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Research Article

Factors Associated with Episiotomy Practices in Gondar City at Public Health Facility Northwest Ethiopia: A Cross-Sectional Study

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Abstract

Background: An episiotomy is a surgical incision made in the perineum and posterior vaginal wall to allow for fetal delivery through a vaginal orifice. It is an obstetric procedure introduced into practice with a clear and acceptable indication of the extent of its limited performance obstetric interventions. Despite its limited acceptable indication, the prevalence of episiotomy is increasing due to different unclear factors. Therefore, this study is aimed at determining the prevalence of episiotomy and associated factors among women who gave birth at Gondar public health facility, Northwest Ethiopia.

Method: A facility-based cross-sectional study was conducted among 411 mothers from September 1 to November 1, 2021. Data were gathered using a structured questionnaire administered by an interviewer and supplemented with a review of the labor and delivery chart. Epi-data version 4.6 and SPSS version 23 software were used for data entry and analysis. Binary logistic regressions (bivariable and multivariable) were performed to identify statistically significant variables. An adjusted odd ratio with a 95% CI was used to declare statistically significant variables based on a p-value < 0.05 in the multivariable logistic regression model.

Result: A total of 411 study participants were interviewed with a response rate of 100%. The prevalence of women undergoing episiotomy was found to be 52.8% with a 95% CI of 47.7–57.4). In the multivariable analysis, being a perimiparous woman (AOR = 8.95; 95% CI: 4.65, 17.20), the presence of labor-related diseases (AOR = 3.03; 95% CI: 1.21, 7.62), having fetal distress (AOR = 4.51; 95% CI: 2.71, 6.49) and fetal weight of 4 kg (AOR = 3.42; 95% CI: 2.64, 6.62) were significantly associated with prevalence of episiotomy.

Conclusions: The prevalence of women undergoing episiotomy was higher than the World Health Organization's maximum limit of recommendation (10%). Therefore, the practice of routine episiotomy should be abandoned. To reduce this high prevalence of episiotomy practice, obstetric clinical training should be provided for health providers to use the new national guidelines. It is highly advised that the health providers should be followed during labor delivery by an obstetric ultrasound to confirm the clear indication of episiotomy.

Keywords: *Episiotomy, Ethiopia, Gondar*

Abbreviations

ANC: Ante Natal Care; APGAR: Appearance Pulse Grimace Activity and Respiration; AOD: Adjusted Odd Ratio; COR: Crude Odd Ratio; CI: Confidence Interval; OR: Odd Ratio and WHO: World Health Organization

Introduction

An episiotomy is the surgical enlargement of the vaginal orifice during the last part of the second stage of labor or childbirth by an incision into the perineum to facilitate vaginal delivery [1]. Based on the World Health Organization (WHO) guidelines, routine use of episiotomy practice is not recommended, which is less than 10% of those undergoing spontaneous vaginal birth [2].

The American College of Obstetricians and Gynecologists (ACOG) and the Federation of International Gynecologists and Obstetricians (FIGO) have also established a conservative episiotomy policy guideline of 30% in general, 50% for perimiparous, and 10% for multiparous women with judicious indication to reduce perineal more than second-degree tears with complications [3]. In fact that, the existing evidence also supports the recommendation to allow episiotomy use only during an assisted vacuum or forceps delivery, shoulder dystocia, breech delivery, macrosomic fetuses, and persistent occipital posterior positions in the case of abnormal labor progression and non-reassuring fetal heart rate pattern [4-6].

Complications of performing 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, pain during sexual intercourse (dyspareunia), recto-vaginal fistula, severe perineal pain that lasted an average of 5.5 days, edema, increased blood loss, hematoma, and an increased chance of human immune deficiency virus transmission from mother to neonate [7,8]. Strategies for changing routine practice were difficult in current episiotomy practice, as were creating social and organizational environments that encourage motivation, which was more effective in lowering the episiotomy rate [9].

Globally, the prevalence of episiotomy ranges from 3.7% to 75% [10]. In some African country studies, it ranges from 63.3% (South Africa) to 100% (Guatemala) for nulliparous women, and other evidence in Rwanda has been reported for nulliparous women at 80.1% and 19.9% for multiparous women [11-14]. The findings from studies conducted in different parts of Ethiopia revealed that the magnitude of episiotomy was over 30% and the practice was reported to increase up to 2.3-folds more in a rural part of Ethiopia [15,16]. The rate of episiotomy in developed countries is on the decline, but in developing countries, it remains high [17]. While episiotomy practice has become a common issue among mothers who have delivered vaginally in Ethiopia, studies are limited to showing the extent of the problem [18]. The episiotomies are used differently depending on the obstetric procedure, maternal and fetal conditions, type of birth attendant, level of education of health providers, and years of experience of the birth attendant [19-21]. Therefore, this aims is to assess the prevalence of episiotomy and associated factors among women who gave birth at the Gondar public health facility, Northwest Ethiopia, which may help to reduce adverse consequences to the mother. Moreover, the finding of this study may help clinicians to make an informed decision about episiotomy-related clinical practice, There by achieving the best pregnancy outcome.

Methods and materials

Study area, design and period

The study was conducted in Gondar Town, Amhara Regional State in Northwest Ethiopia. The town is one of the ancient and largely populated towns in the country. It is located about 748 km northwest of Addis Ababa (the capital of Ethiopia). It has an altitude of 12 360N 37 280E and longitude of 12.60N 37.467'E with an elevation of 2100 meters above sea level and is divided into 12 administrative areas (sub- cities) which consist of 21 kebeles (the smallest administrative units in Ethiopia). According to the Ethiopian central statistics agency, the projected total population of Gondar town in the year 2021 is 378,000 [22] It has one comprehensive specialized hospital, eight health centers, and two private hospitals for providing maternal health services, like antenatal care, labor delivery, postnatal, and vaccination services, which are provided free of charge as exempted services. A facility-based cross-sectional study was conducted from September 1 to November 1, 2021, Gondar, Northwest Ethiopia.

Participants

The source population was all women who gave birth vaginally in Gondar town's public health facility. During the study period, all women who gave birth vaginally after the gestational age of viability (28 weeks in the Ethiopian context) in Gondar town public health

facility were included in the study population. Furthermore, all mothers who were unable to communicate, critically ill, or lost their charts were excluded from the study.

Sample size determination and sampling techniques

The sample size was determined using a single population proportion formula with the following assumptions: the proportion of women who had episiotomy at Axum Town, Tigray Region, North Ethiopia was (41.44%) [12], with a 5% margin of error, a value for 95% confidence interval (CI 1.96), and a non-response rate of 10%, the final sample size was 411.

A systematic random sampling technique was employed for the selection of the sampling units. In the town, there was one comprehensive, specialized hospital and eight public health centers. Among those health facilities, I randomly selected one comprehensive specialized hospital and two health centers for our study to represent all public health institutions in Gondar town health facility and allocated proportionally to the selected public health institutions based on the average monthly number of deliveries. A study participant was chosen from the maternity ward every Kth interval using a systematic random sampling technique. The first study participant was selected by the lottery method, and then the next study participant was identified systematically in every other interval until at the health faculty, the required sample size was achieved. Face-to-face interviews with pretested questionnaires and supplemental chart reviews (for questions that couldn't be answered by the interviewer alone) were used for data collection.

Data collection tools and processes

A standardized questionnaire containing socio-demographic characteristics, obstetric variables, and other health service-related variables related to the risk of exposure to the outcome. The English version was prepared following the research objectives and the local situation of the study area. The questionnaire was then translated into Amharic and back to English to ensure the instrument's accuracy. Four undergraduate students served as data collectors, and two MSc midwifery lecturers supervised the data collection process. Then one day of training was given on the collection of data by face-to-face interview and supported with chart review using structured and pre-tested questionnaires to control under-registration of clinical data. The data were then checked for any incompleteness and were later coded.

Data quality management

A pre-test was done on 5% of the sample size (21 participants) in Dabat primary hospital. A one-day training was given for the data collectors before the actual data collection. The training covered the aim of the study, procedure, inclusion and exclusion criteria, data collection techniques, contents and details of the questionnaire, the art of interviewing and clarification. Moreover, during data collection, the supervisor checked how the data collection process was going on. At the end of each data collection, the principal investigator also checked the completeness of the filled questionnaires. In other words, every questionnaire was checked before data entry by the principal investigator. Multicollinearity was also checked to see the linear correlation between the independent variables by using a standard error and variance inflation factor. Variables with a standard error of > 2 and a variance inflation factor (VIF) of one to ten were checked by the multivariable analysis. The Hosmer-Lemeshow goodness of fit test was used to check for model fitness by looking at the cut-point P-value > 0.05.

Data processing and analysis

Data entry was performed using the statistical program Epi-Data version 4.6 and then exported into SPSS version 23 for analysis. Descriptive statistics were carried out and presented with narration and tabulation. In addition, binary logistic regression (bivariable and multivariable) was performed to identify statistically significant variables using a cut-off p-value < 0.25 in the bivariable analysis to identify candidate variables for multivariable logistic regression. An adjusted odds ratio with a 95% confidence interval was used to declare

statistically significant variables based on a p-value < 0.05 in the multivariable binary logistic regression model. The study's outcome was presented in the form of texts and tables.

Result

Socio-demographic characteristics

A total of 411 study participants were interviewed, with a response rate of 100%. The majority of the 296 (72.1%) of participants were in the age group below or equal to 34 years, with the mean ± SD age of the participants of 30.82 (± 5.65) years. Of all the study subjects, about 352 (85.6%) of women were able to read and write at an educational level. Almost all 385 (93.7%) of the study participants were married. Related to the residence status of the respondents, 305 (74.2%) were urban dwellers (Table 1).

Variable	Frequency	Percent
Age		
≤34	296	72.1
≥35	115	27.9
Educational status		
Unable to read and write	59	14.4
Able to read and write	352	85.6
Occupational status		
House wife	154	37.5
Government employee	166	40.4
Private/NGO	26	6.3
Merchant	32	7.8
Daily laborer	6	1.5
Unemployed	13	3.2
Student	14	3.3
Marital status		
Single	8	1.9
Married	385	93.7
Divorced	11	2.7
Widowed	7	1.7
Husbands educational status		
Unable to read and write	28	6.8
Able to read and write	383	93.2
Husbands occupation		
Governmental employee	159	38.7
Private/NGO	68	16.5
Merchant	103	25.1
Daily laborer	16	3.9
Farmer	60	14.6
Others*	5	1.2
Residence		
Urban	305	74.2
Rural	106	25.2
Family income		
≤1500	28	6.8
1501-9999	269	65.5
10000 and above	11	27.7

Table 1: *Socio-demographic characteristics of the study participants at Gondar public health facility, Northwest Ethiopia, 2021 (n=411) Others*=student, unemployed.*

Child birth characteristics of mothers

Of the total respondents in this study, almost all 376 (91.6%) and 311 (75.7%) of them were Gravida < 4 and Para ≥ 2 respectively. More than two–thirds of 311 (75.7%) had a birth spacing of fewer than two years ago. About 69 (16.8%) of mothers' fetuses had experienced non-reassuring fetal heart rate. Almost all 406 (98.8%) participants had at least two ANC follow-ups in their last pregnancy. Of the study subjects, three-fourths (300) (73.0%) had labor started spontaneously. Of the total multiparous women in this study, 50 (12.2%) of them had a history of previous episiotomy being performed. Regarding the labor delivery process, the majority (367, or 89.3%) of fetal presentations were vertex presentations (Table 2).

Variable	Frequency	Percent
Gravidity < 4 ≥ 5	376 35	91.6 8.4
Parity 1 ≥ 2	100 311	24.3 75.7
Birth spacing Below24 month Above 25 month	311 100	75.7 24.3
Onset of labor Spontaneous Induction Artificial rupture of membrane	300 104 7	73.0 25.3 1.7
Fetal presentation Vertex Brow Face Breech	367 10 28 6	89.3 2.4 6.8 1.5
Gestational age ≤ 37 37- 41 ≥ 42	147 244 20	35.8 59.4 4.8
Position during labor Lithotomic without choice Lithotomic with choice	198 213	48.2 51.8
Duration of 2nd stage of labor in minute ≤ 30 30 - 60 ≥ 61	109 301 1	26.5 73.2 0.3
Apgar score in 1st minute ≤ 6 ≥ 7	52 359	12.7 87.3
Birth weight ≤ 2500 2500 - 4000 ≥ 4000	43 314 54	10.5 76.4 13.1
Previous cesarean section Yes No	11 400	2.7 97.3
Labor related disease Yes No	27 384	6.6 93.4
Type of labor related disease (n = 27) Debits milts Hypertension Cardiac problem	10 16 3	34.0 56.3 9.7

Table 2*: Obstetric related factors of the study participants at Gondar public health facility, Northwest Ethiopia, 2021 (n = 411).*

Health Service Related Factors with Episiotomy Practice

The prevalence of women undergoing episiotomy was found to be 52.8% among 411 vaginal-delivered mothers with a 95% CI (47.7, 57.4). Among these, more than half (52.3%) of the episiotomies were done without health professionals introducing themselves during the labor delivery process. Regarding to services, 38 (73.1%) of episiotomies were performed without counseling by episiotomy procurers, while 14 (26.9%) were counseled on the need for an episiotomy. About 39 (75.0%) of episiotomies were done by midwife professionals, while 13 (25.0%) of episiotomies were performed by doctors.

Factors Associated with Episiotomy Practice

In bivariate logistic regression analysis revealed that mother's age, household income, gravidity, ANC follow up, parity, fetal distress, labor-related disease, 1st minute Apgar score, and birth weight variables were fitted for a multivariable logistic regression model. But, after multivariable logistic regression analysis, those variables like perimiparous presence of labor-related diseases, fetal distress, and birth weight greater than or equal to 4.00 gram were significantly associated with the outcome variable in the final multivariable analysis.

In this study, those women who were perimiparous were found to have a significant statistical association, where being perimiparous was more than 8.95 times more likely to have an episiotomy during delivery than multiparous women (AOR = 8.95; 95% CI: 4.65, 17.20). Concerning fetal condition, mothers who had distressed fetal condition were 4.51 times more likely to have an episiotomy procedure than those mothers who had normal fetal condition (AOR = 4.51; 95%; CI: 2.71, 6.49).

On the other hand, mothers who gave birth to neonates whose weight was more than or equal to 400 gram were 3.42 times more likely to undergo an episiotomy procedure during delivery than those whose weight was below 400 gram (AOR =3.42; 95% CI: 2.64, 6.62). Regarding pregnancy related complication, those mothers who had labor-related diseases were more than three times more likely to have episiotomy procedures than mothers with normal maternal condition during labor delivery (AOR = 3.03; 95% CI: 1.21, 7.62 (Table 3).

Variables	Episiotomy out come		COR,95% CI	AOR,95%CI
	Yes	No		
Age ≤ 34 ≥ 35	175 (59.1%) 42 (36.5%)	121 (40.9) 73 (63.5)	2.51 (1.61,3.92) 1	1.585 (0.912,2.753) 1
Gravida ≤ 4 ≥ 5	204 (54.3%) 4 (26.7%)	172 (45.7) 11 (73.3)	3.26 (1.02,10.43)* 1	1.852 (0.465,7.349) 1
Parity 1 ≥ 2	87 (87%) 130 (41.8%)	13 (13.0) 181 (58.2)	9.62 (4.99,17.4)** 1	8.95 (4.65,17.2)** 1
ANC visit Yes No	210 (52.2%) 7 (77.8%)	192 (47.8) 2 (22.2)	1 3.2 (0.66,15.6)	1 0.27 (0.000,1.000)
Labor related disease Yes No	19 (70.4) 198 (51.6)	8 (29.6) 186 (48.4)	2.23 (0.95,5.221) * 1	3.03 (1.21,7.62)** 1
Fetal distress Yes No	49 (71%) 168 (49.1%)	20 (29.0%) 174 (50.9%)	2.54 (1.45,4.45)** 1	4.51 (2.71,6.49) ** 1
1st minute Apgar score ≤ 6 ≥ 7	38 (73.1%) 179 (49.9%)	14 (26.9%) 180 (50.1%)	2.73 (0.19,0.70)* 1	1.587 (0.46,5.47) 1
Birth weight < 4 kg ≥ 4kg	152 (42.6%) 37 (70.6%)	205 (57.4%) 17 (29.4%)	1 2.94 (1.93,4.95)	3.42 (2.64,6.62) *

Table 3: *Factors associated with episiotomy practice among birth giving mothers at Gondar public health facility, Northwest Ethiopia, 2021 (n = 411) N.B ANC = antenatal care, to say ANC visit yes, if more than two or more times*

** = statistically significant at p < 0.01, ** = statistically significant at p < 0.001.*

Discussions

The primary goals of this study were to determine the prevalence of episiotomy and identify risk factors among women giving birth at a public health facility in Gondar town. Thus, the prevalence of episiotomy among mothers who give birth at public health facility was 52.8%, with a 95% CI (47.7, 57.4). The proportion of episiotomies among nulliparous women was 87%, whereas among multiparous women, 41.8% underwent episiotomies at the time of their vaginal deliveries. Overall, the prevalence of episiotomy was higher than from different studies conducted, which was higher than the recommended value by the WHO [14], Pernambuko in Brazil (29%) [23], Colombia (30.45%) [13], Brazil (28.8%) [20], Iran (41.5%) [24], Aminu Kano Nigeria (41.4%) [1], Democratic Republic of Congo (20.4%) [21] and Nairobi Kenya (28.2%) [25], Mezan aman general hospital Ethiopian (30.6%) [11], Addis Ababa black lion hospital (40.2%) [16], Akaki Kality in Addis Ababa (35.2%) [4], Axum town public health institutions(41.44) [12], Bahir Dar Comprehensive Specialized Referral Hospital Ethiopia (41.1%) [26], Metema primary hospital, Ethiopia (44.15%) [18] and Tigray Region, North Ethiopia (41.44%) [12].

These disparities may be due to the difference in the study population. Because some previous studies were retrospective cross-sectional studies, there may have been some under-registration, which could have led to a lower level of episiotomy procedure. In addition to this, differences in the availability of obstetric ultrasound and the use of a standard guideline related to episiotomy indications to monitor the progress of labor delivery conditions in the study area may vary in that setup. Current study setting health providers' are labor delivery followed simply by manual fetoscope. Evidence states that labor followed by a fetoscope has a high prevalence of episiotomy [27,28]. Another explanation for the low magnitude of episiotomy might be associated with experiences of birth attendants, use of certain birthing positions (examples, hands and knees) and premium support. These findings are consistent with those different reported in Ethiopia [4,29].

In contrast, the finding is lower as compared to previous studies done in South-east Nigeria (62.1%) [30] and Uganda (73%) (73%) [31] This discrepancy might be attributed to variation in study participants and study settings, which were studied in Nigeria and Uganda. The study participants were merely perimiparous and focused on referral hospitals. Evidence has shown that the prevalence of episiotomy is higher among multiparous mothers than among perimiparous mothers [32].

The analysis of this study showed that perimiparous women had an almost 9-fold higher likelihood of having an episiotomy compared to multiparous women. This finding was supported by local previous studies done in Brazil [20],Turkey [33] and in Addis Ababa, Ethiopia [4], Axum [12] and Mezan aman [11]. This might be since most of the time, perimiparous women were prone to perineum tightening, which is one indication of episiotomy, and the old recommendation of routine episiotomy in perimiparous women, performed by many health professionals, might still have an influence on the indication of this procedure for those women. In this study, it was observed that a higher prevalence of episiotomy was observed in those women who had labor-related complications than their counterparts. This finding is supported by a study conducted in Brazil [20]. One possible reason could be that episiotomy is recommended to shorten the second stage of labor for women who have labor-related diseases such as cardiac problems and pregnancy-induced hypertension.

In the current statistical analysis of this result, it showed that mothers who had distressed fetal conditions had a 4.15 times higher risk for prevalence of episiotomy. This finding was also supported by studies in Ethiopia [34] and in France [35]. The potential explanation might be that fetal distress occurs in a health facility managed by providing episiotomy next to maternal resuscitation and lateral position. In addition to this, in health centers there may be a limit to the number of trained health professionals and obstetric ultrasound to the use of a standard guideline related to assessing early fetal. Furthermore, the birth weight of the newborn had a significant statistical association with episiotomy, where mothers who gave birth to a neonate whose weight was more than or equal to 3.6 kg were 3.42 times more likely to have an episiotomy procedure during delivery than those whose weight was below 4 kilogram. This result was not significant in the studies done in Spain [28], Mizan Aman General Hospital in Ethiopia [36], Debre Markos Referral Hospital [37] and Axum Town [29]. This finding gives a hint that clinicians would tend to give episiotomy for a fetus if they assumed the weight was higher. In fact, the higher

the estimated fetal weight, the more it could predispose to perinatal trauma if the provider tends to give judicious episiotomy in time. Evidence indicated that one of the main reasons clinicians used to perform episiotomy was fear of a perineal tear [38]. Since healthcare providers should be pregnant and labor should be followed by obstetric ultrasounds to confirm the indication of episiotomy, because this may reduce the fear of the birth attendant. Also, those who fear perineal tears should consult an experienced birth attendant early.

Limitations of the Study

The study acknowledged some important possible limitations that should be considered when interpreting the results. First, the study was cross-sectional, a design that does not permit establishing cause-effect relationships. Second, social desirability and recall bias might be introduced. Thirdly, all participants were recruited from health facilities, which may introduce selection bias.

Conclusions

The prevalence of women having episiotomies was higher than the WHO recommendation, which is that the prevalence of episiotomy rate is about 10% or less with acceptable obstetric evidence indication. Therefore, the practice of routine episiotomy should be abandoned. To reduce this high prevalence of episiotomy practice, obstetric clinical training should be provided for health providers to use the new national guidelines. It is highly advised that the health providers should be followed during labor delivery by an obstetric ultrasound to confirm the clear indication of episiotomy.

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Declarations

Ethical Considerations

The research was conducted after an ethical approval letter was given from the research and ethical committee department of nursing at Real Dream University College (Number: Ref DN/06/2014). In addition, after explaining the importance of the study, permission letters were taken from each of the head health facility administrators, and informed consent was obtained from each study participant. Names or specific addresses of the study participants were coded and kept anonymous, and confidentiality was assured. The respondents were also informed that they had the full right to withdraw or refuse at any time from the process. Confidentiality of information given by each respondent was kept properly and anonymity was explained clearly to the participants.

Competing Interests

The author has declared that they have no competing interests.

Funding Statement

There is no source of funding for this research. All costs were covered by researchers.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Author's Contributions

Agerie Mengistie analyzed the data, drafted the paper and prepared the manuscript, and approved the proposal with a few revisions after my friends gave comments. I revised subsequent drafts of the paper. Author read and approved the final manuscript.

Consent for Publication

Not applicable.

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