

Prevalence of Episiotomy and its Associated Factors among Mothers Who Gave Birth at Public Health Facility in Gondar City, Northwest Ethiopia: A Cross-Sectional Study

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ARTICLE INFO	ABSTRACT
<p><i>Article type:</i> Original article</p>	<p>Background & aim: Extension of the incision, vulvar hematoma, infection, wound dehiscence and dyspareunia are some complications of performing episiotomy. Despite its adverse effects, the prevalence of episiotomy is increasing in some settings due to different factors. Therefore, this study aimed to determine the prevalence of episiotomy and its associated factors among mothers who gave birth at Gondar public health facility, Northwest Ethiopia.</p> <p>Methods: This, 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 delivery chart review at postnatal room. Binary and multivariable logistic regressions were performed to identify predictor variables. P-value ≤ 0.05 used to determine the level of statistically significant of outcome variable.</p> <p>Results: A total of 411 study participants were interviewed, with a response rate of 100%. The prevalence of episiotomy was found to be 52.8%, with a 95%CI of 47.7–57.4). Being a perimiparous mother (AOR = 8.95; 95% CI: 4.65, 17.20), labor complications (AOR = 3.03; 95% CI: 1.21, 7.62), fetal distress (AOR = 4.51; 95% CI: 2.71, 6.49), and fetal weight ≥ 4 kilogram (AOR = 3.42; 95% CI: 2.64, 6.62) were significantly associated with episiotomy.</p> <p>Conclusion: The rate of episiotomy was higher than the World Health Organization's maximum limit of recommendation (10%). Therefore, as per our findings we recommend that clinicians emphasize on use of standard guidelines and clear indication of performing episiotomy to reduce the rate of unnecessary procedures.</p>
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Introduction

An episiotomy is a surgically planned incision on the perineum and the posterior vaginal wall during the second stage of labor to facilitate vaginal delivery (1). Based on the World Health Organization (WHO) guidelines, routine use of episiotomy practice is not recommended, and its percentage should not exceed 10% of those undergoing spontaneous vaginal birth (2). In addition to this, 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. It enlarges the vaginal introitus, so facilitate easy and safe delivery of the fetus and minimize overstretching and rupture of the perineal muscles and fascia; to reduce the stress and strain on the fetal head (3). The existing evidence also support the recommendation to allow episiotomy use only during an assisted operative delivery, shoulder dystocia, breech delivery, anticipating perineal tear and persistent occipital posterior positions in the case of causing arrest or delay in descent of the

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presenting part as in elderly primigravida and non-reassuring fetal heart rate pattern (4-6).

For many years routine episiotomy practice was accepted and taught but nowadays restrictive episiotomy performance is with some clear indication than the routine (7) and is applied to reduce perineal trauma, reduce suturing, less complications and reduce third and fourth degree perineal lacerations (8). Even though episiotomy is allowed with some restrictions, since it is a surgical procedure, it is not free from complications. Some studies indicate that complications of performing episiotomy are extension of the incision, vulvar hematoma, infection, wound dehiscence and dyspareunia, damage to the Bartholin's gland, unsatisfactory anatomic results such as skin tags, asymmetry or excessive narrowing of the introitus, recto-vaginal fistula, and severe perineal pain that lasted an average of 5.5 days, increased blood loss, and an increased chance of human immune deficiency virus transmission from mother to neonate (9, 10). Now, routine episiotomy is considered to be a form of obstetric violence when a woman is automatically transformed into a patient and when routine medical procedures are carried out without giving the woman the right to make her own decisions about her own body (11). Still there is no strategy for effective lowering the routine perineal injury practice (12).

Globally, the prevalence of episiotomy ranges from 3.7% to 75% (13). 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 (14-17). The research findings in Ethiopia revealed that the magnitude of episiotomy is over 30% and episiotomy practice has increased up to 2.3-folds among rural mothers; so it has remained high (18, 19). However, its prevalence is on the decline in developed countries (20).

The prevalence of episiotomies are associated with type of obstetric procedure, maternal and fetal conditions, skill of birth attendant, level of education of healthcare providers, and years of experience of the birth attendant (21-23). Due to these reasons, the episiotomy practice has become a common issue

among mothers who have delivered vaginally in Ethiopia (24). Still, there is a big variation of episiotomy practice between developed and developing countries including Ethiopia. Therefore, the aim of this study was to assess the prevalence of episiotomy and its associated factors among women who gave birth vaginally at public health facility in Gondar city, Ethiopia. Findings of this research could help the clinicians to do the episiotomy in selective cases rather than as a routine and make an informed decision about episiotomy-related clinical practice, thereby achieving the best pregnancy outcome.

Materials and Methods

This cross-sectional study was conducted from September 1 to November 1, 2021, at Gondar public health facility.

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) at Gondar town public health facility were included in the study population. All mothers who underwent destructive delivery, were unable to communicate and critically ill during study period were excluded.

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%)(15), with a 5% margin of error, a value for 95% confidence interval, $n = Z^2 \alpha / 2 \times p (1-p) / d^2$. By a non-response rate of 10% the final sample size was calculated 411.

A systematic random sampling technique was employed for the selection of the participants. In the town, there was one comprehensive, specialized hospital and eight public health centers. Among those health facilities, we randomly selected one comprehensive hospital and two health centers for our study to represent all public health facilities in Gondar town and allocated proportionally to the selected each public health facility based on the average monthly number of deliveries. A study participant was chosen from the maternity ward every K^{th} 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 facility, the required sample size was achieved.

Face-to-face interview were supplemented with chart review (for questions that could not be answered by the interviewer alone) for clinical data collection.

A standardized questionnaire contains socio-demographic characteristics, obstetric variables, and healthcare service variables 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.

A pre-test was done on 5% of the sample size (21 participants) in Dabat primary hospital. After pre-test, amendment was done on questionnaire clarification. A one-day training was given for the data collectors before the actual data collection. The training covered the aim of the study, inclusion and exclusion criteria, data collection techniques, contents and details of the questionnaire, and the art of interviewing. Moreover, during data collection, the supervisor checked how the data collection process was going on. At the end of each data collection, the principal investigators also checked the completeness of the filled questionnaires. In other words, every questionnaire was checked and later coded before data entry by the principal investigators. The reliability of the questionnaire was assessed through test-retest method to assess stability of the research instruments. This involved administering the questionnaire to participants in a health facility within the study area. This was repeated two weeks apart while internal consistency of questionnaire was examined by calculating Cronbach's alpha value (Cronbach's alpha value = 0.72) for the questionnaire. Multicollinearity was also checked by using a standard error and variance inflation factor to see the linear correlation between the independent variables. Variables with a standard error of >2 and a variance inflation

factor (VIF) of one to ten were also 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 entry were 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 results were presented in the form of texts and tables.

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 participants 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 participant was kept properly and anonymity was explained clearly to the participants.

Results

Socio-demographic characteristics

A total of 411 study participants were participated with a response rate of 100%. The majority of the 296 (72.1%) of mothers were in the age groups below or equal to 34 years, with the mean±SD age of the participants of (30.82 ±5.65) years old. Of all the study subjects, 352 (85.6%) of women were able to read and write at an educational status. Almost all 385 (93.7%) of the study participants were married.

Regarding of the respondents residence status, 305 (74.2%) were urban dwellers (Table 1).

Table 1. Socio-demographic characteristics of the study participants at Gondar public health facility, Northwest Ethiopia, 2021 (N=411)

Variable	N (%)
Age	
≤34	296 (72.1)
≥35	115 (27.9)
Educational level	
Unable to read and write	59 (14.4)
Able to read and write	352 (85.6)
Occupation	
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)
Husband's educational level	
Unable to read and write	28 (6.8)
Able to read and write	383 (93.2)
Husband's 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 (Mean)	244 (59.4)
≤4547.9	167 (40.6)
>4547.9	

Obstetric Characteristics

Of the total mothers (411) almost all 376 (91.6%) were Gravida <4 and 311 (75.7%) were para ≥2. More than two-thirds 311 (75.7%) of mothers had given a child less than two years ago birth spacing. About 69 (16.8%) of mothers' fetuses had experienced non-reassuring fetal heart rate.

Table 2. Frequency of obstetric characteristics of mothers at Gondar public health facility, Northwest Ethiopia, 2021 (N=411)

Variable	N (%)
Gravidity	
<4	376 (91.6)
≥5	35 (8.4)
Parity	
1	100 (24.3)
≥2	311 (75.7)
Birth spacing	
Below 24 month	311 (75.7)
Above 25 month	100 (24.3)
ANC visit (≥2 times)	
Yes	402 (97.8)
No	9 (2.2)
Onset of labor	
Spontaneous	300 (73.0)
Induction	104 (25.3)
Artificial rupture of membrane	7 (1.7)
Fetal presentation	
Cephalic	367 (89.3)
Brow	10 (2.4)
Face	28 (6.8)
Breech	6 (1.5)
Gestational age	
≤37	147 (35.8)
37-41	244 (59.4)
≥42	20 (4.8)
Labor position	
Lithotomic without choice	198 (48.2)
Lithotomic with choice	213 (51.8)
Duration of 2nd stage of labor in minute	
≤30	109 (26.5)
30-60	301 (73.2)
≥61	1 (0.3)
Fetal distress	
Yes	69 (16.8)
No	342 (83.2)
Apgar score in 1st minute	
≤6	52 (12.7)
≥7	359 (87.3)
Birth weight	
≤2.5kg	43 (10.5)
2.5-4 kg	314 (76.4)
≥4 kg	54 (13.1)
Previous cesarean section	
Yes	11 (2.7)
No	400 (97.3)
Labor related disease	
Yes	27 (6.6)
No	384 (93.4)
Labor related disorders (n=29)	
Debts milts	10 (34.0)
Hypertension	16 (56.3)
Cardiac problem	3 (9.7)

Almost all 402 (97.8%) of participants had at least two ANC follow-ups in their last pregnancies. Of the study subjects, three-fourths (300) (73.0%) had labor started spontaneously. From this study, 50 (12.2%) of multiparous women had a history of previous episiotomy being performed. Regarding the parturition process, the majority (367 (89.3%) of fetal presentations were normal presentations (Table 2).

Service related factors

From all (411) vaginal-delivered mothers, 52.8% with a 95%CI (47.7, 57.4) was delivered by assisting episiotomy. Of them 87% was

among nulliparous women, while 41.8% underwent episiotomies among multiparous women. From this study, more than half (52.3%) of the episiotomies were done without introducing themselves during the labor delivery process. Again, 38 (73.1%) of episiotomies were performed without counseling before performing episiotomy procurers, while merely 14 (26.9%) of mothers had counseled on the need for an episiotomy before procedure. Regarding professionals, 39 (75.0%) of episiotomies were done by midwives, while 13 (25.0%) of episiotomies were done by physicians.

Table 3. Factors associated with episiotomy among mothers who gave birth at Gondar public health facility, Northwest Ethiopia, 2021 (N=411)

Variables	Episiotomy		COR,95% CI	AOR,95%CI
	Yes	No		
Age groups				
≤ 34	175(59.1%)	121(40.9)	2.53(1.61,3.92)	1.585(0.912,2.753)
≥35	42(36.5%)	73(63.5)	1	1
Gravida				
≤4	204(54.3%)	172(45.7)	3.26(1.02,10.43) *	1.852(0.465,7.349)
≥5	4(26.7%)	11(73.3)	1	1
Parity				
1	87(87%)	13(13.0)	9.62(4.99,17.4) **	8.95(4.65,17.2) **
≥2	130(41.8%)	181(58.2)	1	1
ANC visit				
Yes	210(52.2%)	192(47.8)	1	1
No	7(77.8%)	2(22.2)	3.2(0.66,15.6)	0.27(0.000,1.000)
Labor related disease				
Yes	19(70.4)	8(29.6)	2.23(0.95,5.221) *	3.03(1.21,7.62) **
No	198(51.6)	186(48.4)	1	1
Fetal distress				
Yes	49(71%)	20(29.0%)	2.54(1.45,4.45) **	4.51(2.71,6.49) **
No	168(49.1%)	174(50.9%)	1	1
1st minute Apgar score				
≤6	38(73.1%)	14(26.9%)	2.73(1.29,4.70) *	1.587(0.46,5.47)
≥7	179(49.9%)	180(50.1%)	1	1
Birth weight				
<4 kg	152(42.6%)	205(57.4%)	1	1
≥4 kg	37(70.6%)	17(29.4%)	2.94(1.93,4.95)	3.42(2.64,6.62) *

Factors Associated with Prevalence of Episiotomy

In bivariate logistic regression analysis revealed that mother's age, gravidity, ANC follow up, parity, fetus having distress, labor-related disease, 1st minute Apgar score, and birth weight variables were fitted for a multivariable logistic regression model. But, after controlling in multivariable logistic

regression analysis, those variables like; perimparous who had labor-related diseases, fetal distress, and birth weight greater than or equal to 4 kilo gram were significantly associated with the outcome variable.

In this study, those women who being perimparous were found to have a significant statistical association, where being perimparous 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 with 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). Mothers who gave birth to neonates whose weight more than or equal to 4 kilo gram were 3.42 times more likely to undergo an episiotomy procedure during delivery than those whose weight was below 4 kilo gram (AOR =3.42; 95% CI: 2.64, 6.62). In this study, mothers with labor-related diseases were 3.03 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).

Discussion

The primary goals of this study were to determine the prevalence of episiotomy and to identify factors among women who gave birth vaginally at public health facility in Gondar city. Thus, the prevalence of episiotomy among mothers who gave birth was 52.8%, with a 95% CI (47.7, 57.4). The overall prevalence of episiotomy was higher than the recommended value by the WHO (17) and also from different studies including studies in Brazil (29%) (25), Colombia (30.45%) (16), Brazil (28.8%) (22), Iran (41.5%) (26), Aminu Kano in Nigeria (41.4%) (1), Democratic Republic of Congo (20.4%) (23) Nairobi in Kenya (28.2%) (27), Mezan aman general hospital, Ethiopia (30.6%) (14), Addis Ababa black lion hospital (40.2%) (19), Akaki Kality in Addis Ababa (35.2%) (4), Axum town public health institutions(41.44%) (15), Bahir Dar Hospital, Ethiopia (41.1%) (28), Metema primary hospital, Ethiopia (44.15%)(29) and Tigray Region, North Ethiopia (41.44%) (15).

These disparities may be due to the difference in the study population. Because some previous studies were retrospective cross-sectional studies, there might be some under-registration, which could led to a lower level of episiotomy procedure. In addition to this, the availability of obstetric ultrasound and the use of a standard guideline to know clearly the indications of episiotomy during the labor and

delivery may vary in different settings. In the current study, healthcare providers got advantage from simply manual fetoscope. Evidence states that labor followed by a manual fetoscope has a high prevalence of episiotomy (30, 31). Another explanation for the low prevalence of episiotomy might be associated with skills of birth attendants, use of certain birthing positions (examples, hands and knees) and premium supports. This finding is consistent with different reported in Ethiopia (4, 32). In contrast, this finding is lower than compared to previous studies done in South-east Nigeria (62.1%) (33) and Uganda (73%) (73%) (34). This discrepancy might be attributed to variation in study participants and study settings, which were studied in Nigeria and in Uganda, because the study participants in that study were merely perimiparous and admitted in referral hospitals. Evidence has shown that the prevalence of episiotomy is higher among multiparous mothers than among perimiparous mothers (35).

The analysis of this study also showed that perimiparous women had an almost 9-folds higher likelihood of having an episiotomy compared to multiparous women. This finding was supported by local previous studies done in Brazil (22), Turkey (36) and in Addis Ababa, Ethiopia (4), Axum (15) and Mezan aman (14). This might be since most of the time, perimiparous women were prone to perineum tightening, which is one indication of episiotomy, and the old indication of routine episiotomy in perimiparous women. On other explanation, birth attendants believed that perimiparous women need routine episiotomy. In this study, it was observed that a higher prevalence of episiotomy was done in those women who had labor-related complications than their counterparts. This finding is supported by a study conducted in Brazil (22). One possible reason could be that episiotomy is recommended for making the second stage of labor shorter for women who have labor-related disorders such as cardiac problems and pregnancy-induced hypertension.

The statistical analysis in this study showed that mothers who had fetal distress had a 4.15 times higher risk for having episiotomy prevalence than their counterparts. This finding

was also supported by studies in Ethiopia (37) and in France (38). The potential explanation might be that fetal distress occurs in a health facility managed by providing episiotomy next to maternal resuscitation and change to lateral position. Since, in the current study, most of the participants were evolved in the health centers, there may be a limit to the number of trained health professionals and obstetric ultrasound to assess the early fetal condition for indication of episiotomy. Furthermore, birth weight of the newborn had a significant statistical association with episiotomy prevalence, where in mothers who gave birth to a neonate whose weight was more than or equal to 4 kilograms were 3.42 times more likely to have an episiotomy practice than mother had neonate less than 4-kilogram birth weight. This association coincides with the findings reported from other centers; in Spain (31), Mizan Aman General Hospital in Ethiopia (39), Debre Markos Referral Hospital(40) and Axum Town (32). 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 that clinicians use to perform episiotomy is fear of a perineal tear (41). This might be due to fear of perineal tear, to boost adequate space for higher fetal weight and might be associated with instrument-assisted birth. The study acknowledged some important possible limitations that should be considered when interpreting the results. First, social desirability and recall bias might be introduced. Second, all participants were recruited only from public health facilities, which may introduce selection bias.

Conclusion

The prevalence of episiotomy among women who gave birth in Gondar city was higher than the WHO recommendation, which is around 10% or less with acceptable obstetric evidence indication.

Therefore, as per our findings we suggest emphasis on the restrictive use of episiotomy and with clear indication to reduce episiotomy rate and unnecessary procedures. Different stakeholders working on maternal health

programs should work on those factors to reduce the unnecessary episiotomy. Clinicians and any responsible body should critically follow the new national guidelines during labor. Moreover, there is a need for further addressing factors that hinder the episiotomy-restrictive interventions for birth attendants.

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Conflicts of interest

Authors declared no conflict of interest.

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