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The Impact of Labor Complications on Episiotomy Rates in a Rural Ethiopian Hospital (2019): Exploring Links Between Vacuum Deliveries and Low Apgar Scores

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Abstract

Background

Episiotomy rates remain high in some regions, despitequestions about its benefits. This study investigates the prevalence of episiotomy in a rural Ethiopian hospital (2019) and explores links betweenepisiotomy use, labor complications (vacuum deliveries), and newborn health (low Apgar scores).

Methods

A cross-sectional study reviewed 300 vaginal deliveries at BatuGeneral Hospital in January-March 2019. We analyzed data on maternalage, mode of delivery, neonate sex, first-minute Apgar score, and episiotomy use.

Results

Episiotomy was performed in 26% (78/300) of deliveries. Mothers who delivered with vacuum assistance were 15.17 times more likely to experience episiotomy compared to those with spontaneous vaginal delivery. Deliveries with low Apgar scores had 6.11 times higher odds of episiotomy compared to normal Apgar scores.

Conclusion

This study highlights a high episiotomy rate in this setting. Labor complications, particularly those requiring instrumental deliveries and resulting in low Apgar scores, are significantly associated with episiotomy use. Further investigation is needed to determine if reducing unnecessary episiotomy is feasible while ensuring safe deliveries formothers and newborns in this context.

List of Acronyms and Abbreviations

ANC - Ante Natal Care

APGAR score - Appearance, Pulse, Grimace, Activity, Respiration

AOR - Adjusted Odds Ratio

CI - Confidence Interval

LBW - Low Birth Weight

NVD - Normal Vaginal Delivery (alternative to SVD)

OR - Odds Ratio

SGA - Small for Gestational Age

SROM - Spontaneous Rupture of Membranes

SVD - Spontaneous Vaginal Delivery

VAC - Vacuum Assisted Delivery

Operational Definitions

Apgar Score: A method for determining an infant's condition at birth by scoring his/herheart rate, respiratory effort, reflex/irritability, muscle tone, and color. Each variable isscored from 0 to 2 giving a maximum score of 10. Each of the variables is assessed at 1 and 5 minutes. The Apgar score is an objective way of assessing and describing an infant's adaptation to extra-uterine life.

Birth Weight: The weight of a neonate determined immediately after delivery or as soonthereafter as feasible. It should be expressed to the nearest gram.

Episiotomy, also known as **perineotomy**, is a surgical incision of the perineum and the posterior vaginal wall generally done by a midwife or obstetrician. Episiotomy is usually performed during the second stage of labor to quickly enlarge the opening for the baby to pass through.

Extremely low birthweight: A newborn whose weight is < 1000 gm.

Forceps delivery: It is a type of assisted vaginal delivery. It's sometimes needed in the course of vaginal childbirth. In a forceps delivery, a healthcare provider applies forceps — an instrument shaped like a pair of large spoons or salad tongs — to the baby's head to help guide the baby out of the birth canal.

Low birthweight: A newborn whose weight is < 2500 gm**.**

A Vacuum-Assisted Vaginal Delivery or Vacuum Extraction (VE) is a method to assist the delivery of a baby using a vacuum device.

Very low birthweight: A newborn whose weight is < 1500 gm.

Introduction

1.1. Background

Episiotomy, a surgical incision made in the perineum (the area between the vagina and anus) during childbirth, is a widely performed obstetric intervention. Despite its prevalence, episiotomy rates vary significantly across the globe, ranging from 30-63% in some regions to a concerning 93% for first-time mothers (nulliparous women) in others **[1]**. This variation highlights the ongoing debate surrounding the practice of episiotomy and its necessity in modern obstetrics. Episiotomy remains a part of obstetric practice, but its use has become more selective. Understanding the different types, historical justifications, and modern considerations can guide a more informed approach to episiotomy use in childbirth.

Historical Context of Episiotomy: A Shifting Landscape

The practice of episiotomy, a surgical incision made in the perineum during childbirth, boasts a surprisingly long history. While its exact origins remain unclear, evidence suggests its use dates back at least **300 years [2]**. However, the widespread adoption of episiotomy is a relatively recent phenomenon.

The 1920s marked a turning point, with influential publications by De Lee and Pomeroy advocating for its routine use **[2]**. Despite this growing acceptance, the benefits of episiotomy were not without controversy.

A significant factor influencing episiotomy rates was the 20th-century shift toward **in-hospital deliveries**. This transition coincided with a rise not only in episiotomy use but also in other obstetric interventions like forceps deliveries and cesarean sections **[2]**. Notably, the rationale behind these interventions often overlapped, with a focus on achieving a more controlled and efficient birth process.

Interestingly, data from the United States demonstrates a **decline in episiotomy rates** from 1.6 million procedures in 1992 to 716,000 in 2003[**3]**. This trend occurred despite a concurrent rise in cesarean delivery rates. This suggests a growing awareness within the medical community regarding the potential drawbacks associated with routine episiotomy.

The decline in episiotomy use reflects a **shifting paradigm** in obstetric care. While episiotomy remains a valuable tool in specific situations, the focus has shifted away from its indiscriminate use. This change is driven by a growing body of research that challenges the historical justifications for routine episiotomy and highlights the potential complications associated with the procedure.

Types of Episiotomy

During childbirth, an episiotomy is a surgical incision made in the perineum, the area between the vagina and anus, to enlarge the vaginal opening. While the practice of episiotomy has been debated for decades, it remains a procedure used in some deliveries. Here, we explore the different types of episiotomy techniques and how the rationale behind their use has evolved.

- **Median (Midline) Episiotomy:** This is a straight incision made directly down the center of the perineum. It was once the most common type of episiotomy, but its use has declined due to concerns about potential damage to sphincter muscles and prolonged healing times.
- **Mediolateral Episiotomy:** This angled incision starts in the midline and extends towards the buttock crease. It was thought to offer advantages over midline episiotomy by directing tears away from the anus and minimizing damage to sphincter muscles. However, research suggests these benefits may be limited.
- **J Incision:** This is a variation on the midline incision with an additional downward extension in the shape of a "J." It was intended to create a larger opening for delivery but has fallen out of favor due to the increased risk of excessive bleeding and prolonged healing.

Historical Rationale for Episiotomy

Traditionally, episiotomy was performed routinely with the belief that it offered several benefits:

- **Prevention of Pelvic Floor Damage:** The theory was that a controlled incision would prevent more extensive spontaneous tears, thereby reducing the risk of pelvic floor dysfunction and prolapse (weakening of pelvic muscles).
- **Fetal Benefits:** Episiotomy was thought to shorten the second stage of labor, potentially reducing the risk of cephalic compression (pressure on the baby's head) and improving fetal outcomes, particularly for larger babies or those in distress.

Modern Understanding of Episiotomy

Current research challenges the historical justifications for routine episiotomy. Here's why:

- **Episiotomy itself can cause significant tissue damage:** The incision can injure muscles, nerves, blood vessels, and skin, potentially leading to pain, discomfort, and sexual dysfunction after childbirth.
- **Spontaneous tears often heal faster:** Studies suggest that smaller spontaneous lacerations heal quicker and with fewer complications compared to episiotomy incisions.
- **Limited evidence for preventing pelvic floor problems:** Research hasn't conclusively shown that episiotomy effectively prevents pelvic floor dysfunction.

Shifting Paradigm in Episiotomy Use

Based on this evolving knowledge, the approach to episiotomy has shifted.It is no longer considered a routine procedure. Instead, it is reserved for specific situations where it may be beneficial, such as:

- **Delivery of a baby in distress:** When a rapid delivery is necessary for the baby's well-being.
- **Instrumental deliveries (forceps or vacuum):** Episiotomy might be used to minimize the risk of severe tearing during an instrumental delivery.
- **Protecting the premature baby's head:** In some cases, an episiotomy may be performed to prevent excessive pressure on a premature baby's head during delivery.

The decision to perform an episiotomy should be made on a case-by-case basis, considering the mother's individual circumstances and the baby's well-being. Effective communication and informed consent are crucial before proceeding with an episiotomy.

1.2. Statement of the Problem

Episiotomy, while intended to be a preventative measure, can introduce itsown set of complications. These complications can have a significant impact on a mother's physical and emotional well-being, potentially extending into the postpartum period and beyond.

Potential Complications of Episiotomy

- **Pain and Discomfort:** Episiotomy incisions can cause significant pain and discomfort during the postpartum period, particularly during activities like sitting, walking, and using the toilet. This pain can interfere with a mother's ability to care for herself and her newborn.
- **Infection:** As with any surgical incision, episiotomy sites are susceptible to infection. This can lead to increased pain, fever, and delayed healing.
- **Bleeding:** Excessive bleeding can occur during or after episiotomy. While typically manageable, it can be a source of anxiety for mothers and healthcare providers.
- **Slowed Healing:** Episiotomy healing times can vary depending on the severity of the incision and individual factors. Prolonged healing can impact a mother's ability to resume normal activities and intimacy.
- **Pelvic Floor Dysfunction:** While the historical rationale for episiotomy was to prevent pelvic floor damage, research suggests it might contribute to the problem. Episiotomy can damage muscles and nerves that support the pelvic organs, potentially leading to issues with bladder control (urinary incontinence) or bowel control (fecal incontinence).
- **Sexual Dysfunction:** Scar tissue or nerve damage from an episiotomy can lead to pain during intercourse or difficulty achieving orgasm.

Impact on Maternal Well-Being

The complications associated with episiotomy can significantly impact a mother's well-being in the following ways:

- **Psychological Distress:** Pain, discomfort, and concerns about healing can lead to anxiety and depression postpartum.
- **Reduced Bonding with Baby:** Physical limitations due to pain can make it difficult for mothers to care for and bond with their newborns.
- **Impact on Intimacy:** Sexual dysfunction caused by episiotomy can negatively affect a couple's intimacy and overall relationship satisfaction.

Literature Review

In 2000, A cross-sectional study was conducted by Kiros K and Lakew Z in the delivery unit of the Tikur Anbessa Specialized Hospital, A.A, Ethiopia.A total of 917 deliveries were attended during the study period among which 672 mothers (83.1) delivered vaginally. Among the vaginal deliveries, 270 (40.2%) mothers had episiotomy. Of these 203 (75.2%) mothers were prim gravidae. Null parity (77.7% vs 21.3%), the duration ofthe second stage of labor more than 90 minutes (76%vs13.8%), and instrumental delivery (86.2%vs13.8.1%) has been shown to be significantly associated with having an episiotomy, while the birth weight and APGAR score didn't show significant differences. Local anesthesia was used only in 71(28.1%) cases among the 253, for whom information regarding the use of local anesthesia was retrieved **[6]**.

In 2010, A retrospective cross-sectional study was conducted in the Maternidade Escola Prof. Monteiro de Moraes at the Centro de Saúde Amaury de Medeiros (CISAM), Brazil. Prevalence of performing episiotomy was 29.1% (n = 144). After bivariate analysis, They found a significant association of episiotomy with adolescence (PR 1.74; CI95% 1.33-2.28), age over 35 years (PR 0.35; CI95% 0.14-0.90), primiparity (PR4.73, CI95% 3.33-6.71), absence of previous vaginal delivery, a group including, in addition to primiparous patients, those who had cesarean delivery in previous gestation (PR 5.44; CI95% 3.67-8.06) and related diseases at the time of delivery (RP 1.71, CI 95% 1.30-2.25). There was nosignificant relation with gestational age at delivery, duration of labor over6 hours (mean time of the active phase of labor), expulsion period of morethan 30 minutes (considered as prolonged), use of misoprostol or oxytocin, abnormal fetal heart rate, presence of meconium, shift of delivery completion (night or day), rate of Apgar score in 1 and 5 minutes and weight of the newborn. The presence of perineal lacerations was higher in the group not subject to episiotomy, however, only 1st and 2nd-degree lacerations were described. After logistic regression, the analyzed remaining factors associated with episiotomies were maternal diseases (RA 1.99, CI 95% 1.20-3.28) and absence of previous vaginal delivery (9.85 RA, CI 95% 6.04-16.06) **[7]**.

In 2013, a prospective cross-sectional study was done by *Mitiku Getachew Kumera* **[1]** and associates at Mizan Aman General Hospital in Bench Maji zone, Southwest Ethiopia, which is about 574 kilometers from Addis Ababa. Of a total of 310 laboring mothers 95(30.6%) of them, their second-stage labor was assisted by episiotomy, of which 65(68.4%) had ANC followed up, 57(60%) of them were prim gravida and 38(40%) were 1-4 parity and 81(85.5%) were 32-42 weeks of gestational age. The most common indication for episiotomy was imminent laceration of the perineum 67(70.5%). There was a 71.4% increase in Episiotomy practice forthose who have no ANC follow-up (OR=1.714, 95% CI 1.041-2.82). The weight of neonates >4000g has more Episiotomy practice (OR=2.697, 95% CI 1.057-6.88) as compared with those weighing 1500g-2499g **[8]**.

In 2014, According to a study done in public health institutions in Shire town, Tigray Region. A facility-based cross-sectional study design was conducted. Among the study participants, episiotomy was performed for 144(35.4%) mothers. Age group 15-20 years [AOR=3.53] and 21-34 years [AOR=3.46], primipara [AOR=2.12], post-term [AOR=2.35] and use of oxytocin [AOR=2.19] were factors significantly associated with episiotomy practice. The prevalence of episiotomy practice in this study was relatively high (35.4%) as compared to the recommended practice bythe World Health Organization (10%) **[9]**.

In 2015, an institutional-based cross-sectional study was conducted by Yemaneh Y and associates at Public Health Institutions of Axum Town, Tigray Region, North Ethiopia. Out of 338 deliveries, the proportion of episiotomy was 140(41.44%). The odds of episiotomy practice were 1.8 times greater among primipara when compared with multiparous women [AOR=1.89(1.08, 3.23)], 8.9 times greater among mothers whose labor was assisted by vacuum as compared to those who delivered by normal vaginal delivery [AOR=8.99(4.25, 19.03)], 4.7 times greater among deliveries whose fetal presentation was faced when compared with vertex presentations [AOR=4.76(1.94, 11.67)] **[10]**.

Objectives

This study aims to investigate the prevalence of episiotomy and the factors associated with its use among women delivering vaginally at Batu General Hospital.

2.1. General Objective

The primary objective of this research is to assess the magnitude of episiotomy performed in spontaneous vaginal deliveries at Batu General Hospital. This will involve determining the proportion of women who underwent episiotomy during the study period.

2.2. Specific Objectives

To achieve the broader aim, this study will address the following specific objectives:

- **Quantify the rate of episiotomy:** This objective focuses on measuring the exact percentage of women who received an episiotomy during spontaneous deliveries within the designated timeframe.
- **Identify factors associated with episiotomy use:** This objective delves deeper, exploring the potential factors that influence a healthcare provider's decision to perform an episiotomy. Thesefactors might include:
    - **Maternal characteristics:** Age, parity (number of previouspregnancies), body mass index (BMI)
    - **Labor characteristics:** Length of labor, use of labor augmentation (medications to stimulate contractions)
    - **Fetal characteristics:** Baby's position, size, and presentation(head first, breech)
    - **Obstetric practices of healthcare providers:** Physician or midwife preference, training, and experience.

3 Methodology

This section details the research design, study setting, and population selection for investigating episiotomy rates and associated factors in a rural Ethiopian hospital.

3.1 Study Setting

The study was conducted at Batu General Hospital, located in Ziway town, Oromia Region, Ethiopia. This general hospital serves the surrounding community and is situated approximately 160 kilometers from AddisAbaba, the nation's capital.

3.2 Study Design

A cross-sectional study design was employed. This type of observational study design allows for the collection of data at a single point in time to assess the prevalence of a specific condition (episiotomy rate) and its association with other relevant variables (e.g., labor complications).

3.3 Source Population

The source population for this study comprised all women who delivered vaginally at Batu General Hospital during the specified timeframe.

3.4 Study Population

The study population was further narrowed to women who delivered vaginally at Batu General Hospital between January and March 2019 (Ethiopian calendar). This specific timeframe was chosen to ensure a manageable data collection period and to reflect a consistent seasonal representation within the year.

3.5 Study Unit

Individual delivery charts served as the primary unit of analysis for this study. These charts document various details about each vaginal delivery,providing the necessary data to assess episiotomy rates and associated factors.

3.6 Inclusion and Exclusion Criteria

To ensure data quality and relevance, specific criteria were establishedfor selecting delivery charts:

- **Inclusion Criteria**

  All deliveries that occurred vaginally at Batu General Hospital within the designated study period (January-March 2019) were included. This ensures a representative sample ofvaginal deliveries during that timeframe.

- **Exclusion Criteria**

  Delivery charts with incomplete documentation were excluded. Incomplete charts might lack crucial information needed for the study, potentially compromising the accuracyof the analysis. This ensures data integrity and minimizes therisk of bias.

3.7 Sample Size Determination and Selection

This study employed a cross-sectional design to investigate the prevalenceof episiotomy and its associated factors in a rural Ethiopian hospital. To ensure a representative sample and achieve statistically reliable results, we determined the appropriate sample size using a single population proportion formula.

Formula and Assumptions

The formula used for sample size calculation is:

$$n = (Z\alpha/2)^2 * P (1 - P) / d^2$$

Where

- n = sample size
- Zα/2 = critical value from the standard normal distribution table corresponding to the desired confidence level (α) divided by 2 (typically 1.96 for a 95% confidence level)
- P = estimated proportion of episiotomy (assumed to be 50% in this case)
- 1 - P = complement of the estimated proportion
- d = margin of error (set at 5%)

Initial Sample Size Calculation

Based on the formula and assumptions, the initial calculated sample size(ni) was:

$$ni = (1.96)^2 * 0.5 (1 - 0.5) / (0.05)^2 = 384$$

Correction for Finite Population

Since the source population delivering vaginally at Batu Hospital was less than 10,000 (N = 1380), a finite population correction was applied to adjustfor potential bias. The final sample size (nf) was calculated using the following formula:

$$nf = ni / (1 + ni / N) = 384 / (1 + 384 / 1380) \approx 300$$

Selection Method

A systematic random sampling technique was employed to select the final sample of 300 deliveries from the labor registration book at Batu Hospital. This method ensures each delivery within the timeframe (January-March 2019) has an equal chance of being selected and avoids selection bias.

Explanation of Assumptions

The initial assumption of a 50% episiotomy rate is a common starting pointfor sample size calculations when the actual prevalence is unknown. The chosen 5% margin of error allows for a balance between precision and sample size feasibility. By employing a systematic random samplingtechnique and a calculated sample size of 300, this study aimed to obtain arepresentative sample and generate reliable data on episiotomy prevalence and its associations in the study setting.

3.8 Study Variables

The study employed a set of variables to understand the factors associated with episiotomy rates in the study population. These variables can be categorized as:

Independent Variables: These are factors that may influence theoutcome variable (episiotomy completion). In this study, the independent variables include:

- **Sociodemographic Factors**
  - **Maternal Age:** Age may be a factor in tissue elasticity and perineal integrity, potentially influencing the likelihood of episiotomy.
  - **Sex of Neonate:** While not directly influencing episiotomy decisions, the sex of the neonate (male or female) is often documented during delivery and can be included as a control variable in the analysis.
- **Dependent Variable:** This is the outcome variable of interest inthe study.
  - **Episiotomy Completion:** This variable indicates whether an episiotomy was performed during the delivery (yes/no).

Data Collection

Data for this study was collected retrospectively from the labor registration logbook at Batu General Hospital. This logbook presumably documents relevant details about each delivery, including:

- **Maternal Sociodemographic Information:** Age and sex of the mother, likely recorded during initial patient intake.
- **Neonatal Information:** The sex of the baby is typically documented after delivery.
- **Delivery Information:** This may include a notation indicating whether an episiotomy was performed.

3.10 Data Analysis Strategies

Following data collection from the Batu Hospital labor registration book,a two-step approach was employed for data analysis:

1. **Data Entry:** The collected data on maternal delivery characteristics andepisiotomy use were entered into Epidata 3.1, a data management software specifically designed for epidemiological studies. Epidataoffers functionalities to ensure data quality through data cleaning and consistency checks.
2. **Statistical Analysis:** The anonymized data was then exported to SPSSversion 25, a statistical software program. SPSS allows for a wide rangeof statistical analyses suitable for this cross-sectional study design. Descriptive statistics will be used to summarize the data, including measures of central tendency (mean, median) and dispersion (range, standard deviation) for continuous variables. Categorical variables, such as mode of delivery and episiotomy use, will be presented as frequencies and percentages. Additionally, bivariate analyses (e.g., chi-square tests) may be employed to explore potential associations between episiotomy and other variables of interest, such as maternal age, parity, and labor complications.

3.11 Ethical Considerations

This research adheres to the ethical principles outlined in the Declaration of Helsinki, a set of international guidelines for ethical research involvinghuman subjects. Here's how these principles were addressed:

- **Informed Consent:** Since this study used anonymized secondary data from medical records, informed consent from individual participants was not required. However, permission to access and analyze the data was obtained from the Batu Hospital administration.
- **Confidentiality:** Participant confidentiality was ensured throughout the research process. All data was anonymized before analysis, andno personal identifiers were linked to the data set.
- **Respect for Autonomy:** The study design respected the autonomy of the women who delivered at Batu Hospital. Their medical recordswere used only for this research after receiving hospital administrative approval.

- **Minimizing Risks:** As a retrospective study using anonymized data, the research posed minimal risk to participants.

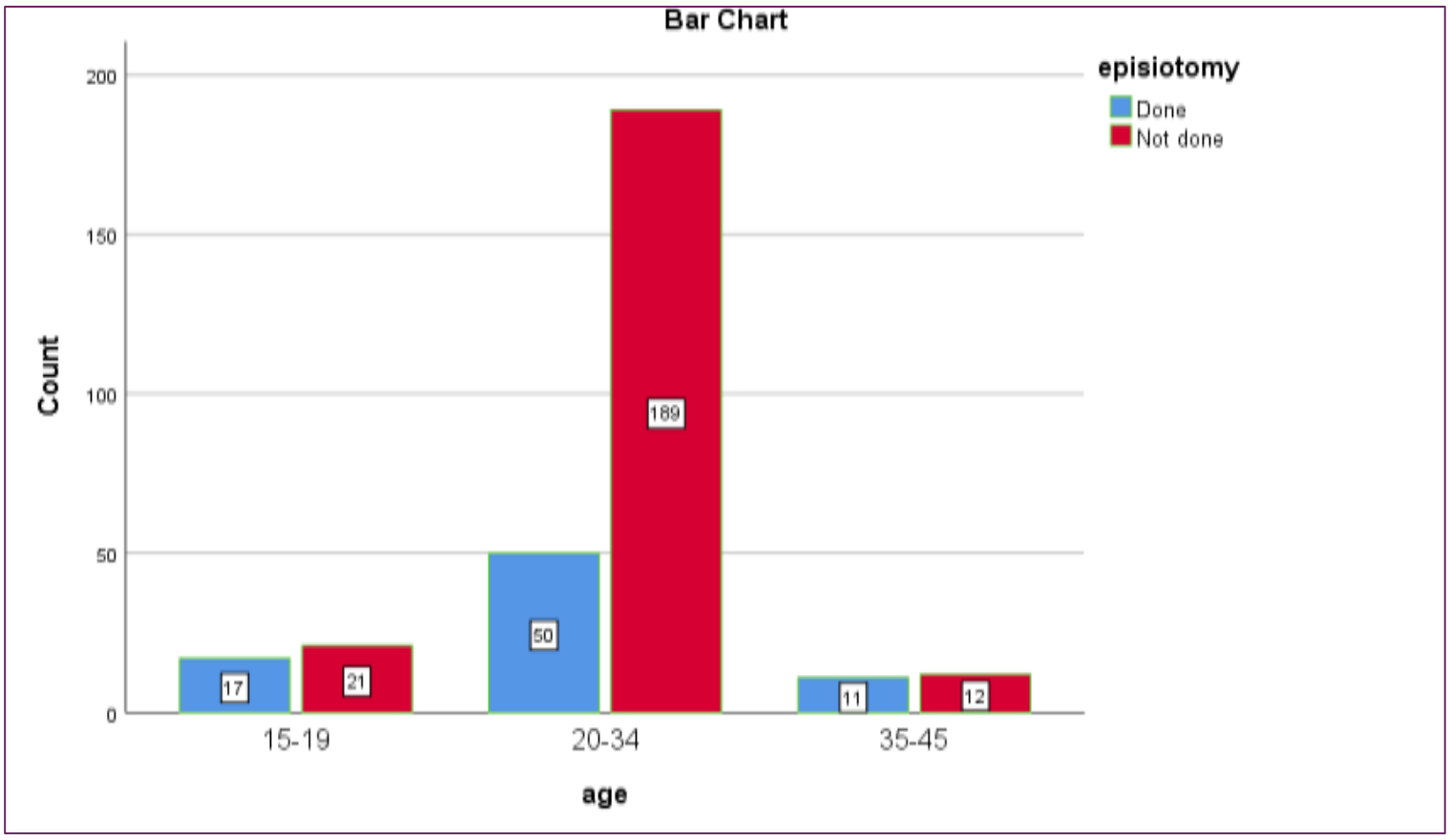
4. RESULTS

4.1. Socio-demographic characteristics

This section presents the findings related to the sociodemographic characteristics of the mothers who participated in the study.

A majority of the mothers delivering vaginally at Batu General Hospital during the study period (January-March 2019) fell within the age group of21-34 years (n=204, 67.3%). The remaining mothers were distributed between the 15-20 year age group (n=73, 24.1%) and the 35-45 year age group (n=23, 7.6%). **(Figure 1)**

Figure 1: Socio-Demographic Characteristics



4.2 Postnatal Characteristics

This section explores the characteristics of newborns delivered in thestudy at Batu General Hospital. Data was collected from 300 delivery charts, providing insights into birth weight and Apgar scores.

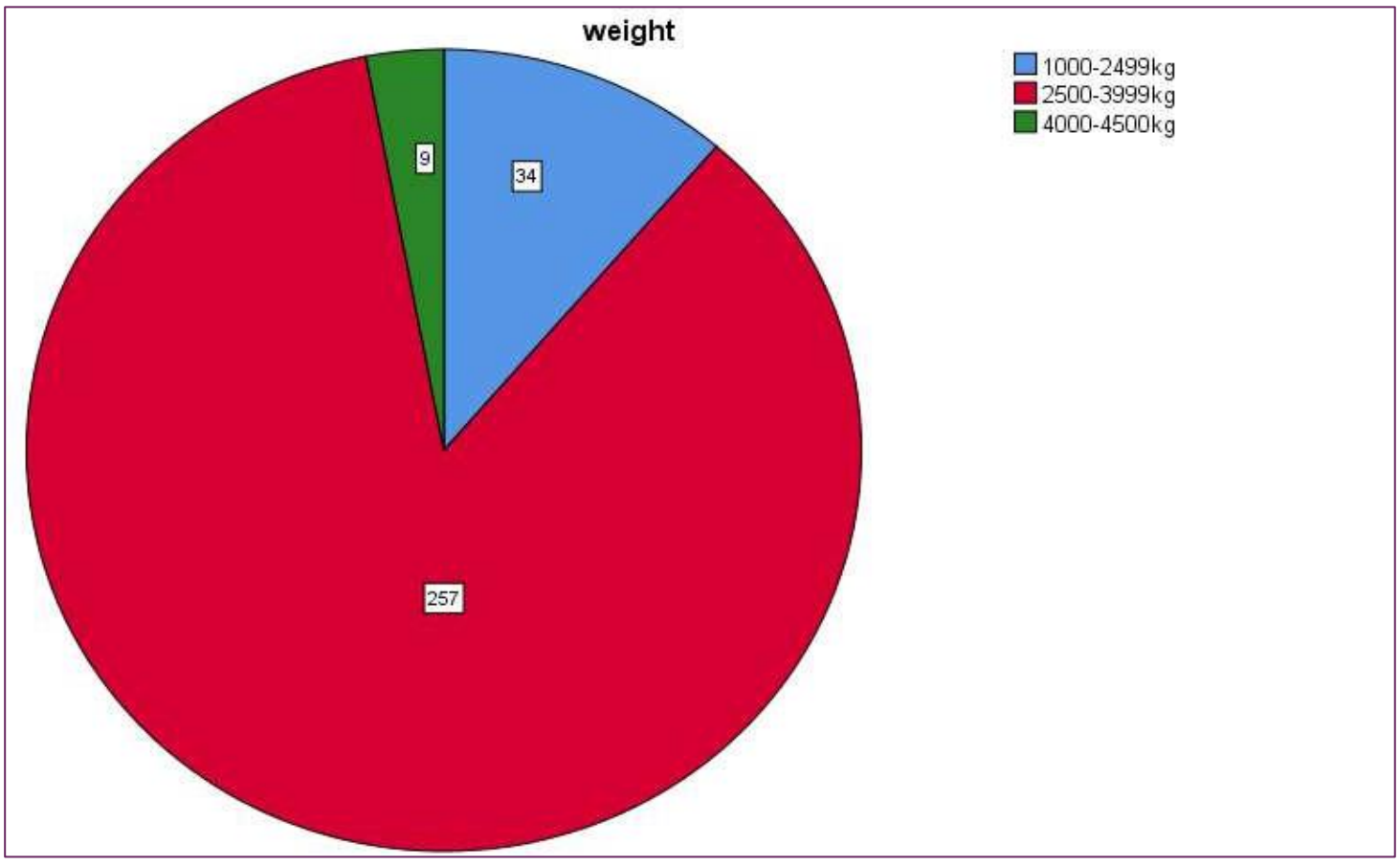
Birth Weight

- A significant majority (84.8%, n=257) of neonates had birth weights within the normal range, defined as 2.50 kg to 3.99 kg. This suggests a healthy weight distribution for most newborns inthis study.

Apgar Scores

- A positive finding was that 84.2% (n=255) of newborns had a 1st-minute Apgar score greater than 7. The Apgar score is a quick assessment of a newborn's health at birth, considering factors like heart rate, breathing, muscle tone, and reflexes. Scores above 7 generally indicate good health and minimal need for resuscitation.

Figure 2 Birth Weight of Neonates



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4.3 Factors Influencing Episiotomy Use: A Closer Look

While the decision to perform an episiotomy is no longer routine, certain factors can increase the likelihood of its use. This section explores these key associations:

Labor Complications

- **Instrumental Deliveries:** Studies suggest that women undergoing instrumental deliveries with forceps or vacuum assistance are significantly more likely to experience episiotomy compared to spontaneous vaginal deliveries (SVD). This may be done to create more space for instrument passage and minimize the risk of severe tearing during a difficult delivery.
- **Fetal Distress:** When a baby shows signs of distress during labor, a rapid delivery might be necessary. In such cases, an episiotomy can be performed to expedite the delivery process and improve fetal well-being.
- **Low Apgar score:** A low Apgar score (0-6) in the first minute of life indicates potential health problems in the newborn. Research suggests a higher likelihood of episiotomy in deliveries with low Apgar scores compared to normal scores (7-10). This may be done to facilitate a quicker delivery and address potential complications for the baby.

Maternal Characteristics

- **Maternal Age:** Studies have shown a potential link between maternal age and episiotomy use. Adolescents and women aged 35 years or older may have a higher chance of experiencing episiotomycompared to women in their mid-twenties **[8]**. The reasons for thisassociation are not fully understood but could be related to tissue elasticity or perceived birthing difficulties.
- **Fetal Size:** The risk of episiotomy increases significantly with the delivery of macrosomic babies (larger than average weight). The odds of episiotomy for macrosomia are substantially higher compared to both low birth weight and average birth weight deliveries. This is likely done to accommodate the larger baby's head and shoulders during delivery.

Important Considerations

Research suggests that avoiding episiotomy whenever possible does not appear to be associated with adverse outcomes for the mother or baby. Factors like fetal sex and low birth weight (excluding macrosomia) do notnecessarily influence the need for episiotomy.

Understanding the factors associated with episiotomy use can help guide informed decision-making during childbirth. While some situations may necessitate episiotomy, a nuanced approach that prioritizes minimizing unnecessary interventions remains crucial.

Table 1: Factors Associated with the Practice of Episiotomy

Variables		Episiotomy		OR (Odd's ratio)
		Yes(n=78)	NO(n=222)	
Birth Weight	Low birth(R)	8	26	
	Normal birth	63	194	1.06
	Macrosomic	7	2	11.38
Mode of delivery	SVD(R)	40	208	
	Vacuum	35	12	15.17
	Forceps	3	2	7.8
APGAR score	0-6	16	9	6.11
	7-10(R)	62	213	
Maternal age	15-19	17	21	3.06
	20-34(R)	50	189	
	35-45	11	12	3.47
Sex of the fetus	Male	44	107	1.39
	Female(R)	34	115	

Discussion

The present study attempted to assess the proportion of episiotomy practice and associatedfactors at Batu Hospital.

The prevalence of episiotomy observed was 26% which is much higher than what is recommended by the World Health Organization, around 10%. The result of this studywas very close to the previous studies done in Nigeria **[11]** and at Jimma Teaching Hospital **[12]**, which found that the prevalence of episiotomy was 23% and 25% respectively.

This study has found a lower prevalence of episiotomy compared to a study done at Black Lion Teaching Hospital **[6]**, public health institutions of Axum Town, and Brigham Hospital Boston Massachusetts **[13]** where the

prevalence of episiotomy was 40.2%, 41.44% and 40.6% respectively. These higher results may be due to the fact that these studies have a high prevalence of instrumental delivery in the study area because most of the mothers who gave birth were primi so they may perform episiotomy for most of the prime mothers by referring to the previous guidelines, the hospitals are serving as teaching institution for universities including both the undergraduate and postgraduate students of health sciences, inappropriate documentation meaning the healthprofessional may document the tear as episiotomy after repairing it, and the health professionals perception about routine use of episiotomy and may be due to the countrypolicies towards the selective use of episiotomy. Since 2002 selective episiotomy has become normal at the Professor Monteiro de Moraes maternity center in Recife, state of Pernambuco, Brazil, and indicated in pregnant patients with acute fetal distress and inadequate progress of labor **[6]**.

Implementation of continuous medical education, as well as disclosure of reviews and meta-analyses on the theme, showed an influence on the reduction of this rate. A studyconducted in the United States has evidenced a decline of 60.9% in 1979 to 24.5% in2004 **[14]**. At Prof. Monteiro de Moraes's maternity hospital, where the study was conducted in 2003, before the implementation of selective episiotomy norms, the frequency of episiotomy performance was around 46%. So in three years of implementation, a reduction of more than 1/3 of this frequency took place **[15]**.

Most of the Factors associated with episiotomy among laboring mothers are similar toother studies done in Addis Ababa, Jimma, Axum, Mizan- Aman and Ogbomosho Nigeria **[6, 8, 9, 11]**.

Episiotomy practice was 15.17 times greater among those whose labor was assisted by vacuum as compared to those who delivered by normal vaginal delivery. Similarly, theodds of episiotomy practice were 7.8 times greater among those whose labor was assisted by forceps as compared to those who delivered by SVD. This result is consistent with thestudy done in Black Lion Teaching Hospital, Zaria Nigeria, Brazil, and Brigham Hospital Boston Massachusetts **[6, 11, 7, 13]**.

Episiotomy practice was 6.11 times greater among those deliveries who had low Apgar scores than those with normal Apgar scores. This finding is consistent with the study doneat Petrolane, Brazil which found the practice of episiotomy on newborns with lower Apgarindex was nearly twice as likely to occur in episiotomy **[16]**.

Episiotomy practice was 11.38 times greater among those deliveries who had macrocosmic babies than those with normal weight. Also, episiotomy practice was 3.47 times for maternal who aged>35 than those aged between 20 and 35. This resultis consistent with a prospective cohort study done in Axum and Erbil city **[17]**.

The supposed benefits for the fetus of episiotomy include cranial protection, mainly for premature ones, reduction of perinatal asphyxia, lower fetal acidosis, and reduction of complications in the shoulders' dystocia. In relation to prematurity, there is no evidence that episiotomy is necessary for preventing fetal cotraumatisms. Contrarily, the use of episiotomy was associated with an increase in cutaneous contusions and abrasions and had no influence on birth conditions, such as fetal acidosis or admission to the neonatalintensive care unit **[18]**.

Other variables pertinent to the theme, such as post-operative pain, surgical site infection, hemorrhage, parity, dyspareunia, urinary and fecal incontinence, and factors related to later periods of birth could be assessed due to the study's design. Therefore, new prospective studies are recommended to determine risk factors associated with episiotomy performance, emphasizing its own complications.

6 Limitations of the Study

This study offers valuable insights into episiotomy rates and associated factors in a rural Ethiopian hospital setting. However, it is essential to acknowledge the study's limitations, which can guide future research directions:

The study design relied on data available in patient charts. Unfortunately, some potentially relevant factors influencing episiotomy use, such as medical conditions, parity (number of previous pregnancies), gestational age, fetal presentation (position of the baby in the womb), and broader obstetrical complications, were not consistently documented or readily available. This limits the ability to comprehensively assess all potential contributing factors.

The cross-sectional nature of the study restricts its ability to establish causal relationships between variables. It can only identify associations between factors and episiotomy use at a single point in time. Longitudinalstudies that follow women over time would be necessary to determine if specific factors truly lead to a higher likelihood of episiotomy.

The data collection period of three months may not fully capture seasonal variations or potential changes in episiotomy practices over a longerduration. The availability of limited human resources could have potentially impacted the comprehensiveness of data collection.

7 Future Research Directions

Despite these limitations, the study findings provide a strong foundationfor further research. Here are some potential areas for future investigation:

- **Prospective cohort studies:** Following women throughout pregnancy and delivery can offer a more robust understanding of how various factors influence episiotomy use and its impact on maternal and neonatal outcomes.
- **Improved data collection:** Standardizing medical record-keeping practices to ensure consistent documentation of relevant variables can significantly enhance future research efforts.
- **Qualitative studies:** Incorporating qualitative research methods, such as interviews with healthcare providers, could provide valuable insights into the decision-making process surrounding episiotomy use in this specific context.

8. Conclusion and Recommendation

The proportion of episiotomy practice in Batu Hospital is high. The practice ofepisiotomy was found to have a statistically significant association with Age, Weight, mode of delivery, and 1st minute APGAR score.

The possible reasons that make the proportion of episiotomy high: are the high prevalence of instrumental delivery in the study area, extremities of age,

macrosomy, and the health professionals' perception of routine use of episiotomy.

There is an urgent need for evidence-based practice guidelines for specific maternal and fetal indications for episiotomy.

Episiotomy is the surgical enlargement of the vaginal orifice by an incision ofthe perineum. It is better to take informed consent before the procedure. Afterthe procedure, it is also important to record in detail the procedure, types, Indications, and advice given after the procedure on the client's card to get a clear report and for the researcher.

The disclosure of episiotomy rates in health services with careful assessment of its indications aims at reducing it after restriction policies are implemented. This study evidences the importance of continuousmedical education for the reformulation of old concepts. The decrease in the frequency of episiotomy performance, and in attendance to selective indications, brings us great satisfaction as educators, and a great stimulusto keep seeking knowledge improvement, reflecting better healthassistance.

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10 Annex

S.no	Age	Mode of delivery	Outcome		APGAR at 1st min	Episiotomy	Remark
		1. SVD 2. Vacuum 3. Forceps	Weight (grams)	Sex 1. Male 2. Female		1 Done 2 Not done	
1							
2							
3							
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