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Episiotomy and its Associated Factors Among Mothers Who Gave Birth at Public Health Institutions of Debark Town North Gondar, Amhara Region, Ethiopia.

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EPISIOTOMY AND ITS ASSOCIATED FACTORS AMONG MOTHERS WHO GAVE BIRTH AT PUBLIC HEALTH INSTITUTIONS OF DEBARK TOWN NORTH GONDAR, AMHARA REGION, ETHIOPIA.

BY: ANDARGEW ALEMU (MSC STUDENT IN IESO)

A THESIS REPORT TO BE SUBMITTED TO DEPARTMENT OF INTEGRATED EMERGENCY SURGE AND OBSTETRICS COLLEGE OF MEDICINE AND HEALTH SCIENCE, BAHIR DAR UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN INTEGRATED EMERGENCY SURGERY AND OBSTETRICS.

AUGUST, 2021
BAHIR DAR, ETHIOPIA

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DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for the degree of Master of in integrated emergency general surgery, gynecology and obstetrics, Bahir Dar University. The thesis is deposited in the Bahir Dar University Library and is made available to borrowers under the rules of the library. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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SURGERY AND OBSTETRICS

ADVISORS APPROVAL SHEET

This is to certify that the thesis entitled episiotomy and its associated factors among mothers who gave birth at public health institution of debark town North Gondar, Ethiopia, 2021, institutional based cross-sectional study was submitted in partial fulfillment of the requirements for the degree of MSC with specialization in “integrated emergency surgery and obstetrics” to the graduate program of the department of integrated emergency surgery and obstetrics of the College of Medicine and Health Sciences at Bahir Dar University and has been carried out by: Andargew Alemu under our supervision. The student has fulfilled the thesis requirements and hence here by can submit thesis to the department.

Name of Advisors:

Signature

Date

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Acronyms and Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANC	Ante Natal Care
AOR	Adjusted Odds Ratio
APH	Ante-Partum Hemorrhage
HC	Health Center
HIV	Human Immune Deficiency Virus
HTN	Hypertension
IESO	Integrated Emergency Surgery and Obstetrics
LMIC	Low and Middle Income Countries
PIH	Pregnancy Induced Hypertension
SPSS	Statistical Package for Social Sciences
VE	Vacuum Extraction
WHO	World Health Organization

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ABSTRACT

Introduction: Episiotomy is the surgical enlargement of the posterior aspect of the vagina by an incision to the perineum during the last part of the second stage of labor. The rate of episiotomy is on the decline in developed countries but still remains high in less industrialized country. Studies are limited to show the extent of the problem and the reasons behind episiotomy practice.

Objective: To assess the proportion of episiotomy practice and its associated factors among mothers who gave birth at public health institutions of Debark town Northwest Ethiopia 2021.

Methods: Institutional based cross sectional study was conducted among 410 delivered mothers from April 1/2021 to June 30/2021. Systematic random sampling technique was used to select study participants. Data were entered to Epi data version 3.1 and exported to SPSS version 23. Variable with p-value < 0.25 during the bivariable analysis was considered for multivariable analysis. Stepwise backward elimination was applied for variable selection and model fitness was checked using Hosmer and Lemshows statistics test. Adjusted odds ratio with the corresponding 95% confidence interval was used to declare the statistical significance association of independent variables with the outcome variable.

Result: Among the study participants the proportion of episiotomy was (42.9%). It was found that after the Multiple variable logistic regression: Face presentation (AOR =4.15; 95% CI (1.22,14.1) $P=0.022$), previous episiotomy (AOR=3.73; 95% CI (1.95,7.15); $P < 0.001$), short birth spacing interval (AOR=1.66;95% CI (1.01,2.73); $P=0.044$), perineal laceration (AOR=2.18; 95% CI (1.16,4.08); $P=0.014$) and induced labor (AOR=2.12; 95% CI (1.08, 4.14); $P=0.028$), were statistically significant at p-value <0.05 at 95% confidence interval .

Conclusion and recommendation: The prevalence of episiotomy in this study area is high as compared with WHO recommendation (5-10%) and it's more significantly associated with Face presentation, short birth spacing interval, induced labor, perineal tear and previous episiotomy. Therefore, judicious and timely episiotomy should be done for patients with Face presentation, short birth spacing interval, induced labor, perineal tear and previous episiotomy. So as to lower the increased risk of obstetric anal sphincter injuries and other complication in subsequent deliveries. But in the absence of benefit and with a potential for harm, a procedure should be abandoned.

Key words: Episiotomy, Practice, Associated factors, proportion.

1. INTRODUCTION

1.1 Background

Episiotomy is the surgical enlargement of the posterior aspect of the vagina by an incision to the perineum during the last part of the second stage of labor(1). Seven episiotomy types have been identified. However, only three (midline, mediolateral, and lateral) are routinely used(2).Types of episiotomy technique are classified on millimeter distance from the incision point to the posterior fourchette and by angle from the sagittal or parasagittal plane in degrees(3). Women with midline episiotomy, deep perineal tears occurred in two fold higher compared to women who underwent a medio-lateral episiotomy(4).

Routine use of episiotomy originally began by Pomeroy in 1918 & this routine practice was accepted and taught in obstetrics services till 1970s when the first consistent clinical trials questioning the value of episiotomy were published. Since then many studies, reviews and met analyses have evidenced that there is no scientific basis for maintaining the routine practice of episiotomy. The procedure is shown to increase intra and post-operative complications, suggesting its practice to be restricted to selected deliveries (5-7).

Its use has shown also poorer future sexual function, similar pelvic floor muscle strength, and similar urinary incontinence in comparison with women in whom episiotomy is used in a selective manner. Routine use of episiotomy has no evidence on any beneficial effect; on the contrary, there is clear evidence that it may cause harm such as a greater need for surgical repair and a poorer future sexual capability. In view of the available evidence the routine use of episiotomy should be abandoned and episiotomy rates >30% are not justified. Routine use of episiotomy is not recommended for women undergoing spontaneous vaginal delivery. World

Health organization recommends an episiotomy rate of 10% for all normal deliveries. It is prescribed selectively for women who have past history of lower genital tract surgeries and for women who require assisted vaginal deliveries. For other women in labor, episiotomies may be given on emergency basis when there is presumed imminent perineal tear (8-11).

1.2 Statement of the problem

Strategies for changing practice that were identified focused on challenging rationales for current practice of episiotomy and on creating a social and organizational environments that encourage motivation are more effective in reducing episiotomy rates. Systematic review and meta-analysis that done on episiotomy in developed countries recommend that there is an urgent need to explore reasons for and

devise programs to reduce the apparent higher rates of episiotomies in low and middle income countries (LMIC) medical facilities (12, 13).

Even if episiotomy is a very common operation but little is known of its short-term or long-term morbidity (14).

Complications of episiotomies include accidental extension into the anal sphincter or rectum, damage to the Bartholin's gland, unsatisfactory anatomic results such as skin tags, asymmetry or excessive narrowing of the introitus, vaginal prolapse, recto-vaginal fistula, fistula in ano, pain, edema, increased blood loss, hematoma, infection and dehiscence (15-17).

Women who had given birth with episiotomy are at risk for psychological trauma, higher frequency of dyspareunia and insufficient lubrication than women who had given birth without episiotomy. Episiotomy may affect women's sex life during the second year postpartum with more frequent pain and vaginal dryness at intercourse, although the role of episiotomies in the causation of dyspareunia in the long term is not clear (18-20).

Common complication of episiotomy was perineal pain that lasted an average of 5.5 days. Other complications included asymmetry, infection, partial dehiscence, skin tags, perineal laceration, hemorrhage, extension of the incision and it increases the number of suture materials used (5, 21, 22).

At 3 months postpartum those delivered with an intact perineum had the strongest pelvic floor musculature than who had used episiotomy (23)

Study showed that mean time from delivery to maternal rest and time taken to bond with the infant were significantly longer in the episiotomy groups compared to mothers who delivered without episiotomy procedure (24).

Perianal local infiltration of lidocaine is risk for the newborn for toxication due to maternal perineal nerve block with lidocaine(25).

The HIV/AIDS epidemic still growing rapidly in many countries and episiotomy is a risk for HIV transmission to the child and for health professions during procedure. Especially if a small needle is used during suturing of episiotomies the risk of a finger-prick injury is high. So, any invasive intervention may increase the risk of HIV vertical transmission. Therefore its use should be limited to cases of absolute necessity (12, 26-28).

There are many variations in reported reasons for episiotomy practice between the obstetricians, and many of these reasons are not congruent with international practice guidelines. Therefore, Uniform protocols and educational programs are needed to guide episiotomy practice.

1.3 Significant of the study

Knowing the proportion and associated factors of episiotomy with reasons of it at public health institutions of Debark town has a great role in guiding health professionals to identify factors for monitoring episiotomy practice.

The findings of this study were enable policy makers to design appropriate evidence based prevention strategies and to prepare uniform protocols and educational programs for episiotomy. It may be also help to fill the research gaps in the study area and contributes information for other researches. More over addressing the proportion and associated factors of episiotomy lead to the better understanding of the problem which finally lead to developing strategies and implementing them, as a result in which the women become benefited.

2 Literature review

2.1 Magnitude of episiotomy

Statistics from around the world revealed overall high rates of episiotomy with a decreasing trend in some developed countries. Episiotomy rates range from as low as 9.7 % (Sweden) to 100 % (Taiwan) that include both primiparous and multiparous women. Rates for only primiparas range from 63.3 % (South Africa) to 100 % (Guatemala), demonstrating that overall greater likelihood of primiparas will undergo episiotomies. Episiotomy rates tend to be lowest in some European countries. In many parts of the world (e.g., Central and South America, South Africa, and Asia) in France population based study showed that episiotomy rate for vaginal deliveries overall significantly decreased from 26.7% in 2007 to 19.9% in 2014 (29, 30).

A multicenter cross-sectional study of episiotomy practice in Romania showed that the prevalence of episiotomy was 71.4% (31).

Hospital based descriptive study based on data routinely collected in a perinatal information system indicated that 9 in every 10 primiparous women who gave birth spontaneously in hospitals in Latin America between 1995 and 1998 had an episiotomy(32).

Study in Burkina Faso showed that estimates of episiotomy rates were 46% among primigravidae and The overall episiotomy rate in the health district of Bogodogo in Ouagadougou, in the same country was 22% (20, 33).

Study in Ogbomoso, Nigeria and in Enugu, Southeast Nigeria indicated that; The episiotomy prevalence was 34.3 and 62.1% respectively (34, 35).

In our country study showed that ; the prevalence of episiotomy at public institutions of Axum town , at saint Paul's hospital millennium medical college Addis Ababa and at Mizan Aman General Hospital the prevalence of episiotomy were found to be 41.44%, 65.4% ,30.6 %respectively(36-38) .

2.2 Factors of episiotomy

Socio- demographic factors for episiotomy

Findings at a maternity school in Recife, Pernambuco, Brazil and in a tertiary care centre in Nigeria and in our country at Mizan Aman General Hospital and at Saint Paul's hospital Millennium Medical College identified that maternal age and place of residence were significant predictors of episiotomy practice (35, 37-39).

Clinical and individual maternal factors for episiotomy

Studies in France, Brazil, Iran, Nigeria, Republic of Congo, and in our country studies at Akaki Kaliti, Axum town, at Saint Paul's hospital Millennium Medical College and Mizan Aman general hospital identified that Primipara was significant factor for episiotomy practice(30, 34, 35, 37-47).

Findings in Kurdistan region ,Republic of Congo and Brazil showed that previous history of episiotomy, perineal laceration (tear) and known medical diseases were significant predictors for episiotomy practice(43, 48, 49)

Findings in our country at Saint Paul's hospital Millennium Medical College and at Mizan Aman general Hospital and at Akaki Kaliti showed that duration of second stage of labour more than 90 minute, ANC follow up history, and time of delivery were significant predictors for episiotomy practice(37, 38, 40).

Clinical and individual child factors for episiotomy

Studies in Northeast of Iran, Brazil, Republic of Congo, Israel, Kurdistan region, Zimbabwe and in our country at Mizan Aman general Hospital, at Akaki Kaliti, at Saint Paul's hospital Millennium Medical College, at Axum town public health institution and at Jima teaching Hospital identified that birth weight of 4kg and above, gestational age, presence of meconium, sex the neonate, breech and shoulder presentation and condition of fetal heart rate were significant factors for episiotomy practice (30, 34, 35, 37-48, 50-52).

Technical factors for episiotomy

Studies in Zimbabwe, Brazil, Northeast of Iran, Republic of Congo, Israel, Kurdistan region, and in our country at Mizan Aman general Hospital, at Akaki Kaliti, at Saint Paul's hospital Millennium Medical College at Axum town, at Jima teaching Hospital and at Institutions of Shire Town showed that instrumental vaginal delivery especially, use of oxytocin, when doctors attending labor and use of analgesia were predictors of episiotomy practice (30, 34, 35, 37-48, 50-54).

A multi-country study showed that; Forceps-assisted delivery, nulliparity and high birth weight were significant risk factors in all regions. Vacuum-assisted delivery was also a significant risk factor in Africa and Asia(47).

In France population-based study indicate that; breech vaginal delivery, epidural analgesia, non-reassuring fetal heart rate and giving birth for the first time was significantly associated with use of episiotomy (30).

Studies at a maternity school in Recife, Pernambuco, Brazil showed that; adolescence, age over 35 years, primiparity, absence of previous vaginal delivery, those who had cesarean delivery in previous gestation and related diseases at the time of delivery had a significant association with episiotomy(44, 55).

A cross-sectional survey to assess the reported reasons for episiotomy performance in Israel indicated that; shoulder dystocia, and more than half reported performing it in most cases of vacuum deliveries, fetal macrosomia and advanced perineal tear in previous delivery were factors for episiotomy (45).

Studies in Shahroud city, northeast of Iran indicate that; parity, use of oxytocin and infant's head circumference and birth spacing were considered predictors of episiotomy(51).

Factors influencing the performance of an episiotomy are greater fetal weight, as well as individual professional judgment attending childbirth(56). The main clinical reasons reported by Kurdistan region midwives for performing an episiotomy were; macrosomia/large fetus, breech delivery, shoulder dystocia, anticipated perineal tear and fetal distress (48).

Predictors of episiotomy in Ogbomoso, Nigeria and episiotomy among women at first birth in Enugu, Southeast Nigeria showed that; nulliparity, assisted vaginal delivery, the birth weights and newborns with low 1st min Apgar and another study in the same country in a tertiary care centre in Nigeria showed that; age <20 years, nulliparous, those who had assisted breech and instrumental deliveries were statistically significant factors for episiotomy (34, 35, 46).

Determinants of episiotomy in rural Zimbabwe indicate that; parity, vacuum extraction (VE), breech delivery and delivery with a persistent occipito-posterior position of the head appears to be statistically significant to the incidence of episiotomy and studies in Bukavu, Democratic Republic of Congo also showed that; Primiparity, fetal distress, antecedent of episiotomy, private character of maternity and fact that the childbirth was directed by a doctor were strongly associated with the practice of episiotomy (41).

A facility based cross-sectional study at public Health Institutions of Akaki Kality in Addis Ababa indicate that; face presentation, birth attendant (when doctors attend), duration of second stage of labor, who stayed above 2 hours, primiparity and weight above 4000 gram(gm) and another study with the same city at Saint Paul's hospital Millennium Medical college showed that nulliparity, duration of second stage of labor more than 90-minute, instrumental delivery, assisted breech delivery & birth weight more than 4,000 gm were factors significantly associated with episiotomy(37, 57).

Study that was done at Public health institutions of Axum town, Tigray Region showed that; Parity, face presentation, mode of delivery and birth attendant were significantly associated with practice of episiotomy(42).

Another prospective cross sectional study in our country at Mizan Aman General Hospital showed that: antenatal care follow up history, parity, gestational age, imminent laceration of the perineum, place of

residence and macrosomia (neonatal weight greater than 4000gm) had significant association with episiotomy practice(38).

2.3 Conceptual framework

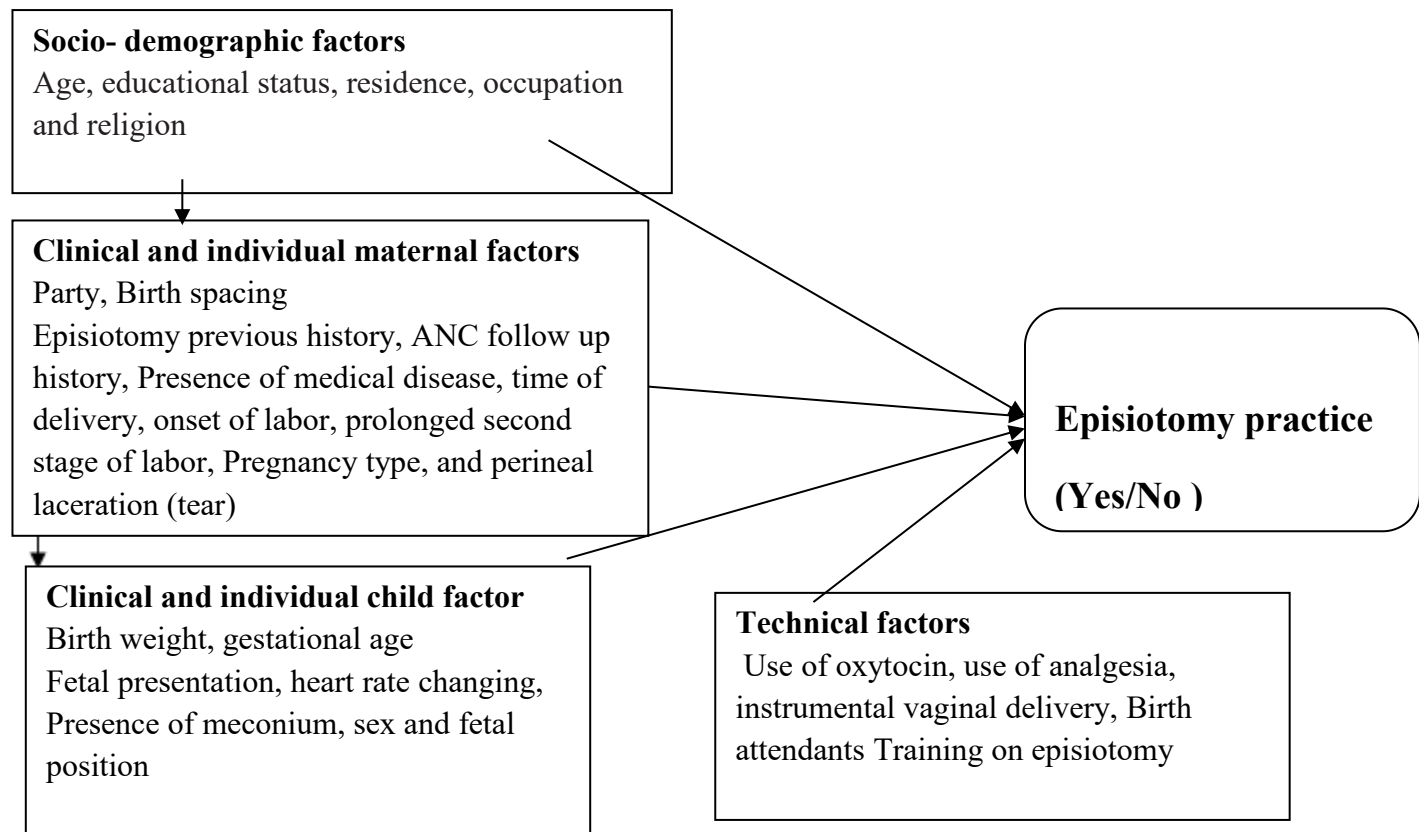


Figure 1: Conceptual framework on episiotomy practice and associated factors which is newly developed by reading different literatures on episiotomy practice and associated factors at public health institutions of Debar town, Ethiopia, 2021 G.C.

3 OBJECTIVE

3.1 General objective

The objective of this study is to assess the proportion of episiotomy and its associated factors among mothers who gave birth at public health institutions of Debarq town north Gondar, Ethiopia, 2021 G.C.

3.2 Specific objective

.To determine the proportion of episiotomy among mothers who gave birth at public health institutions of Debarq town, North west Ethiopia, 2021 G.C.

.To identify factors associated with episiotomy among mothers who gave birth at public health institutions of Debarq town, North West Ethiopia, 2021 G.C.

4 METHODS AND MATERIALS

4.1 Study design

Institutional based quantitative cross-sectional study was conducted.

4.2 Study area and period

The study was conducted at public health institutions of Debark town, North Gondar zone, Amhara region, North West Ethiopia. Debark town is found approximately 830 kilometers to north from Addis Ababa which is the capital city of Ethiopia ,283km from Bahir Dar which is the capital city of Amhara region and 103 km from Gondar town which is the capital city of Central Gondar zone . The health facilities in Debark town provided health services to more than 125,000 populations in 2020. Currently, one health center and one General hospital were available in the catchment area of the town. There were more than 2520 deliveries among pregnant mothers in 2020. This Study was conducted from April, 1, 2021G.C to June, 30, 2021G.C.

4.3 Source population

All women who gave birth vaginally at public health institutions of Debark town North Gondar and from April, 1, 2021G.C to June, 30, 2021G.C.

4.4 Study population

Women who gave birth vaginally at public health institutions of Debark town North Gondar and from April, 1, 2021G.C to June, 30, 2021G.C.

4.5 Eligibility criteria

4.5.1 Inclusion criteria

All women who gave birth vaginally at public health institutions of Debark town North Gondar during data collection period

4.5.2 Exclusion criteria

Mothers who gave birth vaginally and having psychiatric problem, having hearing problem and difficulty of talking were excluded.

4.6 Sample size determination

The required sample size of the study participants for the objective was determined by using single population proportion formula with basic assumption of 95% confidence interval, 5% margin of error and 41.44% estimated proportion of vaginal delivery with episiotomy at public health institutions of Axum

Town, Tigray Region, from previous study(42) with 10% of non-response rate was taken to calculate the sample size. Therefore, the following formula was used for sample size calculation for the first objective.

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

$$n = \frac{(1.96)^2 0.4144(1- 0.4144)}{(0.05)^2} = 373$$

Assumptions;

n = the number of delivered mothers to be interviewed;

Z (±) = 95% confidence interval, which is 1.96

P = Proportion of episiotomy practice was (41.44%) at public health institutions of Axum Town, Tigray Region(42).

d = the margin of error is taken as 5%

Table 1: Sample size calculation for the second objective by considering factors for episiotomy from previous studies, 2021G.C.

Factors for episiotomy	%Outcome in unexposed group	%Outcome in exposed group	Ratio(unexposed: exposed)	AOR	Sample size using 95% CI& power 80%	Reference
Parity	40.5	73.3	1	4.5	82	(43)
gestational hypertension	32.3	52.4	1	2.59	208	(54)
Birth attendant	34.4	56	1	3.44	184	(42)
Previous episiotomy	38.2	78.1	1	3.9	56	(43)
Macrosomia	47.4	84	1	4.8	62	(58)

The sample size obtained considering the above figures using Epi info version 7.2.2.6 all were smaller than from the above sample size

Finally the first objective was preferable for the sample size, by adding 10% of non-response rate the calculated sample size was = 410.

4.7 Sampling technique and procedure

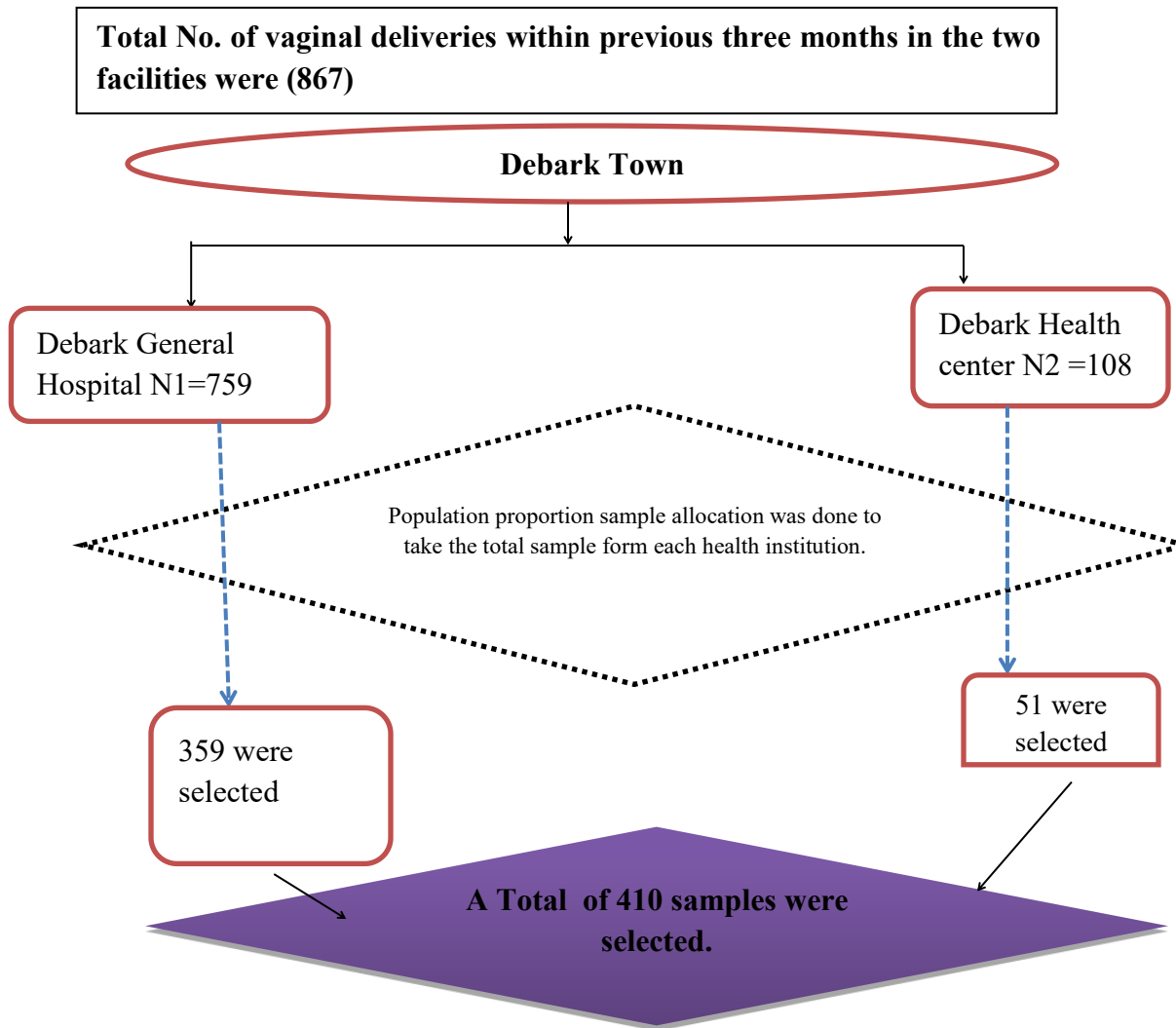
All public health facilities that are found in Debark town were included in the study. Based on list of pre assessment done, the three month average delivery reports were obtained from each institution of delivery mother the number was given for each participant that considered as code starting from N 1 to N 759 for Debark General Hospital deliver mother, and N 760 to 867 for Debark health center deliver mother. Based on the total deliver mother number of each institution a total of 867 samples were allocated proportionally to each health institution. Finally the study participants were selected by systematic random sampling. The sampling interval was determined by dividing the study population to the sample size to obtain “k”. The random number was selected from the numbers (1-k), using lottery method at each health institutions and this number was chosen to be the first study participant to be included in the sample. According to pre assessment done, the three month average delivery reports were 867 in Debark town public health institutions.

Source population become (N) =867

My sample size (n) =410

Finally $K = N/n$

$K = 867/410 = 2.1 \sim 2$ by using lottery method from 1-2 is selected and the first number become the first study participant and every other woman was included in the sample until the desired sample size for the study were achieve at each health institution and sample sizes allocate proportionally and the required amount of sample was collect from each health facilities.



.Figure 2 Schematic Presentation for the Sampling Procedure, Debark town, Ethiopia, 2021

4.8 Variables of the study

4.8.1 Dependent variable

Episiotomy done (Yes / No)

4.8.2 Independent variable

Socio- demographic and economic factors

Age of the mother, educational status, residence and occupation

Clinical and individual maternal factors

Parity, birth spacing, episiotomy previous history, ANC follow up history, known medical disease , time of delivery, duration of second stage of labour, perineal lacerations (tear) and onset of labor

Clinical and individual child factor

Birth weight, gestational age, fetal presentation, condition of fetal heart rate, presence of meconium, and sex of the neonate

Technical factors

Use of oxytocin, use of analgesia, birth attendants and instrumental vaginal delivery

4.9 Operational definition

Birth spacing: Inter pregnancy interval between live births after the first live birth. Example, short birth interval if the mother gives birth every two year or less than two years (59).

Macrosomia: Fetal weight greater than or equal to 4 kg(60)..

Analgesia: A drug for pain management consider if it is given before 3rd stage of labour.

Perianal laceration or tear: Is a tear of varying degrees (first to fourth) involving the perineum of women during vaginal birth(61)

4.10 Data collection tool and procedure

A standardized questionnaire containing socio- demographic characteristics, obstetric variables and technical variables related to the risk of exposure to the outcome, in English was prepared in accordance with the research objectives and the local situation of the study area. The questionnaire was first prepared in English and translated to Amharic for data collection purpose and re-translated back to English by language experts to check its consistency. The Data was collected through interview using structured, pre-tested questionnaire and reviewing maternal records (check list) for actual measurement of some variables through trained data collectors. The questionnaire was adapted from previously known sources. A total of five data collectors (BSC midwives) were recruited to collect data and three BSC midwives for

supervision. The selection criteria of data collectors include interest to participate on the study, being disciplined and punctuality at work. Then One day training was given to them before the beginning of data collection. Data were collected in the immediate post natal period, if conditions unfavorable, it was extended up to 24hrs post-delivery. Data collection completeness and consistency were reviewed and checked by the supervisor and principal investigator.

4.11 Data quality control

One day training was given for 5 BSC midwives on data collection & 3 BSC midwives about supervision during data collection and interviewing approaches. 5 % Pre-test was done at public health institutions of Kolladiba town before actual data collection was started, and necessary corrections were made accordingly. Data collection completeness and consistency was reviewed and checked by the supervisors and principal investigator at the end of each data collection day. The principal investigator was also closely supervising the activity on daily basis.

4.12 Data processing and analysis

After coding and checking for completeness and consistency, data were entered in to computer using Epi-data version 3.1 and were exported in to SPSS version 23. The data were further recoded, cleaned for missing data outliers before analysis. Data were described using descriptive statistics like frequencies, tables, and median standard deviation. Bivariable analysis using binary logistic regression was done to all independent variables to see their association with the dependent variable. All variables with p value < 0.25 in bivariable analysis were entered into the final multivariable logistic regression model. Then association between dependent and independent variables were assessed using AOR, 95% CI and p-value. Variable with p- value <0.05 was considered statistically significant. Stepwise backward elimination was applied for variable selection and Hosmer and Lemshow's statistic test was checked for model fitness of a logistic regression which was P value of 0.5559 indicating fitted logistic model since it was greater than p-value of 0.05.

4.13 Ethical consideration

Ethical clearance was obtained from Bahir Dar University Medicine and health science college ethical committee. A formal letter was submitted to all the concerned bodies in the study institution to obtain co-operation in facilitating the study. The objective, benefit and risks of the study to the study participants were explained by data collectors to get informed verbal consent prior to data collection. Respondents had the right to refuse or decline from the study at any time without any form of prejudice. The information they gave us would not to be used for any purpose other than the study and the information they gave us not contain their name or any identifiers which refers to them. For in-depth interview for professionals an oral consent for the interview was requested.

4.14 Dissemination of the result

The Result of the study will be submitted to Bahir Dar University, College of medicine and Health Science, Department of IESO, to Regional health bureau, to Bahir Dar Regional public Health institution, to Debark town public Health institution and Debark town government, and also disseminate to other stakeholders working in the area. Further attempts will be tried to publish it on peer reviewed international journals.

5 RESULT

A total of 410 women who gave birth were enrolled in the study with response rate of 100%. Among the study participants the proportion of episiotomy was 42.9% (176/410) with (CI95% 38–48%).

5.1: Socio-demographic characteristics of respondents

This study was conducted on 410 women that underwent vaginal childbirth at public health institution of Debark town over three months. Women's median age was 26 years with standard deviation of ± 5.244 . Among participants, 23.7% were no formal education, 48.3% primary level, 14.9% secondary level and 13.2% Diploma and above. The majority (63.2%) of participant were in the age group of 25-35 years, 39.8% were merchant, 62% lived in the city and 76.1% were orthodox (Table 2).

Table 2: Socio-demographic factors of mothers who delivered at public health institutions of Debark town north Gondar, Northwest, Ethiopia, 2021(N=410).

Variables	Frequency	Percentage (%)
Age group		
18-24 years	124	30.2
25-35years	259	63.2
36-49 years	27	6.6
Residence		
Urban	254	62
Rural	156	38
Educational status		
No formal education	97	23.7
Primary level(1-8)	198	48.3
Secondary level(9-12)	61	14.9
Diploma and above	54	13.2
Religion		
Orthodox	312	76.1
Muslim	89	21.7
Protestant	9	2.2
Occupation		
House wife	148	36.1

Farmer	38	9.3
Merchant	163	39.8
Daily laborer	5	1.2
Government employee	54	13.2
Student	2	0.5

5.2: Clinical and individual maternal factors

Of 410 participants with vaginal childbirth, 24.1% were nulliparous, 75.9% were multiparous, 17.1% had previous episiotomy and 80.7% women's had ANC follow up. Among multiparous participants 44.1% had short inter delivery interval and 31.7% had long inter delivery interval. The majority 88% of onset of labor were spontaneous, 67.8% delivered at night, 53.4% of them stayed less than or equal to 90 minute during second stage of labor at delivery coach, 16.6% participants had perineal tear during delivery among this 55.9 % were second degree tear and 52.5 % mother had hypertension during delivery (Table3).

Table 3: Clinical and individual maternal factors who delivered at public health institutions of Debark town north Gondar, Northwest, Ethiopia, 2021 (N=410).

Variables	Frequency	Percentage (%)
Previous episiotomy		
Yes	70	17.1
No	340	82.9
Parity		
Primipara	99	24.1
Multipara	311	75.9
ANC follow up history		
Yes	331	80.7
No	79	19.3
Birth spacing		
No previous delivery history	99	24.1
Two and less than two years	181	44.1
More than two years	130	31.7

Known medical diseases		
Yes	40	9.8
No	370	90.2
Type of medical disease		
Hypertension	21	52.5
Gestational diabetes	11	27.5
Other	08	20
Duration of second stage of labor		
Less than and equal to 90 minute	219	53.4
Greater than 90 minute	191	46.6
Time of delivery		
Day	132	32.2
Night	278	67.8
Onset of labor		
Spontaneous	361	88
Induced	49	12
Perineal lacerations (tear)		
Yes	68	16.6
No	342	83.4
Degree of perineal tear		
First degree	27	39.7
Second degree	38	55.9
third degree	2	2.9
Fourth degree	1	1.5

5.3: Clinical and individual child factors

Among 410 participants, 85.4% women's were delivered at term gestational age and 86.3% were vertex presentation. Majority of, 72.4% delivered with normal conditions of fetal heart beat, 57.8% were male neonate and 83.9% were normal birth weight at delivery (Table 4).

Table 4: Clinical and individual child factors among mothers who delivered at public health institutions in Debar town north Gondar, Northwest, Ethiopia, 2021 (N=410).

Variables	Frequency	Percentage (%)
Sex of the neonate		
Male	237	57.8
Female	173	42.2
Gestational age		
Preterm	21	5.1
Term	350	85.4
post term	15	3.7
Unknown	24	5.9
Birth weight		
Low birth weight(<2.5kg)	22	5.4
Normal birth weight(2.5kg-3.9kg)	344	83.9
Macrosomia(four and above kg)	44	10.7
Condition of fetal heart beat		
Normal(120-160 b/m)	297	72.4
Bradycardia (<100b/m)	67	16.3
Tachycardia(>180b/m)	46	11.2
Fetal presentation		
Vertex	354	86.3
Breech	28	6.8
Shoulder presentation	28	6.8
Presence of meconium		
Yes	49	12

No	361	88
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5.4: Technical factors

In this study among 410 women's, (85.6%) of them were delivered spontaneously followed by (14.4%) of the mothers by instrumental assisted vaginal delivery, 15.9% were oxytocin use, 4.6% of them used analgesia and majority of 92% delivery were attended by midwife (table5).

Table 5: technical factors for episiotomy at public health institutions in Debark town north Gondar, Northwest, Ethiopia, 2021 (N=410).

Variables	Frequency	Percentage (%)
Use of oxytocin		
Yes	65	15.9
No	345	84.1
Use of analgesia		
Yes	19	4.6
No	391	95.4
Instrumental vaginal delivery		
Yes	59	14.4
No	351	85.6
Type of instrumental delivery		
Vacuum	41	69.5
Forceps	18	30.5

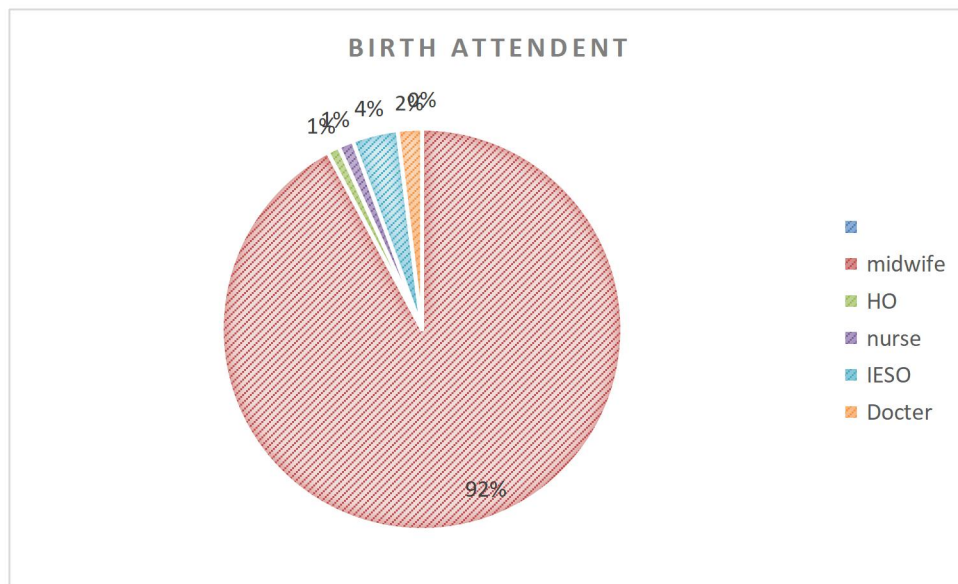


Figure 3: Birth attendant Debark town, Ethiopia, 2021

5.5: Bivariable and multivariable logistic regression analysis of factors associated with episiotomy practice

The bivariable analysis showed that maternal age, residence, previous episiotomy, short birth spacing interval, ANC follow up history, perineal laceration, Fetal presentation, induced labor, and use of analgesia were found to be candidate and considered for multivariable logistic regression with the episiotomy practice at p-value of 0.25. But, after adjusting for possible confounder by multivariable analysis, factors that remained significantly associated with a greater risk of episiotomy were: previous episiotomy, short birth spacing interval, Face presentation, perineal laceration and induced labor as statistically significant at p-value <0.05 at 95% confidence interval at public health institution of Debark town, 2021.

This study showed that women who had the history of episiotomy increased the risk of episiotomy by 3.73 compared with a woman who had never undergone an episiotomy (AOR=3.73; 95% CI (1.95, 7.15)).

The odds of episiotomy practice were 1.66 times greater among mothers who had birth spacing of two years and less than two years when compared with mothers who had birth spacing of more than two years (AOR=1.66; 95% CI (1.01, 2.73)).

the odds of episiotomy practice were 4.15 times greater among deliveries whose fetal presentation was face when compared with vertex presentations (AOR =4.15; 95% CI (1.22, 14.1).

The odds of episiotomy practice were 2.18 times more likely among mothers who had perineal tear during delivery when compared with who had no perineal tear (AOR=2.18; 95% CI (1.16,4.08).

Regarding the onset of labor, the odds of episiotomy practice was 2.12 times greater among women whose onset of labor starts by induction when compared with labor allowed to evolve spontaneously (AOR=2.12; 95% CI (1.08, 4.14) (table 6).

Table 6: Multivariable logistic regression analysis of factors associated with practice of Episiotomy at public health institutions in Debarke town north Gondar, Northwest, Ethiopia, 2021.

Variables	Episiotomy practice		COR (95%CI)	AOR (95%CI)	P value
	Yes (%)	No (%)			
Age group					
18-24 years	46(11.2)	78(19.0)	0.34(0.14,0.82)	0.52(0.19,1.38)	0.194
25-35 years	113(27.6)	146(35.7)	0.45(0.20, 1.03)	0.58(0.23,1.48)	0.258
36-49 years	17(4.1)	10(2.4)	1	1	
Residence					
Urban	102(24.9)	152(37.1)	1	1	
Rural	74(18.0)	82(20)	1.34(0.90,2.01)	1.32(0.83,2.12)	0.237
Previous Episiotomy					
Yes	54(13.2)	16(3.9)	6.03(3.30,10.9)	3.73(1.95,7.15)	<0.001
No	122(29.7)	218(53.2)	1	1	
Birth spacing					
No previous delivery history	28(6.8)	71(17.3)	0.61(0.34,1.07)	0.65(0.36,1.19)	0.169
Two and less than two years	97(23.6)	84(20.5)	1.78(1.13,2.82)	1.66(1.01,2.73)	0.044
More than two	51(12.4)	79(19.4)	1	1	

years					
ANC follow up history					
Yes	137(33.4)	194(47.3)	1	1	
No	39(9.5)	40(9.8)	1.38(0.84,2.25)	0.85(0.48,1.50)	0.585
Fetal presentation					
Vertex	138(33.7)	216(52.6)	1	1	
Breech	14(3.4)	14(3.4)	1.56(0.72,3.38)	1.54(0.68,3.49)	0.297
Face	24(5.9)	4(0.97)	9.39(3.19,27.6)	4.15(1.22,14.1)	0.022
Use of Analgesia					
Yes	14(3.4)	5(1.2)	3.95(1.39,11.2)	2.90(0.91,9.21)	0.070
No	162(39.5)	229(55.9)	1	1	
perineal laceration/ tear					
Yes	45(10.9)	23(5.7)	3.15(1.82,5.44)	2.18(1.16,4.08)	0.014
No	131(31.9)	211(51.5)	1	1	
Onset of Labor					
Spontaneous	146(35.6)	215(52.5)	1	1	
Induced	30(7.3)	19(4.6)	2.32(1.26,4.28)	2.12(1.08,4.14)	0.028
Bold indicates significant at P-Value<0.05, COR: crude odds ratio, CI=Confidence interval, AOR=adjusted odds ratio, 1=reference.					

6 DISCUSSION

This study attempted to institutional based data to assess the proportion of episiotomy and its associated factors at public health institution of Debarik Town. This study indicated that the proportion of episiotomy among laboring mothers who gave birth vaginally was 42.9% with 95% CI (38–48). Although there is no ideal rate for the practice of episiotomy around the world, let us admit however that the overall rate found in this study is far greater to the proportion of less than 10% recommended by the WHO (9) .

It was higher than previous studies done in Ethiopia at Mizan Aman General Hospital which reported that the prevalence of episiotomy was found to be 30.6% (38) .This variation might be explained by the difference in study period gap, and the study population was different which studied at Hospital.

This finding was lower than the previous finding at study in at saint Paul's hospital millennium medical college Addis Ababa which reported that the prevalence of episiotomy was 65.4 % (37). This could be due to the high risk population as the referral hospital deals with referral cases. The result of this study was in line to a previous study done at public health institutions of Axum town, north Ethiopia, which reported that, the proportion of episiotomy practice was 41.44%(36). The reason for those close results might be studying facilities, similar practice level.

The result of this study also higher than those studies done in Bogodogo in Ouagadougou, Burkina Faso 22% (20) and Ogbomoso, Nigeria 34.3% (34). This Difference may be due to the difference in the design of the study and the time gap; as the previous studies were retrospective cross-sectional studies, some under- registration may result and could lead to a lower level of episiotomy procedure. In addition to this, the number of trained health professionals available with technology development and country policies towards the selective use of episiotomy.

However, This finding was lower than the previous finding a Study done in Enugu, Southeast, Nigeria and Mulago National Referral Hospital and in Romania the magnitude of episiotomy was 62.1% and 71.4% respectively (35, 38) .This variation might be explained by the difference in study area and study facilities, which was study at referral hospital .

After logistic analysis, this study found that among mothers who were delivered face presentation had 4.15 fold higher risk of having episiotomy when compared with vertex presentation. This result is similar to the study conducted at public health institutions of Akaki Kaliti in Addis Ababa(40) .This can be justified by Fetal mal presentation May results instrumental and difficult deliveries leads to the higher practice of episiotomy in these centers and similarly in other centers.

The statistical analysis of this result showed that mothers who had birth spacing of two years and less than two years were 1.66 times more likely to have episiotomy than mothers who had birth spacing of more than two years. This result is similar to the study conducted in Shahroud city, northeast of Iran. This might be due to the fact that those mothers who had short birth spacing their reproductive organs become weak and delicate this might be a risk for perineal tear (51).

The statistical analysis of this study implies that: starts of labor by induction were 2.12 times more likely to perform episiotomy than labor allowed to evolve spontaneously. Our results coincide with findings in Kurdistan region (48) and at Jima teaching hospital Ethiopia(50). The potential reason may be if labor does not start and progress naturally that does not bring perineal muscle physiological relaxation and then could increase labor period, it could also be due to intentional use in an effort to reduce labor time and could imply a more interventionist approach by the delivery attending professional. Induced deliveries can also be more dystocic and can cause a cascade of other interventions that may result in fetal heart rate patterns of non-reassurance that require an episiotomy to be performed by the caregiver.

In addition, the finding of this study also revealed that among those mothers who had perineal tear during delivery were 2.18 times more likely to have episiotomy than mothers who had no perineal tear during delivery .this finding is supported by evidence from a study conducted in Israel (45) and in Mizan Aman (38). This might be due to a reason that episiotomy in such cases is supposed to lower and increased risk of obstetric anal sphincter injuries in subsequent deliveries.

Moreover, the statistical analysis, of this study found that mothers who had history of episiotomy multiplied the risk of episiotomy by 3.73 compared to a woman who had never had an episiotomy. This study is consistent with the study conducted in studies in Bukavu, Democratic Republic of Congo .This is related to the repair that has been done and the complications that arise from episiotomy for future deliveries (43).

6.1 Strengths of the study

This study was conducted in two health institutions (hospital and health center) that are owned by a public that could make it more representative.

6.2 Limitation of the study

This study was conducted with in short period of time. In this study it was difficult to know clearly the proportion of mothers who got episiotomy care due to an indication for episiotomy or due to false initiation of episiotomy.

7 CONCLUSION AND RECOMMENDATION

7.1 Conclusion

The prevalence of episiotomy in this study area is high as compared with WHO recommendation (5-10%) and it's significantly associated with Face presentation, short birth spacing interval, induced labor, perineal tear and previous episiotomy.

7.2 Recommendation

For health care workers

In this study, Episiotomy among laboring mothers were found to have association with face presentation, short birth space interval, induced labor, perineal tear and previous episiotomy. Therefore, health professionals should give focus on this and do episiotomy timely and appropriately so as to lower the increased risk of obstetric anal sphincter injuries and other complication in subsequent deliveries. But in the absence of benefit and with a potential for harm, a procedure should be abandoned.

For Regional health bureau and Regional public health institution

Periodic on-job training regarding the indication of episiotomy should be provided to all the obstetric care providers. Coordinate and inter-collaborate different stakeholders working on maternal health programs should work on those factors to reduce the magnitude of episiotomy. Furthermore, it is better to give episiotomy-restrictive interventions to birth attendants. Moreover, clinicians and any responsible body should critically follow the work done in the health institution.

For researchers

Follow up studies must be undertaking to identify truly indicated episiotomy procedures.

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9 ANNEXES

Annex- I Information Sheet

Title of the research Project: Assessment of the proportion of the Episiotomy practice and its associated factors among mothers who gave birth at public health institutions of Debark town north Gondar, Ethiopia, 2021 G.C

Principal Investigator: Andargew Alemu (BSc in public health officer)

Advisors:

1. Dr. Enyew Abate
2. Getachew Hailu (MPH)

Name of the organization: Bahir Dar University; College of Health Science, Department of Medicine

Introduction

My name is Andargew Alemu and I am a student at Bahir Dar University for masters' degree. I am doing a research on Assessment of the proportion of episiotomy practice and its associated factors among mothers who delivered at public health institutions of Debark town as a part of my study course. I am going to give you information and invite you to be part of this research.

Before you decide to be part of the research you can talk to anyone you feel comfortable with about the research.

If there is any word that you don't understand while I am giving the information, please stop me and ask me and I will explain to you.

Purpose of the Research

The purpose of this study is to assess proportion of episiotomy and associated factors at public health institutions of Debark town north Gondar, Ethiopia, 2021 G.C

.The results of this study will be used to design appropriate intervention programs and helpful to design unacceptable episiotomy preventive strategies.

Voluntary participation

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not, all the services you receive as any member of this community will continue and nothing will change. If you choose not to participate in this research, you will be offered all the services that are routinely offered. You may change your mind later and stop participating even if you agreed earlier.

Confidentiality

The information collected for this research will be kept confidential. It will be stored in a file using codes, without your name. It will not expose to anyone. In addition it will used only for this particular research but no other purposes.

Benefits

Your participation in this research may not directly provide you a certain benefit as an individual. But it helps us in assessing factors of episiotomy.

Risks and Side effects

There are no side effects and known risks related with this kind of research so far. The only discomfort is may be sharing us your precious time for interview.

Who to contact

This research was reviewed and approved by the Ethical Review Committee of Bahir Dar University. If you wish to ask questions now or later you can use the contact addresses below.

Andargew Alemu (BSC PH) : Tel: +251-919946508

E-mail: andargew4@gmail.com

1. Getachew Hailu (MPH); Tel: 251-936324779

2. Dr. Enyew Abate; Tel: 251-911591532

Annex -II: Consent Form

Greeting:

My name is _____. I am here to collect information from you.

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. Whether you choose to participate or not, all the services you receive as any member of this community will continue and nothing will change. Any information you give will be kept confidential. Your participation in this research may not directly provide you a certain benefit as an individual. There are no side effects and known risks related with this kind of research so far and it takes only about 20 minutes of participation.

Up to now you have been given all information that I feel you should know regarding the research project that you are being asked to participate in. I think you have understood the issues in detail. Thank you for your cooperation and listening!!!

Are you willing to participate?

Yes ☐ continue

No ☐ (stop the interview)

If respondent agrees to be interviewed,

- Starting time _____
- End time _____

Questionnaire ID _____

Data collector's: code _____ Name _____

Date of data collection: ____ \ ____ \ ____ day \ month \ year

Checked by supervisor: Name _____ Signature _____ Date _____

Part I: Socio-demographic characteristics of the respondent

No.	Questions	Answers	Code	Skip to
101	Age	_____ Years		
102	What is your residence?	Urban	1	
		Rural	2	
103	What is your educational level?	No formal education	1	
		Primary level (Grade 1-8)	2	
		Secondary level (Grade 9-12)	3	
		Diploma	4	
		First degree and above	5	
104	What is your religion?	Orthodox	1	
		Muslim	2	
		Protestant	3	
		Catholic	4	
		Others (specify)_____	5	

105	What is your occupation?	House wife	1	
		Farmer	2	
		Merchant	3	
		Daily laborer	4	
		Government employee	5	
		Student	6	
		Other (specify) _____	7	

PART II: Clinical and individual maternal factors

	Questions	ANSEWR	code	skip to
201	Did you have episiotomy previous history	Yes No	1 2	If Primi skip to 302
202	What is your Parity?	Zero One Two-four Five and above	1 2 3 4	
203	Did you have ANC follow up history for this delivery?	Yes No	1 2	If No.Skip to No.305
204	If yes for the above question How many times, if the mother visit more than 4 times group at four?	One Two Three Four	1 2 3 4	
205	How long you have used to space the birth interval?	No previous delivery history Two and less than	1 2	

		two years More than two years	3	
206	Did you have known medical diseases?	Yes No	1 2	If No.Skip to No.308
207	If yes which medical diseases do you have	Hypertension Gestational diabetes Other (specify)	1 2 3	
208	What was the time of delivery?	Day Night	1 2	

Annex III: Checklist for clinical and individual maternal, child and technical factors

1. What was the duration of second stage of labor?

1. Less than and equal to 90 minute
2. Greater than 90 minute

2. Is there any Perineal laceration (tear)?

1. Yes
2. No

3. If yes for perineal laceration (tear)

1. first degree tear
2. second degree tear
3. third degree tear
4. fourth degree tear

4. What was the onset of labor?

1. Spontaneous
2. Induced

5. What is the Sex of the neonate?
 1. Male
 2. Female
6. What was the gestational age during delivery?
 1. Preterm
 2. Term
 3. Post term
 4. Unknown
7. What was the birth weight (kg) of the neonate immediately after delivery?
 1. Low birth weight (<2.5 kg)
 2. Normal birth weight (2.5 -3.9 kg)
 3. Macrosomia (four and above kg)
8. What was the condition of fetal heart rate during 2nd stage of labor?
 1. Normal (120-160)
 2. Bradycardia(<100)
 3. Tachycardia (>180)
9. What was the fetal presentation during labour?
 1. Vertex
 2. Breech
 3. Other specify
10. Is there presence of meconium during labour and delivery?
 1. Yes
 2. No
11. Who was the birth attendant?
 1. Midwife
 2. Ho
 3. Nurse
 4. IESO
 5. Doctor
12. Does vaginal instrumental deliveries performed?
 1. Yes
 2. No

13. If yes, which type of vaginal instrumental delivery used?

1. Vacuum
2. Forceps

14. If before active 3rd stage of labour. Did oxytocin used to fasten contraction during labour?

1. Yes
2. No

15. If before active 3rd stage of labour. Did analgesia used during labour?

1. Yes
2. No

16. Does episiotomy performed for this delivery now?

1. Yes
2. No