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PREMATURE BIRTH AND ASSOCIATED FACTORS AMONG NEONATE BORN AT GUNCHURE PRIMARY HOSPITAL

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WOLKITE, ETHIOPIA

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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
APH	Ante Partum Hemorrhage
DM	Diabetic Mellitus
EDHS	Ethiopian Demographic Health Survey
ELBW	Extremely Low Birth Weight
HIV	Human Immune Deficiency Virus
HSTP	Health Sector Transformation Plan
LBW	Low Birth Weight
NGO	Nongovernmental Organization
NMR	Neonatal Mortality Rate
PIH	Pregnancy Induced hypertension
PPROM	Preterm Premature Rupture of Membrane
PROM	Premature Rupture of Membrane
SGA	Small for Gestational Age
WHO	World Health Organization

ABSTRACT

Background: Every year, an estimated 15 million babies born premature globally and this number is rising. Pre-term birth complications account for 35% of the estimated 3.1 million global neonatal deaths and are the second leading cause of death in children under 5 years of age. In our country Ethiopia one third of a million neonates are born too soon each year and 24,000 children under five die due to direct preterm complication.

Objective: Aimed to assess the proportion of premature birth and associated factors among neonates born at Gunchire hospital from June 12, 2022 to June 12, 2023GC

Methodology: Institutional based cross sectional study design was conducted by reviewing delivery log book of mother's who gave birth from June 12, 2022 to June 12, 2023 GC at Gunchire primary hospital. Systematic random sampling method was used to select study unit. The data was collected from July 20, 2023 to July 25, 2023GC by using structured check list from delivery log book. It was analyzed by using SPSS for windows version 21. For each independent variable chi-square was calculated with their respective p-values to measure whether they are associated with dependent variable at significant p-value of <0.05.

Result: Of 295 neonates included in the study, 15.3% of them were premature births with 95%: CI [0.112-0.194]. According to this study previous history of premature birth with (CI: 0.000-0.010, P=0.000), premature rupture of membrane with (CI: 0.000-0.010, P=0.000), parity with (CI:0.000-0.010, P=0.000), preeclampsia with (CI: 0.000-0.010, P= 0.003) and Ante partum hemorrhage with (CI:0.00-0.016, p=0.014) were significantly associated with premature birth at p- value of <0.05. But maternal age, Residence, marital status, previous history of abortion, Human Immune Deficiency Virus and Diabetes Mellitus were not significantly associated with premature birth.

Conclusion and Recommendations

Generally according to the findings of this study the proportion of premature birth is high and the associated factors of prematurity are: previous history of premature birth, premature rupture of membrane, Antepartum hemorrhage and Preeclampsia. So, it is better to regularly screen out pregnant mothers on hypertension, Ante partum hemorrhage and premature rupture of membrane so that they will be alarmed as this can put in risk of preterm birth.

CHAPTER ONE

1. INTRODUCTION

1.1 Background

Preterm birth, also known as premature birth, is defined as a delivery which occurs at less than 37 completed weeks of gestation. These babies are known as preemies**.** It is classified as extreme preterm (<28 weeks), very preterm (28 to <32 weeks) and moderate to late preterm (32 to <37 weeks) [1, 2].

Premature birth can occur as a result of spontaneous or provider initiated. Spontaneous premature birth is commencement of labor with intact or pre labor rupture of membrane and birth before 37 weeks of gestation. Provider initiated premature birth are a birth occurs before 37weeks of gestation which results from intervention such as induction of labor or caesarian section taken for maternal or fetal indication% n. Spontaneous onset of labor accounts for 65 – 70 % of all preterm births and provider initiated for 30-35 [1].

Globally, an estimated 15 million babies are born preterm every year and this number is rising. The vast majority of global preterm birth occurs in Asia and Africa where health systems are weak and access and utilization of health services are limited [1].

Different factors are associated with the occurrence of preterm birth. Among this: low socio-economic status in which getting utilization health facility is reduced, history of having preterm sibling, gynecologic and obstetrics problem like uterine over distention secondary to multiple pregnancy, rupture of membrane was commonly identified in different countries. It was also found to be one of adverse birth outcome in women having medical disorder like pregnancy related hypertension [2-7].

Being born preterm is a risk factor that put infant to high risk of chronic diseases and mortality later in life. Preterm birth has different causes and risk of mortality, morbidity, impaired growth and non-communicable diseases. This being born preterm predisposes infant to higher risks of

chronic diseases and mortality later in life, infant born before 32 weeks of gestation are at particularly high risk of adverse outcome [8-12].

1.2 Statement of the problem

Every year 15 million babies born too soon, more than one in ten babies are born premature globally and this number is increasing in all countries. Over 60% of preterm births are occurred in sub–Saharan Africa and south Asia where 9.1 million birth (12.8%) annually are estimated to be preterm. The rate of premature birth highest on average for low-income countries (11.8%) followed by lower middle-income Countries (11.3%) and lowest for upper middle-income countries and high-income countries 9.4% and 9.3% respectively. The highest premature birth (42%) occurred in USA among high income countries [1].

The premature birth in Brazil, Parana and Maringa was increasing from 5% to 11.9%, 6.2% to 7.5% and 7.1% to 13.2% respectively from 2005 to 2012. The rate of premature birth in South East Nigeria rose from 9.8% in 2009 to17.1% in 2013 after peaking at 23% in 2012 [13,14].

In our country Ethiopian the high (one third million) premature births are occur every year. In Gondar University Hospital, North west Ethiopia about one in seven adverse birth outcome (14.3%) was found to be preterm birth [15, 16].

EDHS 2016 shows the significant decrease in Neonatal mortality rate. i.e., it's decreased to 29 per 1000 live births from 37per 1000 live births in 2011 EDHS report. The most common cause of Neonatal mortality rate is Prematurity (37%). Neonatal mortality rate of Jimma zone, Southwest Ethiopia in 2013 was 35.5 per 1000 live-births. 69.1% of them dead within the first week of life making weighted early neonatal mortality rate to be 23.7 and risk of neonatal death was found to be increaq`sed in Prematurity as compared to term births [16,17,18].

Premature births cause significant health consequences to the infant and economic costs for Families and communities. The majority of preterm birth remains vulnerable to long term complications that may persist all over their life. The main resulting morbidity are neurosensory deficits (blindness, deafness), intraventricular hemorrhage, necrotizing enters colitis and delay in physical and mental developments [2].

Preterm birth is the major cause of death and substantial cause of long-term impairment of human potential amongst survivors all over the world. It is the direct causes of neonatal deaths

and the second most common cause of under-5 deaths following pneumonia. Out of 7.6 million deaths in under-five children, prematurity accounts for 17% and being the first leading cause of neonatal deaths, preterm birth attributed about 35% deaths [1, 19]. As gestational age decreases mortality rate increases, and being born both preterm and small for gestational age are at even high risk. In many low-income countries only 30% of those born at 28 to 32 weeks survive while almost all preterm births <28 weeks die within the first few days of life. In all settings majority of deaths stands for very or extremely preterm births, especially where simple care is lacking in low-income countries. Although their absolute numbers are lower, preterm-SGA infants carry a higher risk of mortality in the newborn and infant periods than do term-SGA infants. Estimate of 86% of extremely preterm live birth babies died in the early neonatal period compared to 50.5% of very preterm babies [14, 20, 21, 22].

The aim of this study is to assess the proportion of premature birth and associated factors which can show the way for decreasing both preterm birth occurrence and risk factors that contributes for neonatal mortality significantly.

1.3. Significance of the study

The result of this study serves as a baseline for other wide studies as well as for planning health intervention to improve the wellbeing of children and women in Gurage Zone, gunchire town in particular.

Due to lack of such studies in the zone, this study was conducted to assess the prevalence and common associated factors with prematurity which is support for the readiness of health facilities to make appropriate diagnoses and evaluation of the causes of preterm.

Greater knowledge about prevalence and associated factors of premature birth could lead to better evidence-based interventions in Ethiopia aimed at reducing Neonatal mortality. This study will be providing valuable information for Health professionals, Researchers, Regional health bureau and other Stake holders. By using this study, the professional plan their resources for intervention and for researchers used this result as abuse line for future studies.

CHAPTER TWO

2. Literature Review

2.1 Premature Birth

WHO estimate, 15 million babies were born too soon globally in 2016. Over 60% of premature births occur in Africa and South Asia [23]. Similarly, Global action report on preterm birth in 2012 show that, 15 million babies in the world, more than one in ten births are born too early. 60% of them occur in south Asia and sub-Saharan Africa [23, 24].

As the study done in Brazil, Parana, and Maringa the proportion of premature birth was increased from 5%to 11.9%, 6.2% to 7.5% and 7.1% to 13.2% respectively from 2005 to 2012. Another study done in Maringa show that the prevalence of premature birth from October 2013 to February 2014 was 17% [13].

The study done in France 2012 show that preterm birth rates where 4.4 Per1000 total still births and live birth, and 2.1per1000 live births before 27 weeks gestation 8.4 and 7.5 at 27 though 31weeks and 17.8 and 17.3 at 32 through 34 weeks respectively. In 2015 cross sectional study done in Tehran, Iran shows that, the prevalence rate of premature birth was 6.3% in North,1.3% in South,0.77% East,4.19% West and 1.11%at the center of Tehran. Out of 13,281 live births, 202 are preterm birth or 1.52%. Another study done in Saudi Arabia 2013 Show that, the prevalence of premature birth from April 2013 to 2014 was 8.2% (101) for the 1238 singleton live births that admitted to labor suit of Obstetrics Department of King Fahad Hospital, University of Damma. Cross sectional Observation was conducted in south Western Nigeria in Mother and child Hospital Akur show that the prevalence of premature birth was 15.4% (1606) out of 10,432 of live births in 2016 [25,26,27,28].

In our country Ethiopia, 0.32million babies born preterm each year. The study done in Addis Ababa Tikur Ambessa Hospital from July 1, 2011 to June 30, 2012 show that, among 3,277 neonates admitted to NICU ward of this Hospital 855 neonates are born premature. Similarly, the study done in Addis Ababa and Debre Markos Referral and Teaching Hospitals reported that, the prevalence of preterm birth rate was 7.1% and 11.6% respectively [23, 29, 30,31].

The prospective cohort study conducted in 2014 in Tigray region, Northern Ethiopia on seven Hospitals; Ayder Referral Hospital, Adwa Hospital, Lemiam kerl Hospital, Suhi Hospital, Kahsay Abera Hospital, Kidist mariam Hospital and Adigrat Hospital Shows that the numbers of preterm birth are 13 out of 139, 21out of 198, 4 out of 147, 15 out of 143, 12 out of 102, 17 out of 213 and 11out of 210 live births respectively, with the prevalence 8.1% (93) out of 1152 live births. Institutional based cross-sectional study conducted at Felega Hiowt Referral, Gonder show that, the proportion of preterm birth was 11.7%. The study done in Jimma University specialized Hospital indicated that prevalence rate of preterm birth was 25.9% in 2016 [32,33,34]. Generally, the prematurity in our country Ethiopia is high.

2.2 Associated factors of premature Birth

Maternal socio demographic factors

Preterm birth is affected by a multitude and interrelated factors. Socioeconomic factor, is one of the predictors of preterm birth. In high-income countries, approximately 40-45% of preterm births follow preterm labor. In Nova Scotia, Canada Preterm birth rates were significantly higher among women in the lowest (6.1%) versus the highest (5.6%) family income group for spontaneous preterm birth. Similarly, in western China 46.0% of women who had a preterm birth have average family income ≤ 320USD/ month compared with 36.7% in the control group, the difference had statistical significance. 43.3% were unemployed or housewife, 30.8% were peasant, 11.4% were commercial service staffs, professional staffs occupied 5.2%, and government staffs were 1.0%. Unlike the occupation, educational status showed significant statistical relation [35-38].

Spontaneous preterm birth was associated with increasing maternal age (≥40years) and also highest risk of preterm birth is evidenced in nulliparous/age <18 category followed by parity≥3/age≥35 and parity≥3/age 18-<35. In case of Preterm-SGA, nulliparous/age <18 mothers again had the highest association, followed by nulliparous/age 18-<35. Parity≥3/age≥35 had slightly increased association and parity≥3/age 18-<35 had no association. According to study in a tertiary referral hospital of UK, the mean maternal age for those preterm births was 29.4 within range of 16-46, whereas the majorities (87.3%) were in the age group of 19-39. In Taiwan Greater risk for preterm birth was found in Pregnant women aged <25 years or >28 years compared to those aged 27 years. The risk of preterm births declined to ages of 25≈28 years, but

it was highest at ages of <14 years, and then steadily increased to ages of ≥44 years. In rural South Africa and Malawi, significantly greater proportion of women with preterm births was less than 20 years old [3, 36, 39-42]

Obstetric and gynecologic related factors

As evidenced by different studies causes of preterm vary in different countries. Preterm birth may result from preterm labor with intact fetal membranes, preterm rupture of the fetal membranes, or from iatrogenic preterm delivery for maternal or fetal indications. Globally, 25-40% are for premature ruptures of the fetal membranes, and 30-35% are indicated deliveries. Almost 70% are spontaneous preterm births; 16-21% involves rupture of membranes. As study conducted at Debre Markos Hospital showed that, mothers who had premature rupture of membrane were about six times more likely to give premature birth when compared to mothers without premature rupture of membrane (AOR=6.2, 95% CI =2.7-14) [31]. It also indirectly associated with parity, previous cesarean section, previous low birth weight and perinatal death [35,36]. Stated gestation ages were under 34 Weeks for 14.8% of preterm cases and the smallest case was 22 + 5 weeks in Study of Western China 85.2% cases' gestation age were from 34 weeks to 36 + 6 weeks. In Vali-e ASR hospital, Tehran Iran, the average gestational age for preterm births was 28.19 (25-36) weeks [3, 43, 44]. Also, previous history of preterm delivery affects the occurrence of preterm delivery. Previous preterm delivery (≥ 20 and <37 weeks' gestation) accounts for 25.4% of preterm births in UK tertiary referral hospital. In sub-Saharan Africa there were 3,836 (7.6%) women who delivered preterm in the first pregnancy, of which 1,160 (30.7%) repeated in the second. There was time correlation of delivery in the first delivery with of delivery in the consequent pregnancy. For instance, if a woman had a prior preterm delivery at 28 weeks, the cumulative incidence of any preterm delivery < 37 weeks was 37.9% but the incidence of delivery ≤ 28 weeks was only 10.4%. Compared to women with two prior term deliveries the risk of preterm birth < 37 weeks of gestation in the third delivery was over 10-fold higher for women with two prior preterm deliveries. For women with a history of one prior preterm and one prior term delivery, the risk for subsequent preterm birth in the third pregnancy was higher, 5.5-fold versus 3.5-fold, when the preterm birth occurred in the immediately preceding pregnancy compared to a preterm birth in the first pregnancy. The risk of

subsequent spontaneous preterm delivery was 5.6-fold increased with history of Prior spontaneous preterm delivery. However, the strongest association was for a prior indicated delivery and subsequent risk of both indicated preterm delivery and elective delivery or no recorded indication. In Malawi, history of previous preterm birth was more likely reported in women who gave preterm birth (13.2% vs. 6.1%) and previous neonatal death (8.1% vs. 4.1%) compared to women who delivered at term. During pregnancy women who had lower mean weight gain (kg) between the first (booking, 24 weeks gestation) and subsequent assessment (28–32 weeks gestation) (2.95 vs. 3.39) had a preterm birth. Vaginal bleeding during third trimester risk for prematurity. As study done in Al-Zahra Hospital, Iran shows that vaginal bleeding was associated with three times increased preterm delivery (OR:3, 1.84-4.89) [3, 41, 45, 46].

Medical disorders in mother

Approximately 30% of all preterm births are indicated for either maternal or fetal complications, such as maternal illness or fetal growth restriction. 11-15% has medically induced causes. Clinical risk factors such as hypertension were differently associated with spontaneous and iatrogenic preterm but factors such as diabetes mellitus were not. As study conducted in Gondar town health institutions that revealed mothers in pregnancy induced hypertension had five times increased risk of giving preterm birth than those women without pregnant induced hypertension (AOR =5.36, 95% CI = 1.8 -15.96) [2, 3,37,43]. In rural South Africa, although it was not statistically significant; the proportion of preterm deliveries was slightly higher in HIV-positive than in HIV-negative women. Also, among HIV-Infected Tanzanian Women who gave birth, 24% were premature and 9% were very premature. Low weight gains during pregnancy, malaria, Entamoeba infection, HIV disease stage ≥2 and pre hypertension or hypertension were significantly and independently associated with increased risk of preterm delivery. But no statistical differences were noted for the prevalence of syphilis ($p = 0.12$) or HIV positive status ($p= 0.30$) between those who delivered preterm versus term in Malawi [39, 47].

Maternal life style

Smoking, drinking alcohol and drug using during pregnancy were maternal factors found in preterm births [3,41]. But Studies in Western Europe stated as inverse relationship was observed between alcohol consumption and the risk of preterm birth. Similarly, there was no significant

association between smoking and preterm birth rather preterm birth was only detectable in non-smokers [48].

Conceptual framework

This conceptual framework was developed after reviewing different related literature. There is Association between maternal factor (maternal socio demographic characteristics, Obstetrics and Gynecologic factor, and medical disorders in mother)

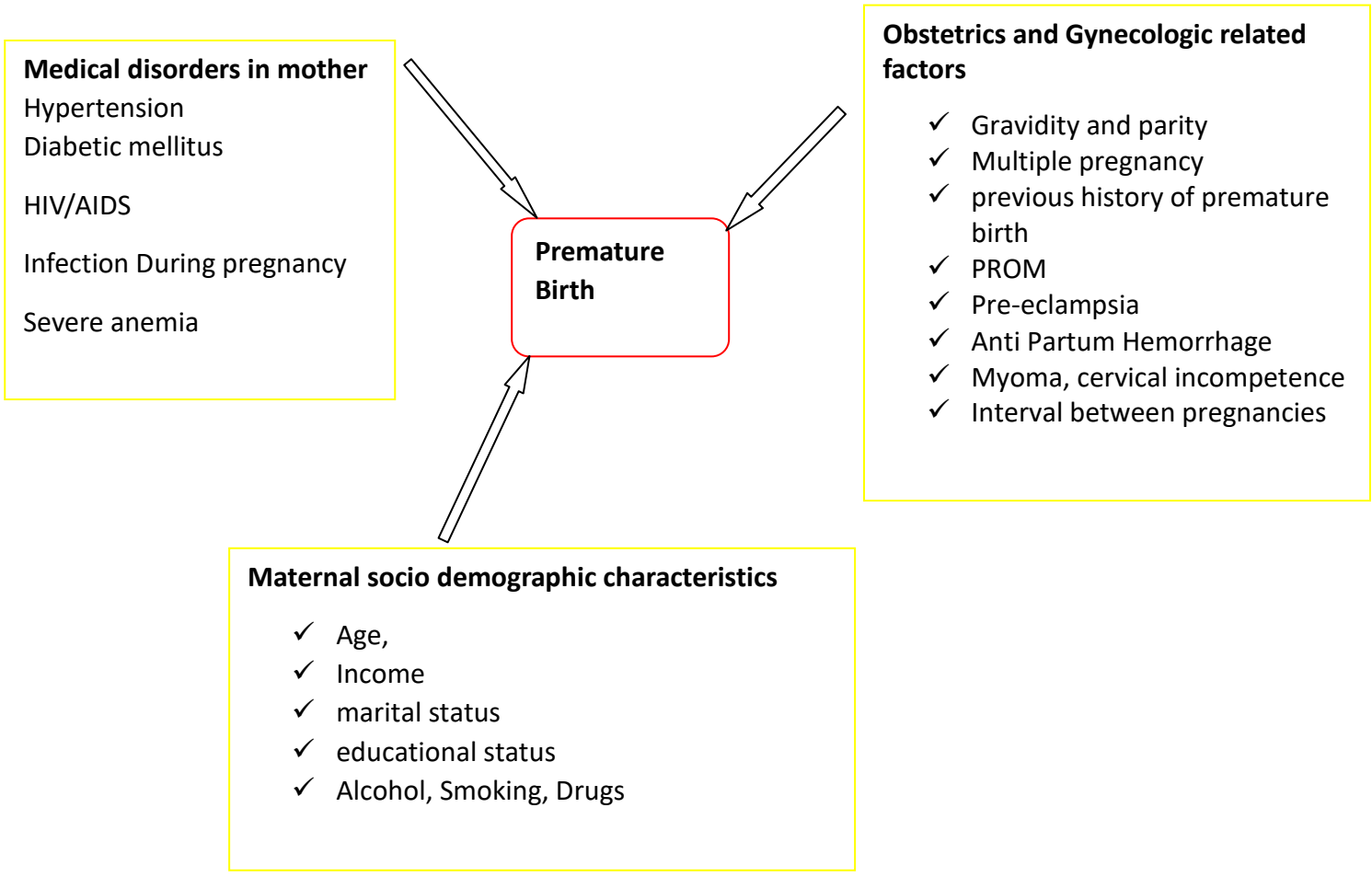


FIGURE 1: ADAPTED CONCEPTUAL FRAMEWORK OF PREMATURE BIRTH AND ASSOCIATED FACTORS.

CHAPTER THREE

3. OBJECTIVES

3.1 General objectives

- To assess prevalence of premature birth and associated factors among neonates born from June 12, 2022 to June 12, 2023GC in Gunchire Primary Hospital, Ethiopia,2023.

3.2 Specific objectives

- To determine the prevalence of prematurity among neonates born at Gunchire Primary hospital from June 12, 2022 to June 12, 2023GC
- To identify factors associated with prematurity among neonates born at Gunchire Primary hospital from June 12, 2022 to June 12, 2023GC

CHAPTER FOUR

4. METHOD AND MATERIALS

4.1. The study design and study period

Institutional based cross sectional study design was conducted from July 20, 2023 to July 25, 2023GC.

4.2 The Study Area

The study was carried out in Ethiopia's, SNNPR, Gurage zone, Enor woreda Gunchire town. Gunchire town is roughly 190 km distant from Addis Ababa which is only 40 km from Wolkite, the Gurage Zones headquarters. Gunchire is a Capital of Enor woreda. There were 119,773 people living in the woreda as whole, of which around 63360(53%) were female and the rest 56412(47) males respectively, according to data from the local government. In the woreda 90.44% of the population lives in rural regions and is reliant on subsistent farming. Only 6.56% of people live in cities and relay on non-agricultural occupations for their daily needs. The supply of essential services and small-scale commerce are what urban inhabitants relay on the most. This town has one Primary Hospital, four private clinic and three private pharmacies.

4.3 Source population

The source populations were all the neonates born at Gunchire Primary Hospital.

4.4 Study Population

The study population were all the neonate born in Gunchire Primary Hospital from June 12, 2022 to June 12, 2023 GC

4.5. Inclusion criteria

- ✓ All neonates who were delivered at gunchire primary Hospital from June 12, 2022 to June 12, 2023G.C.

4.6. Exclusion criteria

- ✓ Neonates Who were delivered at Gunchire primary hospital but time frame out of June 12, 2022 to June 12, 2023 G.C
- ✓ Neonates who were delivered at Gunchire Primary Hospital but their medical record is not clearly recorded.

4.7. Sample Size Determination

The Sample size was estimated by using sample size determination formula for a single population formula. In previous study done in Jimma University specialized Hospital, the prevalence of premature birth was 25.9% [34]. Therefore, the total sample size was calculated with 95% Confidence interval and 5% marginal of error. Based on this assumption a total sample size was calculated by using the formula as indicated below:

$$n_o = \frac{(Z\alpha/2)^2\, p(1-p)}{d^2}$$

were, n_o– initial sample size

Z–standard normal value at 95% C.I which is 1.96

P= prevalence of prematurity at Jimma University specialized hospital = 0.259

d – Possible margin of error tolerated which is 5%

$$\frac{(1.96)^2(0.259)\,(0.741)}{(0.05)^2} = \mathbf{295}$$

4.8. Sampling technique

Systematic random sampling technique was used to collect study subjects' neonates who were delivered at Gunchire primary hospital by using delivery registration log book starting from June 12, 2022 to June 12, 2023G.C. List of neonates born at Gunchire Primary Hospital was used as sampling frame, accordingly the sample was calculated & then the skip interval is determined. The first unit was selected by lottery method and go with skip interval (**k**-value) until the sample size is attended. Number of neonates who were delivered at gunchire primary hospital was 2065 which is what we got from delivery log book.

Then to obtain sampling interval found k-value, the formula for k=N/n, where N- Recorded number of neonates who were delivered at Gunchire primary hospital. n- is sample size (295) k=2065/295= 7 hence the first study subject was selected by lottery method. Data was collected every 7^{th} interval. (K- value =7)

4.9. Study Variables

Dependent variable

- Premature birth

Independent/Predictor variables

- **Socio demographic variables;** age, income, Marital status, educational status, religion, occupation of mother, residence
- **Gynecologic and Obstetrics related factors**: parity, Birth interval, Gestational age at birth, Premature rupture of membrane, multiple birth.
- **Maternal life style**: smoking, alcohol and drug abuse.
- **Medical disorder in mothers:** Hypertension, Diabetes mellitus, HIV/AIDS

4.10 Data collection instrument and method

The data was collected by using structured check list of neonates born at Gunchire primary hospital and recorded mother history. A structured questionnaires were prepared about the maternal socio demographic characteristics, relevant obstetrics information, maternal medical disorder, obstetric complication and characteristics of the neonates. Finally required information was recorded.

4.11 Operational definitions

Newborn: A newborn infant, or neonate, is a child under 28 days of age. **(1)**

Premature birth: any delivery earlier than 37 weeks of pregnancy (1)

Extreme premature birth: any delivery before 28 weeks of pregnancy which is called abortion in Ethiopia. **(2)**

Very premature birth: any delivery between 28 and 32 weeks of pregnancy. (8)

Moderate to late premature birth: The delivery between 32 and 37 weeks of pregnancy. (8)

Term: any delivery between 37 and 42 weeks of pregnancy. (1)

Post-Term: any delivery after 42 weeks of pregnancy. (1)

Medical disorders in mother: Any history of medical diagnosis in the mother as it has been registered on the mother's medical record.

Primipara: A woman who gave birth for the first time. **(4)**

Multi parity: Recorded parity of >=2. (4)

Grand multiparity: A woman who gave >=5 births. (4)

4.12 Data quality assurance

The training was given for the data collector to prevent confusion and misunderstanding about study. Each medical record was checked for provision of full information and appropriate documentation. The filled check list was checked for completeness by data collector. Finally, any problem encountered was discussed among team and self immediately.

4.13 Data processing and analysis

The collected data was analyzed using SPSS for windows. Frequency and cross tabulation were done and results was presented using tables, graphs, and narrations. The commonest test of association (chi square) was used to examine the association of prematurity with each of the variables. The level of significance was taken at a p-value <0.05.

4.14 Ethical consideration

Formal letter of ethical clearance of permission was obtained from Wolkite University, College of Medicine and Health science to conduct the study. Further permission was obtained from the medical director of Gunchire Primary Hospital and Department head of obstetric ward. Since the cards include the mother's identification, confidentiality was maintained by making the data collector aware not to record any identification information from the cards\charts.

CHAPTER FIVE

5. Results

5.1 Maternal Socio demographic Characteristics

A total of 295 mother's charts from Gunchire Primary Hospital were included in the study, making a response rate of 100%. 128(43.4%) out of the total respondents were urban residents. The mean age of the respondents was 26 years. Seventy-point eight percent of respondents were between ages 20–34 years old. Regarding marital status of the mothers, most 285(96.6%) were married.

TABLE 1: DISTRIBUTION OF THE MOTHERS SOCIO DEMOGRAPHIC CHARACTERISTICS WHO GAVE BIRTH IN GUNCHIRE PRIMARY HOSPITAL, ENOR WOREDA, SNNPR, 2023G.C

Variables	response	frequency	percentage
Age of the mothers	15-19	18	6.1
	20-24	50	16.9
	25-29	92	31.2
	30-34	67	22.7
	35-39	57	19.4
	40-44	11	3.7
Residents	Urban	128	43.4
	Rural	167	56.6
Marital status	Married	285	96.6
	single	5	1.7
	Widowed	2	0.7
	Divorced	3	1

5.2 Maternal Obstetric Characteristics

Out of 295 mothers 49(16.6%) were Nullipara whereas 57(19.3%) primipara and 138(46.8%) and 51(17.3%) were Para two to four and para >= five respectively. 34(11.5%) of them had history of abortion whereas 261(88.5%) had no history of abortion. The number of women those had previous history of premature birth were 13(4.4%) and 282(95.6%) of them had no history of premature birth.

TABLE 2: DISTRIBUTION OF MATERNAL AND OBSTETRIC CHARACTERISTICS WHO GAVE BIRTH IN GUNCHIRE PRIMARY HOSPITAL, ENOR WOREDA, SNNPR 2023G.C

Variables	Response	frequency	percentage
Parity	0	49	16.6
	1	57	19.3
	2-4	138	46.8
	>=5	51	17.3
Hx of Abortion	Yes	34	11.5
	No	261	88.5
previous Hx of premature birth	Yes	13	4.4
	No	282	95.6

5.3 maternal medical disorders

In this study among those who had medical disorders 7(31.8%) of mothers were had Hypertension, were 11(50%) had Diabetic Mellitus and were 4(18.2%) had HIV/AIDS.

TABLE 3: DISTRIBUTION OF THE MATERNAL MEDICAL DISORDERS WHO GAVE BIRTH AT GUNCHIRE PRIMARY HOSPITAL, ENOR WOREDA, SNNPR 2023G.C

Variables	Response	Frequency	percentage
HTN	Yes	7	31.8
	No	15	68.2
DM	Yes	11	50
	No	11	50
HIV	Yes	4	18.2
	No	18	81.8

5.4 Maternal Obstetric complication

In this study 12(4.1%) of mothers were complicated with Antepartum Hemorrhage while 6(2%) of them were developed preeclampsia and 19(6.4%) of them were complicated with PROM.

TABLE 4: DISTRIBUTION OF THE MATERNAL OBSTETRIC COMPLICATION WHO GAVE BIRTH AT GUNCHIRE PRIMARY HOSPITAL, ENOR WOREDA, SNNPR 2023G.C

Variables	Response	Frequency	percentage
APH	Yes	12	4.1
	No	283	95.9
Preeclampsia	Yes	6	2
	No	289	98
PROM	Yes	19	6.4
	No	276	93.6

5.5 Characteristics of the Neonates

A total of 295 neonates were included in the study. Of this 154(52.2%) were female and 141(47.8%) were male. The proportion of premature birth, term birth, and post term births are 15.3%, 74.9% and 9.8% respectively.

According to the finding of this study the number of VLBW (BW <1500gm) gm were 35(11.9%), the number of LBW (BW [1500gm, 2500gm)) were 37(12.5%), the number of NBW (BW [2500gm, 4000gm)) Were 217(73.6%) and the number macrosomia (BW> 4000gm) were 6(2%).

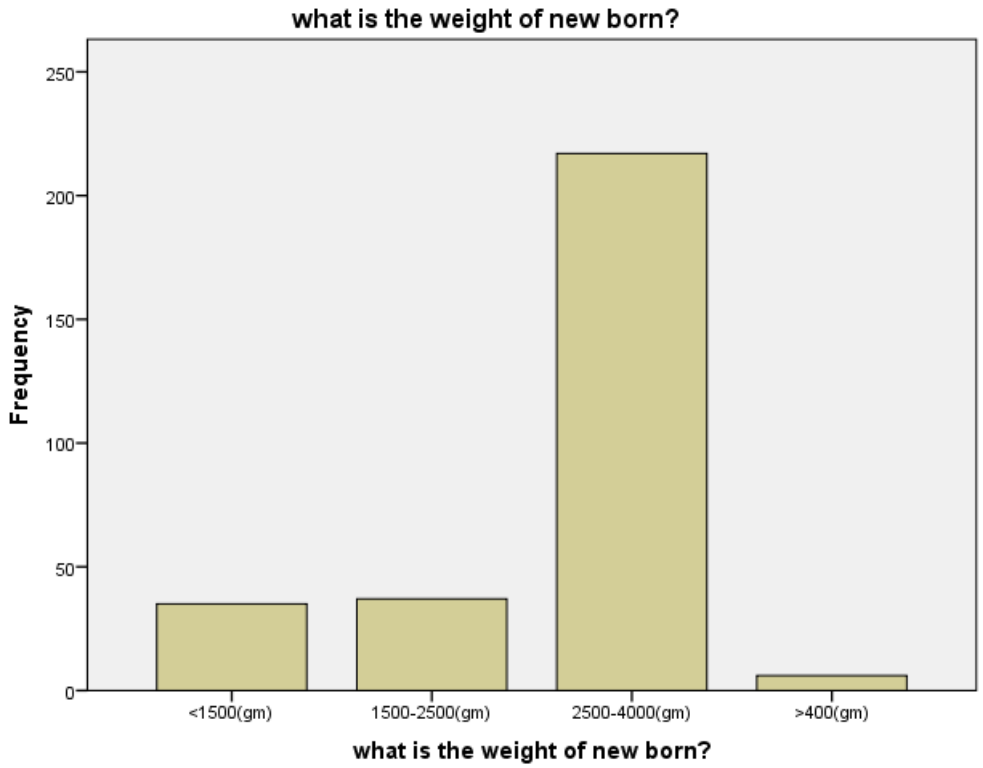


FIGURE 2: BIRTH WEIGHT CLASSIFICATION OF NEONATES BORN AT GUNCHIRE PRIMARY HOSPITAL, ENOR WOREDA, SNNPR 2023G.C

TABLE 5: CHI- SQUARE VALUE SHOWING AN ASSOCIATION BETWEEN PREMATURITY AND ITS ASSOCIATED FACTORS AMONG NEONATES BORN AT GUNCHIRE PRIMARY HOSPITAL, ENOR WOREDA, SNNPR 2023G.C

Variables	Characteristics	Premature birth		X^2	CI	Df.	P-value	Remark
		Yes Of (Ef)	No Of (Ef)					
Maternal age	15-19	5(2.7)	13(15.3)	14.338	0.082-0.156	10	0.119	It's not significant at p< 0.05.
	20-24	7(7.6)	43(42.4)					
	25-29	12(14)	80(78)					
	30-34	11(10.2)	56(56.8)					
	35-39	9(8.7)	48(48.3)					
	40-44	1(1.7)	10(10.3)					
Residence	Urban	27(19.5)	121(108.5)	6.046	0.026-0.076	2	0.051	It is not significant at p<0.05
	Rural	18(25.5)	149(141.5)					
Marital status	married	44(43.5)	241(241.5)	2.683	0.758-0.849	6	0.803	It's not significant at p<0.05
	others	1(1.6)	9(8.4)					
Parity	0	5(7.5)	44(41.5)	55.419	0.000-0.010	6	0.000**	It's significant at p<0.05
	1	13(8.7)	44(48.3)					
	2-4	14(21.1)	124(116.9)					
	>=5	13(7.8)	38(43.2)					
Hx of abortion	Yes	8(5.2)	26(28.8)	21.331	0.045-0.105	2	0.075	It's not significant at p <0.05
	No	37(39.8)	224(221.2)					
Previous hx of premature birth	Yes	9(2)	4(11)	21.276	0.000-0.01	2	0.000**	It's significant at p< 0.05
	No	36(43)	246(239)					
Sex of the	Male	19(21.5)	122(119.5)	0.774	0.632-	2	0.685	It's not significant at

newborn	Female	26(23.5)	128(130.5)		0.738			p<0.05
PROM	Yes	13(2.9)	6(16.1)	30.221	0.00-0.010	2	0.000**	It's significant at p<0.05
	No	32(42.1)	244(233.9)					
APH	Yes	6(1.8)	6(17.2)	9.110	0.00-0.016	2	0.014**	It's significant at p<0.05
	No	39(43.2)	244(239.8)					
Preeclampsia	Yes	4(0.9)	2(5.1)	8.233	0.000-0.022	2	0.007**	It's significant at p<0.05
	No	41(44.1)	248(244.9)					

Of- observed frequency,

Ef - expected frequency,

Df- degree of freedom,

Hx – History

** -significant association

CHAPTER SIX

6. Discussion

The objective of this institutionally based cross-sectional study was to estimate the prevalence of preterm and its contributing factors among newborns delivered at the Gunchire Primary Hospital in the Enor woreda of the SNNRP Region of Ethiopia.

Prematurity is found in 45 of the 295 maternal charts reviewed neonates, with a percentage of 15.3% and a 95% confidence interval [0.112-0.194]. Prematurity was less common in this study than in Jimma University's specialized hospital in 2016 (25.9%), but it was more common than in a cross-sectional study conducted at Felega Hiwot Referral Hospital in Gondar (11.7%) [33,34]. The results of this investigation were greater than those of an Addis Abeba cross-sectional survey, but they were consistent with those of the Debre Marqos Referral Hospital, which revealed prevalence rates of 7.1% and 11.6%, respectively [30,31]. Prematurity prevalence rates were 15.4% in 2016 in the mother and child hospital in south Nigeria, which is almost identical to the prevalence rates found in this study [28].

This study found a greater incidence of prematurity than a cross-sectional study conducted in Tehran, Iran in 2015, which reported a prevalence rate of 6.3% in the north, 1.3% in the south, 0.77% in the east, 4.19% in the west, and 1.11% at the Terhan Center. The prevalence of premature birth from April 2013 to April 2014 was 8.2%, according to a study conducted in Saudi Arabia in 2013 [25, 26, 27]. These studies' variations may be the result of different study regions and socioeconomic conditions. This study revealed risk factors for preterm birth. The Malawian study shows that history of previous preterm birth was more likely reported in women who gave birth preterm (13.2% vs. 6.1%) when compared to women who delivered at term, supporting the findings of this our study also confirmed that mothers with a previous history of preterm birth are associated with current preterm birth at (CI:0.000-0.010, P = 0.000). Another study carried out in sub-Saharan Africa revealed that 1,160 (30.7%) of the 3,836 women who delivered preterm in the first pregnancy repeated the process in the second [41, 45].

According to a global survey, spontaneous premature birth and early membrane rupture are related [23]. Additionally, this study confirmed, with (CI=0.00-0.01, a p-value of 0.000), that moms who experienced an early rupture of the membranes were associated with premature birth. This result is consistent with a study from Debre Markos Town that found that moms who experienced a premature rupture of membranes were roughly six times more likely to give birth

early than mothers who did not (AOR=6.2, 95% CI =2.7-14) [31]. This might be because PROM increased fetal plasma interleukin-6 levels, which showed that this fetal response might cause preterm labor and highly linked with spontaneous birth within 48 to 72 hours.

With a (CI= 0.00-0.016, p-value of 0.014), vaginal bleeding during the third trimester is likewise linked to preterm. Vaginal bleeding was linked to a threefold increase in preterm birth, according to data from an earlier study conducted in Al-Zahra Hospital, Iran (OR:3, CI:1.84–4.89) [26]. Because significant vaginal bleeding in the third trimester is a medical emergency for pregnant women Premature delivery caused by iatrogenic causes may be the outcome of pregnancy termination that is necessary to save the lives of the mother and fetus.

Additionally, this study found a substantial correlation between preeclampsia and premature birth. At a (CI: 0.000-0.022, p-value of 0.007), mothers with preeclampsia were substantially related with premature birth. According to a study done in the health facilities of Gondar town, moms who had preeclampsia had a five-fold higher risk of delivering birth prematurely than those who did not (AOR = 5.36, 95% CI = 1.8 -15.96) [2].

This study found that preeclampsia, parity, premature rupture of the membranes, antepartum hemorrhage, and previous history of preterm birth were all significantly linked to premature birth, but maternal age, residence, marital status, prior history of abortion, HIV, and diabetes mellitus were not.

6.1 Strength and limitation of the study

Strength

This study is the first in the area, and it has generated new ideas for further studies.

Limitation

As we had utilized secondary data, cards lack some important variables that could yield better result.

There are also few variables such as socio demographic characteristic like maternal educational level, maternal weight, smoking status of parents, occupation and drug ingestion that may have influence for prematurity that cannot be included in this study due to lack of data.

Since we have used chi square to measure the association between prematurity and associated factors, we have not measured the direction of association.

CHAPTER SEVEN

7. Conclusion and Recommendations

Conclusion

Generally according to the findings of this study the proportion of premature birth is as high as 15.3% and the associated factors of prematurity are: parity, previous history of premature birth, premature rupture of membrane, APH and Preeclampsia.

Recommendations

The following recommendations are for warded based on the finding of the study.

For health institutions

Since the proportion of premature birth is high (15.3%), it is better to regularly screen out pregnant mothers on preeclampsia, Antepartum hemorrhage and premature rupture of membrane so that they will be alarmed as this can put in risk of preterm birth.

For health professional

To detect early obstetric complication, it is better to encourage and give awareness for pregnant woman to have a regular ANC follow up

For further researchers

It will be more valuable if studies will be conducted on this subject matter with alternative community-based design so as to find more factors associated with preterm birth.

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7.2 ANNEXES

WOLKITE UNIVERSITY

COLLEGE OF MEDICINE AND HEALTH SCIENCES

DEPARTMENT OF PUBLIC HEALTH

Data collection check list

The check list below is very important for our research, so you (the data collector) are requested to fill the entire questionnaire properly. In case you encountered anything unclear you are well come to contact the principal investigators.

Code number _____

PART one: maternal information

1. Mothers age_____

2. Residence: A. Urban B. Rural

3. Marital status: A. single B. married C. windowed D. Divorced.

4. Maternal occupation A. Merchant B. House wife

C. Farmers D. Other

5. Family income per month in birr _____.

6. Gravidity/ parity _____ /_____

7. Numbers of Still birth and abortion _____ /_____

8. Any maternal medical disorders (specify)_____

9. Did she had previous history of premature birth? A. Yes B. No

10. Birth interval? A. Less than two years. B. More than two years

11. Did she have Premature rupture of membrane A. Yes B. No

12. She had smoking cigarettes during the pregnancy? A. Yes B. No

13. Did she had drink alcohol during this pregnancy? A. Yes B. No

14. Did she have APH? A. Yes B. No

15. Did she have Preeclampsia? A. Yes B. No

Part two: New Born information

16. Sex of new born: A. male B. female

17. Weight of new born: _____

18. Gestational age: A. between 28 and 32weeks B. between 32 and 37

C. between 37and 42 D. greater than 42 weeks

Name of data collector……

Date: ……. sign…….