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School of Medicine

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Prevalence and Factors Associated with Perinatal Outcome of Singleton Term Breech Deliveries at three teaching Hospitals in Addis Ababa, Ethiopia: A Cross Sectional Study; 2023G.C

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DECLARATION

I, Dr. Nejad Mohammed, a fourth year Obstetrics and Gynecology Resident declare that this research thesis entitled “prevalence and factors affecting perinatal outcome of singleton term breech delivery in three teaching hospitals in Addis Ababa” is my original work in partial fulfillment of the requirement for Specialty in Obstetrics and Gynecology. This work has not been previously done in Addis Ababa.

Signature ……

Date: ……...

I have undersigned and certify that I have read and here by recommend for acceptance of this research thesis entitled “Prevalence and factors affecting perinatal outcome of singleton breech deliveries in three teaching Hospitals of Addis Ababa university, Ethiopia” to Addis Ababa University.

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ACRONYMS AND ABBREVIATIONS

ANC: Antenatal care

BP: Breech presentation

C/D: Cesarean delivery

CBD: Cesarean breech delivery

CI: Confidence Interval

ETB: Ethiopian Birr

GA: Gestational age

GC: Gregorian calendar

LNMP: Last normal menstrual period

MCH: Maternal and Child Health

NICU: Neonatal Intensive Care Unit

NRFHR: Non-reassuring fetal heart rate

Ob/Gyn: Obstetrics/Gynecology

OR: Odds ratio

PMR: perinatal mortality rate

PNA: Perinatal Asphyxia

RCOG: Royal College of Obstetricians and Gynecologists

TASH: Tikur Anbessa Specialized Hospital

WHO: World Health Organization

ABSTRACT

Background: Breech presentation is a type of mal-presentation where the foetal buttock and/or feet laid over the lower pole of the uterus, hence making it to be firstly delivered. It is the most common malpresentation at terms occurring in 3-4 % of deliveries. It is associated with considerable increase in perinatal morbidity and mortality.

Objective: To assess the prevalence and factors associated with perinatal outcomes of singleton term breech delivery in selected Hospitals in Addis Ababa, Ethiopia from October 01/2022 to March 30 , 2023GC.

Methods: A hospital based prospective cross-sectional study was conducted. The study participants were recruited using consecutive sampling method. Data related to socio-demographic and clinical variables were collected using structured questionnaire and checklist. Data processing and analysis was done using SPSS statistical software version 26. Bivariate and multiple logistic regressions analysis performed to assess the association between dependent and independent variables. The degree of association between dependent and independent variables were assessed using odds ratio with 95% confidence interval and P-value <0.05.

Result: The finding of the study revealed that the prevalence of singleton breech delivery was 3.65% and 63% of the study participants with breech delivery had adverse composite perinatal outcome. Four (2.2%) of the participants had stillbirths and five (5.1%) had ENNDs. Twenty one (11.8%) had low 5th minute APGAR of <7 and 19.1% were admitted to NICU. Planned cesarean delivery was the only factor significantly associated with decreased adverse perinatal outcome with an adjusted OR of 0.20 (95% CI, 0.04-0.80).

Conclusion and Recommendation: the prevalence of singleton breech delivery at term was comparable to the commonly cited rate in the literature and adverse perinatal outcome in breech deliveries in our institution was high especially in those participants who had a trial of labor. We recommend to updates national guidelines for the management of vaginal breech deliveries to reduce this high adverse perinatal outcome.

Keywords: Factors affecting perinatal outcome; Term breech delivery; Prevalence; Singleton; Ethiopia.

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1. INTRODUCTION

1.1.Background

Breech delivery is a delivery of a fetus in breech presentation where the fetal buttock or feet lying over the internal pelvic brim, hence making it to be firstly delivered. It is the most common of malpresentation at terms occurring in 3-4 % of deliveries(1). Prematurity is commonly associated with breech, 33% at 24 weeks(2).

Incidence is about 20%at 28th week of pregnancy and drops down to 5% at 34th week due to spontaneous correction(3). There are three types of breech presentation. In the frank breech position (48 to 73%), both hips are flexed and both knees are extended. In the complete breech position (4.6 to 11.5%), both hips and both knees are flexed. In the incomplete breech position (12.4 to 40.5), one or both hips are not completely flexed(4).

Studies have shown that the prevalence of term breech presentation varies globally. In Malaysia the incidence was shown to be 3.8%, in India 1% and in Cameroon it was found to be 2.98%. Other studies from Nigeria and Ethiopia revealed the incidence of singleton term breech deliveries to be 2.6% and 4% respectively(5).

Breech presentation (BP) is a significant obstetric event associated with increases in perinatal morbidity and mortality.The breech fetus is at increased risk of harm during delivery because cord compression between the cervix and body must occur as the breech crowns and because the after coming shoulders, head, and arms are at greater risk of harm from dystocia(4).

It is generally associated with adverse foetal outcomes during pregnancy especially in delivery, leading to a considerable increase in perinatal morbidity and mortality. In fact, it has also become an outstanding entity in the past few decades and one of controversial issues in obstetric field especially the Term Breech Trial(6).

Breech deliveries have always been topical issues in obstetrics because of the very high perinatal mortality and morbidity. These are due to combination of trauma, birth asphyxia, prematurity, and malformation. In addition 19.4% of neonates undergoing term breech deliveries have long term morbidity up to the school age irrespective of mode of delivery(4).

The predisposing factors for breech deliveries include maternal factors (foetopelvic disproportion, soft tissue dystocia, uterine anomalies; pelvic tumors (myoma, ovarian neoplasm, etc.), and grand multipara); placenta factors (placenta previa, cornual placenta); liquid factors (polyhydramnios, oligohydramnios); and cord factors (very long cord and very short cord). Fetal factors include multiple pregnancies and congenital anomalies (fetal anomalies have been observed in 18% of preterm breech and 4–8 % of term breech deliveries).Other purported risk factors include primiparity, female gender, maternal anticonvulsant therapy, older maternal age, fetal growth restriction, and previous breech presentation(4).

The optimal route of delivery for breech infants has been the subject of much controversy. In United States over 90% of primigravida are delivered by caesarean section. Initially it was thought that caesarean in breech fetus improves maternal and fetal outcome but now it's evident that caesarean does not prevent all infant morbidity and mortality because it usually arises by the same problems that caused the breech presentation in the first place. Rather caesarean places mother at risk of anaesthesia, short and long term complications of surgery and makes her a high risk pregnancy in future, especially in developing countries(7).

In most developing countries, many patients with breech present in labor without antenatal preparation and so are only diagnosed in labor. In such patients, parity and/or presence of other obstetric complications constitute risk factors for abdominal delivery. External cephalic version has been shown to decrease the incidence of CS in breech deliveries at term without increasing the risk to the baby(8).

The morbidity and mortality of breech presentation (BP) are influenced by the mode of delivery (vaginal or cesarean). There are advantages and disadvantages for each delivery mode in BP. The advantages of vaginal labor are minimized blood loss, minimized surgical stress, quicker recovery, and hemodynamic stability while the advantages of cesarean section are predictability, planned delivery, timed delivery, and immediate availability of all personnel. The disadvantages of vaginal labor are unpredictable timing and a potentially prolonged, painful, and stressful labor. The disadvantages of cesarean section are increased surgical stress, higher blood loss, longer recovery, and higher potential for postoperative complications(9).

1.2 Statement of the problem

Breech presentation is associated with increased rates of maternal and perinatal morbidity regardless of mode of delivery. Breech presentation is generally associated with adverse fetal outcomes during pregnancy especially in delivery, leading to a considerable increase in perinatal morbidity and mortality(6).

Maternal complication with breech presentation are increased operative vaginal delivery and cervical, vaginal & perineal trauma, increased caesarean ratio and operative morbidity, increased anesthetic complications and increased sepsis risk(10).Complications observed were cervical tear (0.9%), perineal tear (9.7%) and primary postpartum hemorrhage (1.6%)(11).

Fetal complications in breech delivery includes, preterm & prematurity, cord prolapse risk during vaginal breech delivery, birth asphyxia and subsequent cerebral palsy due to cord compression or cord prolapse, aspiration of amniotic fluid & vaginal contents, prolonged & hard labor, fetal injury (fracture of femur and humerus mainly, cervical & brachial plexus injury, visceral injuries etc.),intracranial hemorrhage due to excessive compression and decompression of head(10).

A 10-fold higher risk of intrapartum fetal death is found to be associated with vaginal breech delivery in comparison to caesarean delivery(12). Study in Chitwan Medical College, Nepal shows the Perinatal Mortality Rate (PMR) was 13.37 per 1000 breech births, which was lower than that the studies in Ethiopia, Nigeria and India (192-250 per 1000 breech births). This might be due to lower rate of vaginal breech deliveries in this study (14.6%) in comparison to those studies (42.6%-73.2%). In this study, the perinatal mortality was present only among the neonates delivered by vaginal breech delivery 5.7%). Similarly, Apgar scores and weight at birth of neonates who were delivered by LSCS were comparatively better than those delivered vaginally(12).

Cesarean section rates are increasing worldwide. The most common reasons for primary cesarean sections are labor arrest, non-reassuring fetal heart rate tracing, and breech presentation (malpresentation). Breech presentation (malpresentation) in the United States is the most common reason for a planned primary cesarean section. This is most likely due to the association of vaginal breech delivery with an increased risk of short-term neonatal morbidity(13).

In developed countries, elective caesarean section is employed in nearly all the cases of singleton breech presentation at term, because of the safety of the procedure. However, in developing countries, where the facility, safety and acceptance of caesarean delivery is poor, the trial of labor should be the preference(14).

A retrospective study was carried out in the Mizan Aman General Hospital, South West, Ethiopia from January 01, 2012 to December 31, 2014 GC. indicated that risk of perinatal mortality in breech delivery is higher in vaginal route than cesarean section, 10.8% and 1.7% respectively. This might be related to vaginal deliveries have high risk of perinatal morbidity and mortality during birth process. Factor such as fetal weight ≥ 3500 gm and vaginal route of breech delivery are significantly associated with increased perinatal mortality. In this study Entrapment of head, birth asphyxia and cord prolapse were the most common causes of perinatal mortality(15).

The term breech foetus faces peculiar challenges in resource restricted countries with its lack of consensus on management and limited investments in health care systems and training of health care providers(16).

Following the publication of the Term Breech Trial there was a change in practice to that of recommending planned caesarean section for term breech presentation. Subsequent critiques and reviews have identified concerns with the study which undermine its reliability. Further retrospective/prospective studies, a systematic review and a meta-analysis have demonstrated equivocal results and suggest that perinatal mortality during vaginal breech births can be reduced when strict criteria are applied and an experienced clinician is involved. Many professional guidelines now advise that offering women the option of a vaginal breech birth is reasonable(17).

Although different studies have been conducted in different parts of the country to our knowledge, there is no study in Addis Ababa recently. However, there is a visible gap in evidence of perinatal outcome and mode of delivery, hence this study is aimed to delineate the magnitude and perinatal outcome of singleton term breech delivery in selected hospitals in Addis Ababa. The study will provide important evidence for the existing truth and gap about singleton term breech delivery.

1.3. Significant of study

This result will be used for selected hospitals in Addis Ababa to develop protocol at hospital level on mode of delivery of all term breech delivery and prevention of complications to improve perinatal outcome.

It also has much benefit for the physicians and other health workers who are working in maternal and child health (MCH) unit, labor and delivery by identifying mothers having breech presentation to prevent complication and improve perinatal outcome.

It will help regional health bureau program planner and supporting stakeholders as input to improve perinatal mortality and morbidity based on this study.

Findings from this study will provide crucial information on local scenarios to obstetricians, which can aid them in making appropriate decisions to manage breech presentation at term.

In addition, the findings of this study can also serve as a basic framework and baseline information for other studies with a similar interest in the future.

2. LITERATURE REVIEW

2.1. Prevalence of singleton term breech delivery

Breech is the commonest malpresentation. The incidence of breech presentation decreases from about 20% at 28 weeks of gestation to 3–4% at term, as most babies turn spontaneously to the cephalic presentation. This appears to be an active process whereby a normally formed and active baby adopts the position of 'best fit' in a normal intrauterine space. Persistent breech presentation may be associated with abnormalities of the baby, the amniotic fluid volume, the placental localisation or the uterus. It may be due to an otherwise insignificant factor such as cornual placental position or it may apparently be due to chance(18).

According to descriptive cross-sectional study conducted in a Tertiary Care Teaching Hospital of Central Nepal on breech presentation and maternal and perinatal outcome from 1st April, 2018 to 31st March 2020 over a period of 2 years, the incidence of breech presentation at term was 5.03%(19).

A 5-year retrospective review of singleton term breech deliveries seen at a tertiary hospital in northern Nigeria from January 1, 2003 to December 31, 2007 revealed that incidence of singleton breech delivery during the study period was 1.69%(8).

In contrast a retrospective cohort study at tertiary hospital in Yaoundé, Cameroon between January 01,2012 and December 31,2016 revealed an incidence term breech of 26.6/1000 deliveries(20).

In Ethiopian context, a retrospective cross-sectional study was conducted from January 1, 2016, to January 30, 2016, on prevalence and perinatal outcomes of singleton term breech delivery in Woliso hospital, Oromia region, Southern Ethiopia. This study showed that the prevalence of singleton breech delivery was 3.8%(4).

A prospective hospital-based cross-sectional study done at Jimma University Medical Center (JUMC), Southwest Ethiopia from July 1st to December 31st, 2014 revealed the incidence of singleton term breech delivery was 5.3%(5).

2.2. Factors affecting outcome of Singleton term breech delivery

A retrospective review of case records of all women who had vaginal breech delivery at a Tertiary Care Center in Nepal from April 13, 2016, to April 12, 2018, was conducted, over a

period of two years. Out of 21,768 cases of deliveries during the study period, the incidence of term breech deliveries was 528 (2.4%) among which the mode of only 84 (17.8%) deliveries was vaginal. Most of the deliveries were unplanned and were conducted because emergency cesarean section could not be performed. Three (3.6%) women had postpartum hemorrhage, and four (4.8%) had entrapment of aftercoming head, two of them requiring Duhrssen incisions. Adverse perinatal outcomes were seen in 23.8% of such deliveries with <7 APGAR score at 5 minutes in 20.2%, neonatal admission in 17.7%, and perinatal mortality in 8.3%.The perinatal mortality was significantly associated with birth weight less than 2500 grams as compared to birth weight ≥2500 grams (21.1% versus 4.6%; P = 0.043) (7).

A retrospective Finnish population-based case-control study done on Risk factors associated with adverse perinatal outcome in planned vaginal breech labors at term between the years 2005 and 2014. An adverse perinatal outcome was recorded for 73 (1.5%) infants. According to the study results fetal growth restriction (adjusted odds ratio, 2.94; 95% CI, 1.30–6.67), oligohydramnios (adjusted odds ratio, 2.94; 95% CI, 1.15–7.18), a history of cesarean section (adjusted odds ratio, 2.94; 95% CI, 1.28–6.77, gestational diabetes (adjusted odds ratio, 2.89; 95% CI, 1.54–5.40), epidural anaesthesia (adjusted odds ratio, 2.20; 95% CI, 1.29–3.75) and nulliparity (adjusted odds ratio, 1.84; 95% CI, 1.10–3.08) were associated with adverse perinatal outcome(21).

According to a retrospective cohort study on Maternal and neonatal outcomes of vaginal breech delivery for singleton term pregnancies in a carefully selected Cameroonian population, Compared with babies born of CBD, counterparts (VBD group) were more likely to have fetal distress (OR 2.05; 95% CI 1.14 to 3.67; P=0.0153), brachial plexus injury (OR 3.91; 95% CI 2.11 to 7.26; P=0.0262) and about fivefold as likely to suffer from birth asphyxia (OR 4.74; 95% CI 3.09 to 7.26; P<0.001) (20).

A population linkage Study on Outcomes of breech birth by mode of delivery from 2009 to 2012 in New South Wales; of 10 133 women with term breech singleton pregnancies, 5197 (51.3%) were classified as eligible for vaginal breech delivery. Of these, 6.8% intended vaginal breech birth, 76.4% planned caesarean section and intention could not be determined for 16.8%. Women intending vaginal delivery had higher rates of neonatal morbidity (6.0% vs 2.1%), neonatal birth trauma (7.4% vs 0.9%), Apgar <4 at one minute (10.5% vs 1.1%), Apgar <7at five minutes (4.3% vs 0.5%) and neonatal intensive care unit/special care nursery admissions (16.2% vs 6.6%) than those planning caesarean section(22).

According to Hospital based three-year retrospective cross-sectional study conducted on Prevalence and Perinatal Outcome of Singleton Term Breech Delivery in Mizan Aman General Hospital, South West, Ethiopia from January 01, 2012 to December 31, 2014 GC, the perinatal outcome of breech deliveries was 104(88%) born alive and 14(12%) were dead indicating that the perinatal mortality rate to be 120 per 1000 term breech presentations. The possible causes of death for dead delivered fetus were entrapment of head 5(35.7%), prolapsed cord 4(28.6%), birth asphyxia 3(21.4%) and intrauterine death with unknown cause 2(14.3%). Birth weight greater than 3500 gm have 26% chance of fetal loss when compared with fetal weight 2500-3499 gm. Vaginal breech delivery have significant statistical association with perinatal loss than abdominal route(15).

According to prospective hospital-based cross-sectional study done at Jimma University Medical Center (JUMC), Southwest Ethiopia from July 1st to December 31st, 2014 , There were 14 (13.9%) intrapartum fetal deaths, of whom 5 (4.6%) were recorded after admission to the labor ward while on follow up, and 94 (87.1%) were born alive. First minute Apgar score was between 5 and 7 for the majority (72.3%) of the neonates, and fifth minute Apgar score was > 7 for most (77.7%) of the neonates. More than six in ten (62%) of the newborns were male while 67 (62%) weighed between 2500 and 3500 g with mean weight of 2988±700 g.

Of the neonates born alive, twenty-seven (25%) required admission to the neonatal intensive care unit (NICU); two-fifth (40.7%) of them had diagnoses of perinatal asphyxia. Three neonates died in the first 7 days of their lives while in the NICU, making a perinatal mortality rate (PMR) of 157.4 per 1000 births among the breech deliveries.

Moreover, as nearly half the women (49.1%) were undiagnosed until labor, statistical analysis was done whether perinatal outcome (perinatal death, birth trauma, perinatal asphyxia, still birth, intrapartum fetal loss, 5^{th} min APGAR score, and admission to NICU) would be affected by diagnosis of breech presentation during labor or ANC follow up and there were no statistical differences(5).

2.3. Conceptual Framework

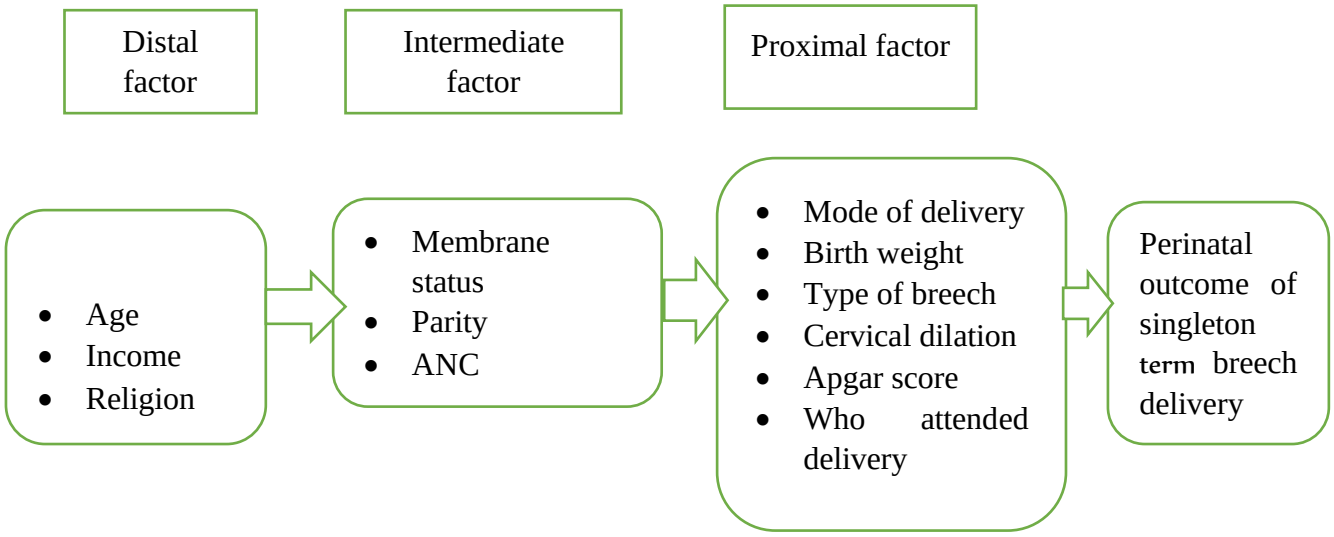

Figure 1 Conceptual framework: Factors affecting perinatal outcome of singleton breech deliveries (Developed after reviewing different literature).

3. OBJECTIVES OF THE STUDY

3.1.General Objective

- To determine the prevalence and factors affecting perinatal outcome of singleton term breech deliveries in three teaching hospitals of Addis Ababa university, Ethiopia

3.2.Specific Objective

- To determine the prevalence of singleton term breech deliveries in three teaching hospitals of Addis Ababa university, Ethiopia
- To determine the prevalence of adverse perinatal outcome in singleton term breech deliveries in three teaching hospitals of Addis Ababa university, Ethiopia
- To determine factors affecting perinatal outcome of singleton term breech deliveries in three teaching hospitals of Addis Ababa university, Ethiopia

4. METHODS AND MATERIALS

4.1. Study Design

A hospital based prospective cross-sectional study was conducted to assess prevalence and factors affecting the perinatal outcome of singleton term breech delivery in three teaching hospitals of Addis Ababa University (TASH, GMH, ZMH)

4.2. Study Area and Period

The study area was labor and maternity wards of selected hospitals in Addis Ababa. Addis Ababa is the capital city of Ethiopia, a country in the horn of Africa. The capital city holds 527 kilometers of area and is at an elevation of 2,355 meters above sea level. Addis Ababa's 2020 population is estimated at 4,793,699 according to United Nations World Urbanization Prospects [21]. Regarding medical service, currently the city has more than 41 hospitals, 28 health centers, 35 health posts and more than 500 clinics. There are more than 12 publics and more than 25 private hospitals in the city. Of the total 12 public hospitals, 3 of them are selected by convenience and included in the study. Tikur Anbessa Specialized Hospital is the largest referral and teaching hospital in the country and is managed by Addis Ababa University, while the rest two are under Addis Ababa Health Bureau. All of the selected hospitals give antepartum, intrapartum and postpartum care including cesarean delivery service for 24 hrs. of a day. The study conducted from January 2023 to March 2023G.C.

4.3. Source Population

All mothers who gave birth at three teaching hospitals in Addis Ababa, Ethiopia during study period.

4.4. Study Population

All mothers with singleton term breech who gave birth in three teaching hospitals during the study period.

4.5. Inclusion and Exclusion Criteria

4.5.1. Inclusion criteria

Mothers with singleton term breech presentation who had either vaginal, caesarean, or instrumental delivery in three teaching Hospitals in Addis Ababa (term will be considered using LNMP, early ultrasound, fetal biometrics (femoral length, biparietal diameter, fetal weight)) from January 2023 to March 2023G.C.

4.5.2. Exclusion criteria

- Mothers who decline to participate
- Mothers who deliver neonate with congenital anomaly

4.6.Sample Size

To determine the sample size, single proportion formula will be used.

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

Where: n = desired sample size

z = z value at 95% confidence interval (CI)

p = prevalence of adverse perinatal outcome

d = margin of error

The Z value at 95% CI is 1.96 (from significance level α = 5%). Since, the prevalence of perinatal mortality (bad perinatal outcome) at Mizan Aman General Hospital is 12%, so I will take p value of 12%. The tolerated margin of error is 5%. Therefore,

$p = 0.12 \quad 1- p = 0.88, \quad d= 0.05$

$$n = \frac{(1.96)^2\,(0.12)\,(1-0.12)}{(0.05)^2} = 162$$

Adding 10% non-response rate the total sample size calculated to be is 178 participants.

4.7. Sampling technique

The cases were identified as breech presentation on admission using physical examination and ultrasound by Obstetrics/Gynaecology (Ob/Gyn) residents. Gestational age (GA) calculated based on last normal menstrual period (LNMP), early ultrasound scanning, fetal biometries (femoral length, biparietal diameter) and Ballard score.

Consecutive sampling method used and every mother who gave birth for singleton term breech deliveries in selected hospitals fulfilling inclusion criteria were sampled until sample size is fulfilled.

4.8.Variables

4.8.1. Dependent Variable

Prevalence of singleton term breech deliveries.

Prevalence of adverse perinatal outcome

Perinatal outcome.

4.8.2. Independent Variables

Socio demographic Factors

- ✓ age
- ✓ occupation
- ✓ religion
- ✓ marital status
- ✓ education level
- ✓ estimated average monthly income.

Obstetrical related factors

Parity

mode of delivery

type of breech

Gestational age

previous breech delivery

Health care factors

- ✓ History of antenatal care visit
- ✓ frequency of antenatal care visit
- ✓ gestational age at first ANC visit

Neonate related

Birth weight

APGAR score

Gender of neonate

4.9. Data Collection method

The questionnaire is developed after reviewing different pieces of literature conducted in different parts of the world. After taking written informed consent, data was collected by midwives, interns and residents in each hospital through face-to-face interviews.

The interviewers explained the purpose of the research to the study participants/mothers. The study participants encouraged to relax and tell relevant information correctly that the confidentiality of their responses assured and no information shared with third parties, except the investigator. After that, a woman who was willing to participate interviewed in a quiet and comfortable room after they finished their delivery service. All deliveries conducted by physician and midwifes assigned to labor ward.

4.10. Data Quality Control Measures

Training was provided for data collectors and supervisor for data accuracy and Completeness and an appropriate modification was made after discussing with the supervisor and data collectors before starting the actual data collection process. The questionnaire was pre-tested on 5% of the study population in one of the hospital 5 days before the actual data collection to ensure clarity, wordings, logical sequence and skip patterns of the questions. Every day the filled questionnaires was checked before a respondent go from the setting by data collectors and supervisor. The principal investigator controls the data collection procedure by supporting the supervisor and data collectors and a close supervision, honest communication and on spot decision in the data collection phase was implemented.

4.11. Data Processing and Analysis

Collected data checked for completeness, consistency, clarity, and missed values and entered into EPI-info version 4.6.0.0. Then cleaned and coded data was exported to SPSS (Statistical Package for Social Science) version 26 data management and Descriptive statistical analysis was carried out to compute proportion, and mean with standard deviations. Associations between dependent and independent variables were assessed using logistic regression analysis. Variables with p-value less than 0.25 in the bivariate analysis entered into multivariable analysis model. Multivariable logistic regression analysis model built to assess the influence of possible potential

confounding variables and the strength of association. The degree of association between dependent and independent variables was assessed using odds ratio with 95% confidence interval (CI) and P-value <0.05 will be considered as statistically significant.

4.12. Operational Definitions

NICU Admission: admission of a new born to NICU for more than 24 hours after delivery.

Adverse perinatal outcomes: the presence of any one of low APGAR score at 5 minutes (<7), neonatal admission and perinatal death (stillbirth and/or ENND in the 1st 7 days).

4.13. Ethical Considerations

The proposal was submitted to the advisors for feedback and approval before conducting the study then ethical approval was requested from TASH research and community service ethical review committee. Formal letter of permission obtained from Addis Ababa University and Addis Ababa city Health Bureau and Official letter of cooperation from the above organization given to selected hospitals. The importance of the study explained to the participants of the study. The written informed consent was obtained after the objectives, the benefit and risks of the study explained to participants and when they are comfortable. Participation is voluntary, confidentiality assured and private information was not be translated for the third person. The right of the respondent to withdraw from the interview or not to participate was respected. The information collected from the study subjects kept confidential and used only for the study and management of the patient.

5. RESULTS

5.1. Socio-demographic Characteristics of the Sudy Participants

There were a total of 4876 deliveries in the three teaching hospitals during the study period. Out of these there were 178 cases of singleton breech deliveries making the prevalence of singleton term breech delivery 3.65%. The mean age with ±2SD for the study participants was 28.3±4.6 years. Most of the study participants (62.9%, n=112) were in the age group of 20-34 years. Almost all (96.6%, n=172) were married and 49.4% (n=88) were Muslims. One-third (36.5%) of the participants completed primary education, 41.6% (n=74) were house wives, and 52.8% (n= 94) had a house hold monthly income of 5000-10000ETB. On the other hand, 37.1% of the adverse perinatal outcomes were in participants aged ≥35 years.

Table 1 Socio-demographic Characteristics of the Study Participants

Variables	Category	Frequency (%)	Adverse Composite Perinatal Outcome		P value	OR (95% CI)	AOR (95% CI)
			No (%)	Yes (%)			
Age of participants	20-34	112 (62.9)	38 (33.9)	74 (66.1)	0.26	1	1
	>=35	66 (37.1)	28 (42.4)	38 (57.6)		0.7 (0.4-1.3)	0.3 (0.1-1.1)
Marital status	Married	172 (96.6)	64 (37.2)	108 (62.8)	1.00	1	1
	Not married	6 (3.4)	2 (33.3)	4 (66.7)		1.2 (0.2-6.7)	-
Religion	Muslim	88 (49.4)	33 (37.5)	55 (62.5)	0.91	1	1
	Christian	90 (50.6)	33 (36.7)	57 (63.3)		1.0 (0.6-1.9)	-
Level of education	Illiterate	7 (3.9)	3 (42.9)	4 (57.1)	0.44	0.5 (0.1-2.6)	1.2 (0.1-12.7)
	Primary	65 (36.5)	23 (35.4)	42 (64.6)	0.41	0.7 (0.3-1.6)	0.5 (0.1-3.1)
	Secondary	53 (29.8)	25 (47.2)	28 (52.8)	0.04	0.4 (0.2-0.99)	0.6 (0.1-2.9)
	Tertiary	53 (29.8)	15 (28.3)	38 (71.7)	0.24	1	1
Occupation	House wife	74 (41.6)	40 (54.1)	34 (45.9)	0.00	1	1
	Employed	80 (44.9)	17 (21.3)	63 (78.8)	0.00	4.4 (2.2-8.8)	0.9 (0.2-4.8)
	Merchant	17 (9.6)	7 (41.2)	10 (58.8)	0.34	1.7 (0.6-4.9)	4.9 (0.9-25.4)
	Daily labor	7 (3.9)	2 (28.6)	5 (71.4)	0.21	2.9 (0.5-16.1)	1.1 (0.1-16.9)
Monthly income	<5000	58 (32.6)	29 (50.0)	29 (50.0)	0.19	0.5 (0.2-1.4)	1.3 (0.2-8.2)
	5000-10000	94 (52.8)	28 (29.8)	66 (70.2)	0.64	1.3 (0.5-3.1)	1.6 (0.3-9.5)
	>10000	26 (14.6)	9 (34.6)	17 (65.4)	0.04	1	1

4.2 Obstetric and Medical Characteristics of the Study Participants

Most of the study participants (85.4%) were parous and 78.1% had prior vaginal delivery. Only 6.7% of the study participants had prior CD. The majority (83.1%) had their ANC in hospitals.

Among the study participants, 18.5% had chronic medical illnesses; 4 (2.2%) were positive for HIV/AIDS, 3 (1.7%) were positive for HBsAg, 10 (5.6%) had Diabetes mellitus and 10.7% had anemia with hemoglobin <11gm/dl before delivery. Twenty-eight participants (15.7%) had antepartal obstetric complication which includes preeclampsia, prolonged PROM and APH. About eleven percent (n=20) of the participants had hypertension/preeclampsia. The most common type of breech among the study participants was complete breech (80%). Among those who were parous, 57.7% (n=15) had adverse perinatal outcome. Among those participants who had no history of previous vaginal delivery, 51.3% had adverse perinatal outcome.

Table 2 Obstetric and Medical Characteristics of Study Participants

Variables	Category	Frequency (%)	Adverse Composite Perinatal Outcome		P value	OR (95% CI)	AOR (95% CI)
			No (%)	Yes (%)			
Parous	No	152 (85.4)	55 (36.2)	97 (63.8)	0.55	1	1
	Yes	26 (14.6)	11 (42.3)	15 (57.7)		1.3 (0.6-3.0)	-
Previous SVD	No	39 (21.9	19 (48.7)	20 (51.3)	0.09	1	1
	Yes	139 (78.1)	47 (33.8)	92 (66.2)		2.2 (0.5-9.8)	1.7 (0.4-7.9)
Prior CS delivery	No	166 (93.3)	58 (34.9)	108 (65.1)	0.06	1	1
	Yes	12 (6.7)	8 (66.7)	4 (33.3)		0.3 (0.1-0.9)	0.6 (0.1-5.5)
Place of ANC	HC	30 (16.9)	14 (46.7)	16 (53.3)	0.23	1	1
	HOSP	148 (83.1)	52 (35.1)	96 (64.9)		1.6 (0.7-3.6)	1.3 (0.3-4.9)
Number of ANC visits	<8	80 (44.9)	39 (48.8)	41 (51.2)	0.004	1	1
	≥8	98 (55.1)	27 (27.6)	71 (72.4)		2.5 (1.3-4.7)	2.3 (0.6-9.5)
Anemia [1]	No ≥11	159 (89.3)	60 (37.7)	99 (62.3)	0.59	1	1
	Yes <11	19 (10.7)	6 (31.6)	13 (68.4)		1.3 (0.5-3.6)	-
HIV Infection	Yes	4 (2.2)	2 (50.0)	2 (50.0)	0.63	1	1
	No	174 (97.8)	64 (36.8)	110 (63.2)		1.7 (0.2-12.5)	-
HBV Infection [2]	Yes	3 (1.7)	0 (0)	3 (100)	0.29	1	1
	No	175 (98.3)	66 (37.7)	109 (62.3)		-	-
Hypertension	No	158 (88.7)	57 (36.1)	101 (63.9)	0.44	1	1
	Yes	20 (11.2)	9 (45.0)	11 (55.0)		0.7 (0.3-1.8)	-
DM	No	168 (94.4)	65 (38.7)	103 (61.3)	0.09	1	1
	Yes	10 (5.6)	1 (10.0)	9 (90.0)		5.7 (0.7-45.9)	-
Chronic medical illness[3]	No	145 (81.5)	58 (40.0)	87 (60.0)	0.09	1	1
	Yes	33 (18.5)	8 (24.2)	25 (75.8)		2.1 (0.9-4.9)	7.9 (1.5-41.6)
APH	No	174 (97.8)	62 (35.6)	112 (64.4)	0.02	1	1
	Yes	4 (2.2)	4 (100)	0 (0)		-	-
Prolonged ROM	No	173 (97.2)	66 (38.2)	107 (61.8)	0.16	1	1
	Yes	5 (2.8)	0 (0)	5 (100)		-	-
Obstetric complications[3]	No	150 (84.3)	53 (35.3)	97 (64.7)	0.27	1	1
	Yes	28 (15.7)	13 (46.4)	15 (53.6)		0.6 (0.3-1.4)	-
PROM	No	156 (87.6)	57 (36.5)	99 (63.5)	0.69	1	1

	Yes	22 (12.4)	9 (40.9)	13 (59.1)		0.8 (0.3-2.1)	-
Types of breech presentation	Complete	143 (80.3)	52 (37.1)	90 (62.9)	0.80	1	1
	Frank	16 (9.0)	5 (31.3)	11 (68.8)	0.67	1.2 (0.5-3.3)	-
	Footling	19 (10.7)	8 (42.1)	11 (57.9)	0.51	1.6 (0.4-6.5)	-

1 (Hgb<11); 2 (HBsAg pos); 3 (HIV, HBV, ANEMIA, DM)

5.2. Labor and Delivery Characteristics of the Study Participants

In this study 55.1% (n=98) had labor established spontaneously while 44.9% (n=80) of them had delivered with planned CD. The rate of cesarean section among the study participants was 38.8%. Among those who had CD, 45.9% had emergency cesarean section and only 4 (3.7%) had complication during the surgery. Most of the study participants (61%, n=109) gave birth at a gestational age of 39-40^{+6} weeks. Ninety-five percent (n=170) had an estimated blood loss of <500ml and 71.1% (n=81) had a hemoglobin counts of ≥11mg/dl. Regarding perinatal outcome, 82.7% (n=81) of the adverse perinatal outcome occurred in women who tried labor.

Table 3 Labor and delivery characteristics of the study participants.

Variables	Categories	Frequency	Percentage
Trial of labor	Yes	98	55.1
	No	80	44.9
GA at delivery	37-38^{+6}	61	34.3
	39-40^{+6}	109	61.2
	41-41^{+6}	6	3.4
	≥42	2	1.1
Mode of delivery	vaginal	69	38.8
	caesarean	109	61.2
Types of breech presentation	Frank	16	9.0
	Complete	143	80.3
	Footling breech	19	10.7
Urgency of CD (n=109)	Elective	59	54.1
	Emergency	50	45.9
Estimated Blood loss	<500ml	170	95.5
	500-1000	1	0.6
	>1000	7	3.9
intraoperative complication (n=109)	yes	4	3.7
	No	105	96.3
PPH	Yes	7	3.9
	No	171	96.1
Prolonged maternal hospital stay (>24hrs)	No	65	36.5
	Yes	113	63.5
Maternal adverse outcome (CD, PPH, prolonged Hospitalization)	No	113	63.5
	Yes	65	36.5

Table 4 Labor and delivery characteristics of the study participants.

Variables	Category	Adverse Composite Perinatal Outcome			P value	OR (95% CI)	AOR (95% CI)
		No (%)	Yes (%)	Total (%)			
Trial of Labor	Yes	17 (17.3)	81 (82.7)	98 (55.1)	0.00	1	1
	No	49 (61.3)	31 (38.8)	80 (44.9)		0.1 (0.07-0.3)	0.2 (0.04-0.8)
GA at delivery	37-38^{+6}	27 (44.3)	34 (55.7)	61 (34.3)	0.09	1	1
	39-40^{+6}	36 (33.0)	73(67.0)	109 (61.2)	0.15	1.6 (0.8-3.1)	-
	41-41^{+6}	1 (16.7)	5 (83.3)	6 (3.4)	0.22	4.0 (0.4-36.1)	-
	≥42	2 (100)	0 (0)	2 (1.1)	0.999	-	-
Mode of delivery	Vaginal	8 (16.6)	61 (88.4)	69 (38.8)	0.00	1	1
	Caesarean	58 (53.2)	51 (46.8)	109 (61.2)		0.1 (0.05-0.3)	-
Urgency of CD (n=109)	Elective	37 (62.7)	22 (37.3)	59 (54.1)	0.03	1	1
	Emergency	21 (42.0)	29 (58.0)	50 (45.9)		2.3 (1.1-5.0)	2.5 (0.7-9.5)
Newborn gender	Male	28 (38.4)	45 (61.6)	73 (41.0)	0.77	1	1
	Female	38 (36.2)	67 (63.8)	105 (59.0)		1.1 (0.6-2.0)	-
Birthweight in gram	2500-3999	59 (39.6)	90 (60.4)	149 (83.7)	0.23	1	1
	<2500	4 (20.0)	16 (80.0)	21 (11.2)	0.09	2.6 (0.8-8.2)	2.2 (0.2-20.3)
	≥4000	3 (33.3)	16 (66.7)	9 (5.1)	0.71	1.3 (0.3-5.4)	0.4 (0.1-3.1)

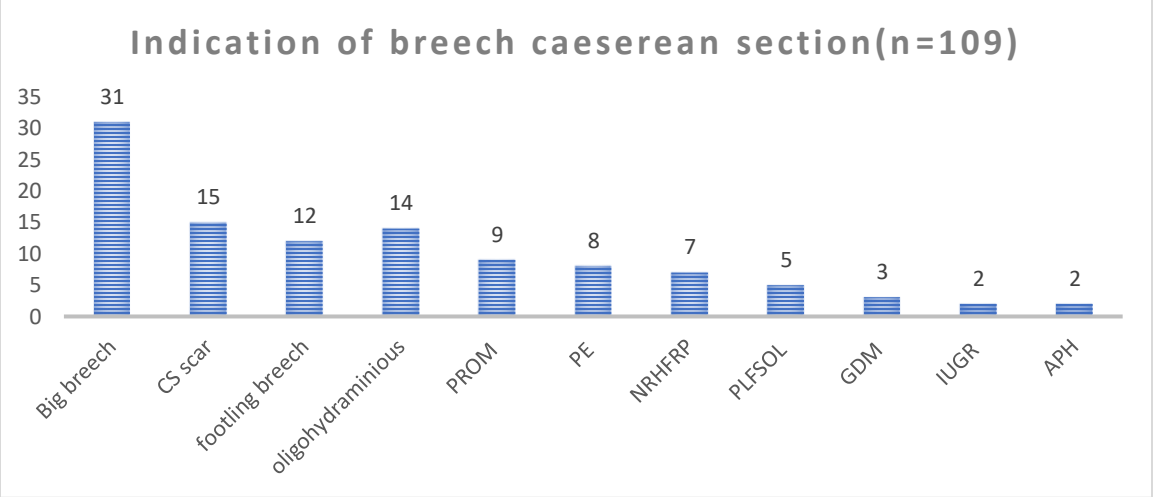

Figure 2. The indications of caesarean section delivery.

5.3. Maternal and Perinatal outcome of Study Participants

Fifty-nine percent (n=105) of the participants were male and 88.8% (n=158) of the neonate had normal birth weight. Almost all (97.2%, n=173) of the participants were live births and 11.8% (n=21) had a low 5th minute APGAR of less than seven. In this study four (2.2%) neonate were stillbirths and five (5.1%) were ENNDs. From those born alive 19.1% (n=33) were admitted in NICU with a diagnosis of RDS (45.5, n=15) followed by MAS and sepsis workup. From those ~~of~~

admitted in NICU, 4 (12.1%) died and 87.9% were discharged. In this study we found 63% (n=112) of the participants had adverse perinatal outcome while 37% (n=66) had good perinatal outcome.

Regarding maternal outcome, 38.8% of the participants had cesarean section for delivery, 3.9% (n=7) suffered PPH as diagnosed by the attending physician and 4 participants sustained intraoperative complications. One hundred thirteen (63.5%) had prolonged hospital stay for >24 hours. The overall adverse maternal outcome in the study participants was 63.5%.

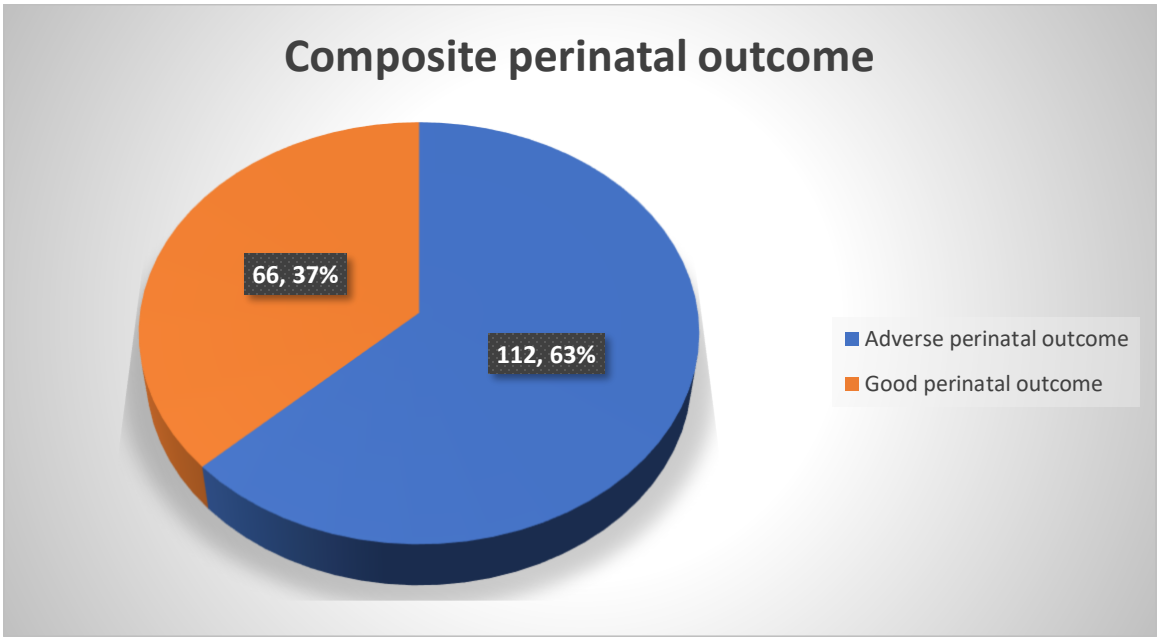

Figure 3. The composite perinatal outcome of breech presentation.

Table 4 Maternal and Perinatal outcome of Study Participants

Variables	Categories	Frequency	Percent
Fetal gender	Male	73	41.0
	Female	105	59.0
Weight in gram	2500-3999	149	83.7
	<2500	21	11.2
	≥4000	9	5.1
Low 5th min. APGAR Score	No	153	86.0
	Yes	21	11.8
NICU Admission	No	140	80.9
	Yes	33	19.1
Reason for NICU admission (n=33)	IUGR	3	9
	MAS	5	15.2
	PNA	5	15.1

	RDS	15	45.5
	sepsis workup	5	15.2
Stillbirth	No	174	97.8
	Yes	4	2.2
Type stillbirth (n=4)	Antepartum	2	50.0
	Intrapartum	2	50.0
ENND	No	169	94.9
	Yes	5	5.1
Perinatal death	No	169	94.9
	Yes	9	5.1
Adverse perinatal outcome	No	66	37.1
	Yes	112	62.9
Prolonged maternal hospital stay[1]	No	65	36.5
	Yes	113	63.5
Estimated Blood loss	<500ml	170	95.5
	500-1000	1	0.6
	>1000	7	3.9
PPH	Yes	7	3.9
Intraoperative complication (n=109)	Yes	4	3.7
	No	105	96.3
Maternal adverse outcome (CD, PPH, prolonged Hospitalization)	No	65	36.5
	Yes	113	63.5

6. DISCUSSION

This study was aimed at determining the prevalence and perinatal outcomes of singleton term breech delivery at a tertiary level hospital (TASH, ZMH and GMH). The finding of this study revealed that the prevalence of singleton term breech delivery was 3.65%. This finding was in line ~~reference~~ with the commonly cited prevalence of 3-4% in the literature. It was also similar to the study done in Woliso hospital, Oromia region (3.8%) (4,18). The prevalence in our study was lower than the study done in Tertiary Care Teaching Hospital of Central Nepal (5.03%) and Jimma University Medical Center (5.3%) (5,19). It was higher than the study done in a tertiary hospital in northern Nigeria (1.69%) (8). These discrepancies can be explained by regional and local practice guidelines and referral load of the centers.

The finding of the study also revealed that 63% of the study participant had adverse composite perinatal outcome. This finding was higher than the study done in Nepal (23.8%), and the study done in Jimma University Medical Center (25%) (5, 7). This discrepancy in adverse perinatal outcome could be because of the difference in the definition of adverse perinatal outcome used in the studies.

Almost all (97.2%, n=173) of the participants were live births and four (2.2%) neonate were stillbirths and five (5.1%) were ENND. This finding was better in perinatal outcome than the study done in Mizan Aman General Hospital, South West, Ethiopia, which had 14 (12%) perinatal death; and Jimma University Medical Center, which had 13.9% intrapartum fetal deaths (5,15). This difference may be due to differences in the level of care and the proportion of women having trial of vaginal breech deliveries in the specific setting.

In this study 2 (1.1%) of the perinatal deaths were intrapartum. This finding was lower than the study done in Jimma University Medical Center in which the intrapartum death was 4.6% (n=5). This difference may be due to the difference in the proportion of women who had trial of labor and planned caesarean delivery in the two settings.

In this study 57.9% of the study participants had an APGAR score of less than seven in the first minute, while 12.1% of the neonate had an APGAR score of less than 7 at five minutes. This finding was lower than the study done in Nepal (20.2%), Jimma University Medical Center (22.3%) (5, 7). The study also revealed that, 19.1% (n=33) of neonates were admitted in NICU. These finding was lower than the study done in JUMC (25%).

Our study revealed that those participants who had a trial of labor for a breech vaginal delivery had significantly increased adverse perinatal outcome (82.7% vs 38.8%). This finding is similar to the finding of the term breech trial which reported a higher adverse perinatal outcome for those with trial of labor as compared to planned caesarean delivery (5.0 vs 1.5%)

7. CONCLUSION

The finding of this study revealed that the prevalence of single tone breech delivery was 3.65%. This It is comparable to the commonly sited prevalence in the literatures. Our study also revealed that 63% of the study participant had adverse perinatal outcome. Four (2.2%) neonate were still birth and five (5.1%) were ENND. Two (1.1%) of the perinatal death occurred intrapartum (after admission). About 12.1% of the neonates had an APGAR score of less than 7 at five minutes and 19.1% (n=33) of neonates were admitted to NICU. The only determinant factor associated with adverse perinatal outcome was trial of labor for vaginal breech delivery.

8. RECOMMENDATION

A maximum effort should be made to reduce the adverse outcome during tern breech delivery.

Different stakeholders working on labor and delivery should work on those factors associated with adverse perinatal outcome and should update themselves regularly on how to prevent.

I recommend further study by using a better study design to ascertain cause relationships

9. LIMITATION AND STRENGTH

The cross-sectional nature of the study.

This study was conducted in three hospitals that could make it more representative

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ANNEX 1: CONSENT AND INFORMATION SHEET

Greetings,

Hello, my name is _____. I am working as a data collector for the study being conducted in this hospital by Dr. Nejad Mohammed who is studying for specialty of Obstetrics and Gynecology at Addis Ababa University, College of Health Sciences. I kindly request you to give me your attention to explain about the study and about you being selected as the study participant.

The Study Title: Prevalence and factors affecting perinatal outcome of singleton term breech deliveries in three teaching Hospitals in Addis Ababa, Ethiopia, 2023 G.C.

Importance and Purpose of the Study: The aim of this study is to write a research paper as a partial requirement for the fulfilment of a specialty program of obstetrics and gynaecology for the principal investigator.

Procedure and Duration: You will take part in this study by willingness and giving verbal consent. Hence, I m asking you to consent for data extraction and for a brief interview for some information missing from your clinical records. I will not take more than 30 minutes of your time.

Risks and Benefits: The risk of being participated in this study is negligible, but only taking a few minutes from your time. There would not be any direct payment for participating in this study and your input has great value for the success of the study.

Confidentiality: The data you will provide us will be confidential. There will be no information that will identify you. The questionnaire will be coded to exclude showing names. No reference will be made in oral or written reports that could link participants to the research. You have full right to refuse to take part or to interrupt the interview at any time.

Are you willing to participate in the study?

1- Yes ……. (continue to the next page)

2 – No……Thank you (skip to the next participant)

Principal Investigator Address: Phone number: - +251 921 251 761

Email: - mohammednejad@44gmail.com

ANNEX 2: DATA COLLECTION SHEET

Name of Hospital _____ Data collection Date _____

Name of the supervisor _____Signature _____Checking Date _____

A. Identification, Socio-demographic & reproductive characteristics

1	Age: ……..yrs. 2. Marital status …….	5	Ethnicity …….... 6. Religion……
3	Education: Highest achieved:	7	Family size (number of people living together)
4	Profession/ occupation:	8	Monthly family INCOME in Birr
1	Gravidity (If primigravida, skip to ANC	2	Abortion
3	Parity	4	Molar/ ectopic (specify)
5	Currently live 6. No of OVD	7	No of SVD 8. No of CS
9	No of OTHER DELIVERIES	10	Specify other deliveries

B. ANC & REFERAL

1	ANC: 1. Yes ___ 0. No ___ If NO, skip to D5	2	ANC place (multiple response) 1. …… 2……
3	Total number of ANC visits ……..	4	Number of ANC visits at this hospital…….
5	If no ANC, reason	6	Was she referred: 1. Yes 0. No If yes, reason ……

C. MATERNAL COMPLICATIONS: obstetric, gynaecologic, medical, surgical

Q. No	***MATERNAL COMPLICATIONS***	***Q. No***	***MATERNAL COMPLICATIONS***
1	HIV/AIDS 1. Positive __ 0. Negative _	4	VDRL status; 0. Negative; 1. + 2. ++,...8.reactive
2	HBsAg: 1. Positive __ 0. Negative _	5	Latest 3rd trimester Hb _____
3	Rh-negative 1. Yes _0. No_	6	Hypertension 1. Yes __ 0. No _ if yes specify cause: ___ 1. CHPT, 2. PE, 3. Eclampsia 4. GH
7	DM 1. Yes 0. No If yes 1. Overt DM; 2. GDM		
8	Pelvic mass (myoma, ovarian etc) 1. Yes _ 0. No		If yes, specify tumor, site & size)_____
9	Uterine congenital abnormality 1. Yes_ 0. No_		If yes, specify_____
10	Vaginal bleeding in 1ST & 2nd trimester. Yes / No		If yes specify cause: _____
11	APH: 1. Yes _0. No_		If yes, specify cause: …..
12	PROM 1. Yes __ 0. No__		If yes, GA ___Latency period…. hrs, chorioamnionitis……
13	Last **antepartum** BIOPHYSICAL SCORE___		
14	Was she admitted to MW, before labor? Yes/no		If yes, reason for admission: _____
15	OTHER COMPLICATIONs (SPECIFY)		

D. ECV (GA, COMPLICATION OF ECV) & CAUSE OF BREECH

`1	What was the GA at breech diagnosis? __week	2	What possible cause/s (risk factors) for the breech was/ were identified? ……
3	When was breech diagnosed? 1. Antepartum 2. intrapartum 3. During CS. If 2 or 3 go to L & D	4	Was ECV attempted/ done? 1. Yes ___0. No__ If not done, Skip to L & D
5	Was the 1st ECV successful? 1. Yes ___0. No__	6	GA first ECV done _____weeks
7	Complications detected after 1st ECV? …….	8	Was the 2nd ECV successful? 1. Yes ___0. No

9	GA second ECV done _____weeks	10	Complications detected after 1st ECV? …….

E. **LABOUR & DELIVERY**

1	GA at delivery (as ascribed by attending physician) _____ From early US…… From LNMP …….		
2	**Onset of labour: _____** 1. Spontaneous 2. Induced 3. Planned CS		
3	At admission to L/W……... a) Duration of labour ……... b) Cervical dilatation …… (<5, ≥5, =10) c) Station …….	4	After admission to L/W……. a) Duration of latent phase ……... b) Duration of active phase ……... c) Duration of second stage ……...
5	Total duration of labour: From admission till delivery_____		before & after admission till delivery: ____ hrs ___minutes
6	Fetal membranes on admission 1) intact 2) ruptured in labour. If yes, duration…… 3) Cervical dilatation at ROM 4) ruptured before labour (PROM), Duration …… 5)Total duration of ROM (antepartum & intrapartum) …	7	Amniotic fluid characteristics at ROM a) Clear b) Meconium stained (GI GII GIII) c) Bloody d) Other (specify)…….

DETAILS OF MODE OF DELIVERY

1	Mode of delivery 1. Vaginal breech delivery 2. Caesarean delivery 3. Other (specify) _____

DETAILS OF BREECH VAGINAL DELIVERY

1	Type of breech presentation 1.Frank 2. Complete 3. Incomplete		Type of vaginal breech delivery: 1. Spontaneous 2. Assisted 3. Total extraction
2	Was vaginal delivery achieved?		1. Yes _0. No
3	complication during delivery		specify……
3	If vaginal delivery was not achieved, why? 1.Inadequate contractions 2. FPD 3. Others (specify)		If vaginal delivery was not achieved, how was she delivered? 1. Emergency CS 2. Destructive vaginal delivery

DETAILS OF CESAREAN DELIVERY

1	Planning of operation 1. Elective 2. Emergency Indication for C/S …….	2	Primary surgeon 1. Consultant_____ 2. Resident (specify year) …….
3	Type of C/S 1. Lower transverse 2. Classical CS 3. Others (specify) _____ Indications for any other than LUSTCS: _____	4	a) Duration of surgery _____ b) Total blood loss ……. c) Intraoperative complication……

F. MATERNAL COMPLICATIONS IDENTIFIED DURING POSTPARTUM ASSESSMENT

	1. PPH (Early/Late) 2. SSI 3. Others (specify)……...	Maternal hospital stay hours ___ days…….
	Lowest 1st postpartum Hgb ……	Baby NICU stay if admitted _____days

G. NEONATAL OUTCOME:

1	Sex: 1. Male 2. Female 3. Ambiguous	2	Birth weight --_____grams
3	Outcome 1. Alive 2. Still birth 3. END	4	APGAR Score. 1st …….. 5th …… 10th ……...minutes
5	If still birth A) Timing 1. Antepartum, at what GA…… 2. Intrapartum B) Cause identified ……...	6	If NICU admission A) Reason of admission ……. B) Duration of NICU stay……... C) Outcome at NICU Died/Recovered/Referred and why?