 2. Primary Level 3. Secondary Level 4. College/university
106.	What is your main occupation?	1. Housewife 2. Government employee 3. Privet sector 4. merchant 5. Others (Specify).....
107.	What is your household monthly income on an average?	_____ (in Ethiopian Birr)
108.	What is your total Family size including extended families?	_____ (In number)

Section II: Questions regarding on obstetrics conditions

ID Code	Questions	variables
201	Did you have history of pregnancy before this one?	1. Yes 2. No
202	Did you have history of abortion?	1. Yes 2. No
203	Did you have history of still birth?	1. Yes 2. No
204.	Did you have other children born before the expected time?	1. Yes 2. No
205.	Did you have an ANC follow up for this pregnancy?	1. Yes 2. No
206.	How many times did you visit the health facilities for ANC during this pregnancy?	_____(In Number)
207.	How was the labor you started for this one?	1. Induced Labor 2. Spontaneously
208.	Did you have membrane ruptured before the labor started?	1. Yes 2. No
209.	What was the mode of delivery for the current pregnancy?	1. C/S 2. SVD
210.	Did you have pregnancy induced hypertension?	1. Yes 2. No
211.	Did you have Antepartum hemorrhage?	1. Yes

		2. No
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Section III: Questions regarding on medical history of the mothers

Code	Questions	variables
301	Did you have diabetics ‘mellitus confirmed by medical dx?	1.yes 2. no
302.	Did you have heart disease confirmed by medical dx?	1. Yes 2. No
303	Did you have malaria during pregnancy?	1.Yes 2. no
304.	Did you have of burning sensation during urination within the current pregnancy?	1. Yes 2. No

Section IV: Questions regarding on the nature and health status of the fetuses

Code	Question	variable
401	What type of pregnancy did you have?	Singleton Twins or more
402	What is the Sex of your baby?	Male Female
403	Does the new born has Congenital anomaly?	Yes No

Section V: Types of questions which could be filled from maternal files or by Measurement.

Code	Question	variables
501.	What was the babe’s Gestational age at birth? (Based on LNMP or 1st trimester ultrasound result)	___(in weeks)

502.	What is the Hemoglobin level of mother?	_____ in (g/dl)
503.	What is the current HIV status of the mother?	1 positive 2 negative
504.	What is the Maternal left mid upper arm circumference (MUAC) at birth	_____/meas ure in cm/

Thank You!

III: Amharic Version of Informed Consent

ጠፍ ይስጥልኝ፡፡ እኔ-----እባላለሁ፡፡ በደብረብርሃን ዩንቨርሲቲ በህክምና ፋኩሊቲ በህብረተሰብ ጠፍ ትምህርት ክፍል የሁለተኛ ዓመት የሚከተርስ ድግሪ ተማሪ ስሆን በደብረብርሃን ኮምፕርሄንሲቭ ስፔሻላይዝድ ሆስፒታል ወስጥ ከሚወለዱ እናቶች የሚጋጥሟቸውን ያለዕድሜ መወለድ ችግር እና መንስኤዎቹን በተመለከተ ጥናት እያደረግሁ እገኛለሁ፡፡ ከዚህ ጥናት የሚገኙት መረጃዎች መንግስት እና የደብረብርሃን ሪፈራል ሆስፒታል በሽታውን ለመገታት አስፈላጊ የሆኑ እቅዶችንና ስሌቶችን በመደፍ ጥቅም ላይ ያወላሉ፡፡ ስለሆነም በዚህ ጥናት ወስጥ የሚጠየቁና መላው ማህበረሰብ የህጻናት ካዕለድሜ መወለድ ችግር ጋር ተያይዞ በሚጠቀሙበት ሆስፒታል ልጆቻቸው እንዳይጠቁ ያደርጋል፡፡ ጥናቱ ወስጥ በመጠየቅ ቀጥተኛ የሆነ ጥቅም የሌለው ሲሆን ጥናት ወስጥ በመጠየቅ የሚጠገንም አይነት ጉዳት ግን የለም፡፡ የጥናቱ መጠይቅ ቢበዛ 20 ደቂቃ ይወስዳል፡፡ እነዚህ ጥናት የሚደረግባቸው የጥናቱ ተሳታፊዎች በተመራመራው አማካኝነት በዕጣ የሚለዩ ናቸው፡፡ ጥናቱ ወስጥ መጠየቅ የሚልጉ እናቶች በፈቃደኝነት ላይ ብቻ የተመሰረተ ተሳትፎ መሆኑን መገንዘብ አለባቸው፡፡ ነገር ግን ከእርሶ የምናገኘውን መረጃ አስፈላጊ ስለሆነ ጥናት ወስጥ በፈቃደኝነት እንደሚጠየቁ ተስፋ አደርጋለሁ፡፡ ከእርስዎ የምናገኘውን መረጃ አይነት መረጃ ከእኛ ወጪ ለማንኛውም ሰነድ ወገን እንደማይሰጥ እና ምስጢራዊነቱ የተጠበቀ እንደሚሆን ላረጋግጥላችሁ እወዳለሁ፡፡

ከዚህ በላይ ያለውን መረጃ አንብቤና በሚገባኝ ቋንቋ ተገልጾልኝ፤ የጥናቱ ዓላማ፣ ጥቅም ጉዳት ምስጢራዊነት የተረዳሁ ሲሆን በጥናቱ ስለመጠየቅ ያለምንም ግፊት በራሴው ፍላጎት የሚከተለውን ወስኛለሁ፡፡

1. በጥናቱ ለመጠየቅ ወስኛለሁ (ወደ ማቀጥለው ፎርም ይለፉ)

2.በጥናቱ ለመሳተፍ አልተስማማውም (ሌላ የጥናት ተሳታፊ ጋር ይሂዱ)

የጥናት አድራጊውስም: - የሴፍ ክብረት

አድራሻ: - ስልክ: +251921723279፣ ኢሜል: yosefkibret2112@gmail .com

ይህ ቃለ መጠይቅ የተደረገበት ቀን-----የተጀመረበት ሰዓት-----

የመረጃ ሰብሳቢውስም----- ፊርማ-----

ይህን ቃለ መጠይቅ የመረመረው የትናቱ ተቆጣጣሪ ስም----- ፊርማ-----

IV: Amharic Version Questioner

የአሜሪካ መጠይቆች

የጥናቱ ርዕስ: እናቶች የማይጋጥሙበት ሁኔታ ያለ እድሜ መወለድ ችግርና መንስኤዎቹን በተመለከተ ጥናት ለማጥናት በደ/ብርሃን ኮምፒረንሲቭ ስፔሻላይዜድ ሆስፒታል በወለዱ እናቶች ላይ በ2020 ዓ.ም ይካሄዳል: ጥያቄዎቹ በአራት ዋና ዋና ክፍሎች የተከፋፈሉ ሲሆኑ: እነሱም: የኢኮኖሚያዊ እና የሚህበራዊ ሁኔታ: እርግዝናና ወሊድን: አጠቃላይ የጠፍ ሁኔታ እና እንደሁም ከፅንሱ አፈጣጠርና የጠፍ ሁኔታ ጋር የተያያዙ ጥያቄዎችን ያካተተ ነው:

የጥናቱ መሪ አድራሻ: - ስልክ: +251921723279፣ ኢሜል: yosefkibret2112@gmail .com

የጥናቱ መግቢያ ቅፅ:

የመረጃ ሰብሳቢውስም-----ፊርማ-----ቀን-----

የጥናቱ ተቆጣጣሪ ስም-----ፊርማ-----ቀን-----

የመጠይቁ ኮድ-----የህፃኑ/የእናቱ/ ካርድ ቁጥር ----- የሆስፒታሉ ስም-----

ክፍል አንድ:- የኢኮኖሚያዊ እና የሚህበራዊ ሁኔታን የተመለከቱ ጥያቄዎች

የጥናቱ ተሳታፊ መለያ ቁጥር

መ.ቁ	ጥያቄዎች	የጥያቄዎች መለኪያዎች/ምሳሌዎች
101.	እድሜዎን በመሉ ዓመት ስንት ነው?	----- (በዓመት)

102.	የ ት ነ ወ-የ ማኞሩት?	1. ከተማ 2. ገጠር
103.	የ ጋብቻ ሁኔታ ምን ይመስላል?	1. ያገባች 2. ያላገባች 3. የተፋታች 4. ባለቤትዋ በሞት የተለያች
104.	የ ምን ሀይማኖት ተከታይ ነዎት?	1. ኦርቶዶክስ 2. መስለም 3. ፕሮቴስታንት 4. ሌላ (ይገለፅ) -----
105.	የ ተከታተሉት ከፍተኛ የ ትምህርት ደረጃ ስንት ነው?	1. ያልተማረች 2. 1ኛ ደረጃ የተማረች 3. 2ኛ ደረጃ የተማረች 4. ኮሌጅ/ዩኒቨርሲቲ የጨለች
106.	የ እርስዎ ዋና ስራ ምንድን ነው?	1. የቤት እመቤት 2. የመንግስት ሰራተኛ 3. የግል ተቀጣሪ 4. ነጋዴ 5 ሌላ (ይገለፅ)-----
107.	በአማካኝ የቤተሰቡ የወር ገቢ ምን ያህል ነው?	1----- (በኢትዮጵያ ብር ይገለጻ)
108.	አጠቃላይ የቤተሰቡ ብዛት ስንት ነው? (አብሮ የማኞር ዘመድን ጨምሮ)	----- (በቁጥር ይገለጻ)

ክፍል-ሁለት: እርግዝናና ወሊድን የተመለከቱ ጥያቄዎች

መ/ቁ	ጥያቄዎች	መልሶች
201	ከሁኑ ርግዝናሽ በፊት ነ ፍሰጠፎ ሆነ ሽ ታወቂያለሽ?	1. አዎ

		2. የለም
202	ከዚህ እርግዝና በፊት ወርጃ አጋጥሞኝ ያወቃል?	1. አዎ 2. የለም
203	ከዚህ በፊት ተወልዶ ወዲያው የሞተብኝ ልጅ ነበር?	1. አዎ 2. የለም
204	ካሁን በፊት በነበረው እርግዝና ቀኑ ከመድረሱ በፊት የወለድኝው ልጅ ነበር?	1. አዎ 2. የለም
205	ለዚህ ህጻን የቅድመ_ወሊድ ክትትል አድርገኝ ነበር?	1. አዎ 2. የለም
206	ለቅድመ_ወሊድ ክትትል ብቻ ስንት ጊዜ ሀኪምቤት ሄደኝል?	1.----- (በቁጥር ይገለፁ)
207	ልጅሽን ስትወልጁ ምጥ የጀመረኝ እንደት ነበር?	1. በራሱ ጊዜ ነው 2. በህክምና ታግዠ
208	ምጥ ሳይጀምርኝ የእንሽርት ወህ ፈሶኝ ነበር ?	1. አዎ 2. የለም
209	ልጅሽን እንደት ወለድኝ?	1. አምጬ 2. በቀዶ ጥገና ነው
210	ከእርግዝና ጋር የተያያዘ የደምግፊት አለብኝ?	1. አዎ 2. የለም
211	ከመወለድኝ በፊት ብዙ ደም ፈሶኝ ነበር?	1. አዎ 2. የለም

ክፍል ሦስት: አጠቃላይ የጤና ሁኔታን የተመለከቱ ጥያቄዎች

መቁ	ጥያቄዎች	መልሶች
301.	በህክምና የተረጋገጠ የሰካር በሽታ አለብሽ ተብሎሽ ታወቂያለሽ?	1. አዎ 2. የለም
302.	በህክምና የተረጋገጠ የልብ በሽታ አለብሽ ተብሎሽ ታወቂያለሽ?	1. አዎ 2. የለም
303.	ባለፉት ዘመኝ የእርግዝና ወራት ጊዜ ወባ አሞሽ ነበር?	1. አዎ 2. የለም
304	በእርግዝናሽ ወቅት ሽንት ስትሸኑ የሚቃጠል ስሜት (የሽንት ባንባ ቁስለት) ነበረሽ?	1. አዎ 2. የለም

ክፍል አራት: ከፅንሱ አፈጣጠርና የጠፍ ሁኔታ ጋር የተያያዙ ጥያቄዎች

ተ/ቁ	ጥያቄዎች	መልስ
401	ያረገ ዝሽዉስንት ልጅ ነበር?	1. አንድ ልጅ/ነ ጠላ 2. መንታ ልጅ
402	የሕፃኑ ያታምንድነ ዉ?	1. ወንድ 2. ሴት
403	የወለድሽውሕፃን አብሮት የተወለደ የጠፍ ችግር አለበት?	1. አዎ 3. የለም

ክፍል አምስት: ከካርድ በማጽናት (በመላካት) የሚሞሉ ጥያቄዎች

ተ/ቁ	ጥያቄዎች?	መልስ
501.	ህፃኑ ሲወለድ የነበረው የእርግዝና እድሜ ስንት ነው? (ከLMP በመሳሰሉ ተቆጥሮ ወይም የአልትራሳውድ ወጠቻ በጽኑ ስንት የሚሆን)	_____ (በሳምንት ይገለጻል)
502.	የእናቱ የሆሞን ሰነድ ስንት ነው? (ካርድ ታይቶ የሚሆን)	1----- (በግራም/ዲሲሊ)
503.	የእናቱ የኤችአይቪ ሁኔታ ህፃኑ ሲወለድ ምን ነበር? / ካርድ ታይቶ የሚሆን)	
504.	እናቱ ህፃኑ ሲወለድ የነበረው “MUAC” ስንት ነበር? (ተለክቶ)	1. _____ (በሴንቲ ሜትር)

ሥላት ትብብሮት ከልብ አመሰግናለሁ፡፡

V: DECLARATION

I the undersigned, MSc in Public Health student declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master in Reproductive Health.

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