PREVALENCE OF EPISIOTOMY AND FACTORS ASSOCIATED WITH ITS PRACTICE IN THREE TEACHING HOSPITALS, ADDIS ABABA, ETHIOPIA

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ABSTRACT

BACKGROUND: Episiotomy is a surgical incision into the perineum and posterior vaginal wall during the second stage of labor to increase the diameter of the soft tissue pelvic outlet to facilitate delivery. Episiotomy rates vary from population to population. Limited information exists related to the practice of episiotomy in Ethiopia.

OBJECTIVE: To assess the prevalence of episiotomy practice and associated factors at three teaching hospitals (Tikur Anbessa Hospital, Gandhi Memorial Hospital, and Zewditu Memorial Hospital) in Addis Ababa Ethiopia.

METHOD AND MATERIALS: Hospital-based cross-sectional study was conducted from January 2022 to March 2022 on 386 mothers who had a vaginal delivery in the three hospitals. A structured questionnaire was used to collect data. The data was entered, coded, and analyzed using Statistical Package for Social Science (SPSS) version 25. Binary and multivariable logistic regression analyses were performed. P value ≤ 0.05 was used to determine the level of statistically significant variables.

RESULTS: The prevalence of episiotomy was 49%. Age ≤24 years (AOR=0.17, 95%CI=0.055, 0.52), duration of second stage of labor ≥2HR (AOR=3.5, 95%CI=1.87, 11.06), birth weight of newborn ≥4000 grams (AOR=5.3, 95%CI=95%CI, 1.28, 22.02) and FGM (AOR=2.8, 95%CI=1.64, 4.94) were factors significantly associated with episiotomy practice.

CONCLUSION: The prevalence of episiotomy in this study (49%) is higher than the WHO's recommendation (10%). Variables that remained associated significantly with episiotomy were maternal age, duration of the second stage of labor ≥2HR, newborn weighing ≥4000 grams, and FGM. An effort should be made to reduce the prevalence of episiotomy by giving emphasis on the restrictive use and adhering to the correct indications.

KEY WORDS: Episiotomy, prevalence of episiotomy, factors associated with episiotomy

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INTRODUCTION

Episiotomy is a surgical incision into the perineum and posterior vaginal wall during second stage of labour to increase the diameter of the soft tissue pelvic outlet and to facilitate delivery[1]. The rate of episiotomy varied considerably from country to country around the world that range from 9.7% (Sweden) to 100% (Taiwan). It is important to highlight that, as any surgical procedure, episiotomy is also responsible for complications, such as perineum lesion extension, hemorrhage, edema, infection, hematoma, dyspareunia, rectovaginal fistulas, myonecrosis, neonatal intoxication from lydocaine, hypersensitivity reactions to anesthetics, endometriosis in the scar, need of surgical correction due to irregular or excessive cicatrization problems, pain after delivery or maternal rejection of the newborn due to pain[2].

It is first reported back in 1741 and continues to become part of modern obstetrics[3]. Routine use of episiotomy originally began by Pomeroy in 1918 & this routine practice was accepted and taught in obstetrics services till 1970s[1]. A routine use of episiotomy was proposed to prevent severe spontaneous perineal lacerations (third and fourth-degrees) by enlarging the vaginal outlet to reduce vaginal soft tissue stretching and tension during childbirth[1]. However, routine use of episiotomy has been questioned, because of its own related complications and the possibility to cause unnecessary trauma[2]. Since then many studies, reviews and met analyses have evidenced that there is no scientific basis for maintaining the routine practice of episiotomy. Restrictive episiotomy policies appear to have a number of benefits compared to policies based on routine episiotomy there is less posterior perineal trauma, less suturing and fewer complications, and although it has been associated with more anterior perineal trauma this type of trauma is not usually clinically significant[3-5]. Lacerations classified as first or second degree appear to be more advantageous than performing routine episiotomies as they are reported to heal better and result in less bleeding and less pain for the woman[6].

Although there is a global trend for reduced episiotomy rates, there is no universally accepted rate of episiotomy for non-operative vaginal delivery in a normal labor ward, but the world health organization recommends a rate of 10%, based on a 1984 English trial[8,9]. Despite current recommendations against routine use of episiotomy, its incidence continue to be very high in some center and areas of the world, with rates up to 60% and 80% in India and china, respectively[7].

In Ethiopia limited information exists related to the practice of episiotomy. Therefore, this study aimed to assess the prevalence of episiotomy and factors associated with its practice in three hospitals (TASH, ZMH & GMH) found in Addis Ababa, Ethiopia, which gives insight regarding the current practice. Knowing the current prevalence of episiotomy and its associated factor in Addis Ababa will help us to give recommendation on the rate of episiotomy which results in reduction of morbidity associated with it therefore; this study has been designed to fill the research gap. The objective of the study is to assess the prevalence of episiotomy and associated factors with its practice at three teaching hospitals in Addis Ababa Ethiopia.

METHOD

There are more than 12 public and more than 25 private hospitals in Addis Ababa city[11]. Of the total 12 public hospitals, 3 were selected by convenience. The study was conducted in three hospitals: Tikur Anbessa Specialized Hospital, Gandhi Memorial Hospital and Zewditu Memorial Hospital which are found in Addis Ababa, Ethiopia. These hospitals serve as central referral teaching hospitals and all obstetric emergencies including high risk pregnancies are referred to these hospitals from Addis Ababa and its vicinity.

Hospital based cross-sectional study design was used to assess the prevalence of episiotomy and factor associated with its practice at three hospitals found in Addis Ababa City Administration

The sample size of 386 determined using single population proportion formula by assuming 95% confidence interval, 5% margin of error and proportion the prevalence of episiotomy practice was 35.4% from the previous study was taken from a similar study done in Ethiopia[12]

Inclusion and Exclusion Criteria

Inclusion criteria

- Women who delivered vaginally at the three teaching hospital in the study period

Exclusion criteria

- Women who was critical after delivery
- Women who didn't give consent
- Women who delivered by distractive delivery

Data was collected by a pre-tested structured questionnaire developed by the investigator. Systematic random sampling technique was used to select study participants among mother who gave birth vaginally. The first study participant was selected by lottery method from those mothers who delivered by vagina: Then the next participant was identified systematically every other interval until the required sample size was achieved. After one hour of delivery after consent obtained from the mother, data was collected by the birth attendant through face to face interview using structured questionnaire and reviewing maternal records and checked for completeness by supervisor on the same day.

Data entry, cleaning and analysis was performed using SPSS version 25. Summary tables were used for describing data. A relationship among the major variables were described by significant level $P<0.05$. Logistic regression (using $P<0.05$) was used to examine the relationship between the proposed dependent and independent variables. For each regression odds ratios (with the accompanying p-values and confidence intervals) of the relationship was reported.

Operational Definitions

- Episiotomy is a surgical incision into the perineum and posterior vaginal wall during second stage of labour to increase the diameter of the soft tissue pelvic outlet and to facilitate delivery[13]
- Liquor status
  - Clear
  - Bloody
  - Meconium
- Fetal heart rate
  - Normal (120-160)
  - Bradycardia (<120)
  - Tachycardia (>160)
- Female genital mutilation comprises all procedures that involve partial or total removal of the external female genitalia, or other injury to the female genital organs for nonmedical reasons.

ETHICAL CLEARANCE

The proposal was approved by the Research and Publication Committee of Department of Obstetrics and Gynecology, Addis Ababa University. Informed oral consent was obtained from each participant before the start of data collection. To ensure confidentially of respondents, their names were not indicated on the questionnaire and it was assured that their responses will be kept strictly confidential. The anonymity and confidentiality of the participants was kept private. The name of the participants was not included in the data collection format.

RESULT

During the study period 386 mothers who gave birth vaginally were interviewed with the response rate of 100%. Half of the respondents were in the age group of 25-30 years. The average mean age of the respondents was 27.2±4.74 years. Majority of respondents were from urban area (95.6%) and sixty-one percent were housewives. Related to the educational status of the respondents 167 (43.3%) of them attended primary school and 102 (26.4%) were government employees.

Table 1. sociodemographic characteristics of mothers who gave birth vaginally at three teaching hospitals of Addis Ababa university, Addis Ababa, Ethiopia, 2022 (N-386)

Variable		Frequency	Percent
Age of the study participant			
	≤24	117	30.3
	25-30	195	50.5
	31-34	32	8.3
	≥35	42	10.9
Place residence			
	Urban	369	95.6
	Rural	17	4.4
Maternal occupation			
	Housewife	236	61.1
	Employee	102	26.4
	Merchant	34	8.8
	Student	9	2.3
	Other	5	1.3
Education status			
	No formal education	44	11.4
	Primary	167	43.3
	Secondary	95	24.6
	College and above	80	20.7

Fifty-eight percent of the respondents were multiparous and 235 (60.9%) had previous vaginal delivery. Among these mothers 175 (74.5%) of them had a history of previous episiotomy. forty-six percent had female genital mutilation and fifty-nine percent of the respondents were found to have a normal body mass index. In 10.4% of mothers, a previous history of chronic illness was reported (Table 2).

Table 2. obstetric characteristics of mothers who gave birth vaginally at three teaching hospitals of Addis Ababa university, Addis Ababa, Ethiopia, 2022 (N-386)

Variable		Frequency	Percent
Parity			
	Prim parous	139	36.0
	multiparous	223	57.8
	Grand multiparous	24	6.2
Previous vaginal delivery			
	yes	235	60.9
	no	151	39.1
History of previous episiotomy			
	yes	175	74.5
	no	60	25.5
Female genital mutilation			
	yes	179	46.4
	no	207	53.6
history of chronic illness specifies			
	cardiac	5	1.3
	chronic HTN	3	.8
	DM	7	1.8
	Asthma	1	.3
	others	24	6.2
	no	346	89.6
Body mass index			
	<=18.4	4	1.0
	18.5-24.9	230	59.6
	25-29.9	127	32.9
	>=30	25	6.5

Out of the 386 deliveries, in 75.6% of the cases labor started spontaneously, 97.9% of the respondent had singleton pregnancy, regarding gestational age of current pregnancy, 83.9 % were term, and 90.9% had normal fetal heart beat pattern in second stage. About 52.3% of respondents had given birth at night; sixty-three percent were delivered in less than one hours of second stage of labor; and 39.6% of deliveries were attended by midwives (Table3).

Table 3. The labor and delivery characteristics of mothers who gave birth vaginally at three teaching hospitals of Addis Ababa university, Addis Ababa, Ethiopia, 2022 (N-386)

Variable		Frequency	Percent
Types of pregnancy			
	Singleton	378	97.9
	Twin	8	2.1
Onset of labor			
	Spontaneous	292	75.6
	Induced	94	24.4
Use of oxytocin			
	Yes	168	43.5
	No	218	56.5
Condition of fetal heart rate during 2nd stage			
	Normal range	351	90.9
	Bradycardia	22	5.7
	Tachycardia	7	1.8
	Negative	6	1.6
Fetal presentation			
	Vertex	377	97.7
	Breech	6	1.6
	Face	3	.8
Shift of delivery completion			
	Night	202	52.3
	Day	184	47.7
Duration of Second stage of labor			
	≤1HR	245	63.5
	1-2HR	93	24.1
	≥2HR	48	12.4
Birth attendant			
	Midwife	153	39.6
	Resident	134	34.7
	Intern	99	25.6

According to this study the prevalence of episiotomy was found to be 49%. And the main reasons for performing episiotomy procedure were; anticipation of spontaneous perineal tears in 38.9% of the cases followed by soft tissue dystocia in 37.9% of cases. The episiotomy type was Medio-lateral in all the cases. Twelve percent of mothers who had episiotomy in the current pregnancy developed extension as a complication.

Among those who had no episiotomy in the current pregnancy, 21.9% of them develop first degree perineal laceration and 8.2 % of them developed Second degree perineal laceration. There was no third and fourth degree perineal laceration (Table 4).

Table 4 episiotomy related characteristics of mothers who gave birth vaginally at three teaching hospitals of Addis Ababa university, Addis Ababa, Ethiopia, 2022 (N-386)

Variable		Frequency	Percent
Types of episiotomies			
	Medio-lateral	190	100
Complications after episiotomy			
	no complication	123	64.7
	extension	24	12.6
	perineal hematoma	3	1.6
	PPH	8	4.2
	Perineal pain	32	16.9
For those who had no episiotomy is there perineal injury	No perineal injury	137	69.9
	First degree perineal injury	43	21.9
	Second degree perineal injury	16	8.2

Out of the total deliveries, 90.4% of fetus had clear liquor during second stage of labor. The birth weight of most of the babies delivered (81.3%) ranged from 2.5 Kg to 3.99 Kg and 12.7% had birth weight of ≥ 4 Kg, 94.3% and 98.2% of the newborns had an Apgar score of greater than 7 at 1st and 5th minutes respectively (Table 5).

Table 5 perinatal characteristics of mothers who gave birth vaginally at three teaching hospitals of Addis Ababa university, Addis Ababa, Ethiopia, 2022 (N-386)

Variable		Frequency	Percent
Gestational age during delivery			
	Preterm (<37wk	27	7.0
	Term (37-41+6)	324	83.9
	Post term (>=42wk	35	9.1
Status of liquor during second stage of labor			
	Clear	349	90.4
	Bloody	16	4.1
	Meconium	21	5.4
Newborn weight			
	≤2499	23	6.0
	2500-3999	314	81.3
	≥4000	49	12.7
APGAR score at one minute			
	0	6	1.6
	1-6	16	4.1
	≥7	364	94.3
APGAR score at five minutes			
	0	6	1.6
	1-6	1	.3
	≥7	379	98.2

The study showed that age of the mother, education status of the mother, parity, duration of second stage, scope of birth attendant, weight of the newborn and FGM are associated with episiotomy practice in bivariate analysis. But, after adjusting for possible confounder, only age of the mother, parity, duration second stage, weight of the newborn and FGM remain significantly associated.

Thus, multivariate analysis of this study revealed that participants whose age is ≥ 35 years are 83% less likely to have episiotomy than participant whose age is ≤ 24 years (AOR=0.17, 95%CI=0.055, 0.52) and Primigravidas were 5 times more likely to have episiotomy as compared to multigravidas (AOR=5.4,95%CI:1.23,7.42).

Duration of second stage of labor was another statistically significant variable. Duration of second stage of labor ≥2hr increase likelihood of having episiotomy by 3.4 folds than second stage of labor duration <1hr (AOR=3.5, 95%CI=1.87, 11.06). Women who delivered 4000 grams and above neonate had increased episiotomy rate by 5.3 folds (AOR=5.3, 95%CI=95%CI, 1.28, 22.02) and participant who had FGM increase the rate of episiotomy by 2.8 folds (AOR=2.8, 95%CI=1.64, 4.94) (Table 6).

Table 6. The bivariate and multivariate binary regression of independent variable with Episiotomy among study participants who gave birth vaginally in three teaching hospitals of Addis Ababa university, Addis Ababa, Ethiopia, 2022 (N-386)

Variable	Episiotomy		p-value	COR (95%CI)	P-value	AOR (95%CI)
	Yes	No				
Age of the study participant						
≤24	82	35	1		1	
25-30	89	106	0.000	0.36(0.22, 0.58)	0.012	0.46(0.26, 0.84)
31-34	13	19	0.003	0.29(0.13, 0.66)	0.179	0.50(0.18, 1.37)
≥35	6	36	0.000	0.07(0.03, 0.18)	0.002	0.17(0 .055, 0.52)
Education status						
no formal education	16	28	1		1	
primary	77	90	0.248	1.5(0.75, 2.97)	0.309	1.5(0.67, 3.48)
secondary	58	37	0.008	2.7(1.31, 5.75)	0.074	2.2(0.92, 5.44)
college and above	39	41	0.186	1.7(0.78, 3.54)	0.216	1.8(0.71, 4.48)
Duration of second stage						
≤1HR	99	146	1		1	
1-2HR	50	43	0.028	1.7(1.06, 2.77)	0.429	1.3(0.71, 2.24)
≥2HR	41	7	0.000	8.6(3.73, 20.03)	0.043	3.4(1.98, 11.45)
Birth attendant						
midwife	66	87	1		1	
resident	66	68	0.300	1.3(0.80, 2.04)	0.322	1.4(0.75, 2.44)
intern	58	41	0.017	1.9(1.12, 3.11)	0.372	0.73(0.36, 1.47)
Newborn weight						
≤2499	6	17	1		1	
2500-3999	148	166	0.058	2.5(0.97, 6.58)	0.096	2.6(0.85, 7.95)
≥4000	36	13	0.000	7.8(2.54, 24.19)	0.021	5.3(1.28, 22.02)
Parity						
primiparous	106	33	1		1	
Multiparous	80	143	0.000	0.17(0.11, 0.28)	0.310	0.47(0.11, 2.010
Grand multiparous	4	20	0.000	0.06(0.02, 0.19)	0.096	0.18(0.023, 1.35)
History of vaginal delivery						
yes	77	158	0.000	0.18(0.11, 0.29)	0.237	0.44(0.11, 1.71)
no	113	38	1		1	
Female genital mutation						
yes	104	75	0.001	1.95(1.30, 2.93)	0.000	2.8(1.64,4.94)
no	86	121	1		1	

DISCUSSION

This study revealed that the prevalence of episiotomy is 49% (95%CI=44.0, 54.0), quite high when it is compared to the world health organization recommendation which is 10%[9]. This study result is also higher when it is compared with the study conducted in Integrated Health Center at a Maternity School in Recife, Pernambuco, Brazil (29.1%), Public health institutions at Shire Town, in Ethiopia (35%) and in Akaki Kality, sub city of Addis Ababa, Ethiopia (35.2%) [2,10,12]

Whereas, the finding of this study is in line with studies conducted in Gondar city, North west Ethiopia which is 47.7%[14]. In contrast, this study has a lower prevalence of episiotomy compared to a study done in Romania (79.2%), Arba Minch General Hospital (68.0%) and Saint Paul's Hospital Millennium Medical College in Addis Ababa, Ethiopia (65.4%)[3,13,15].

This difference in the prevalence of episiotomy might be due to the difference in characteristics of the study population (low risk and high risk); the difference in time in which the study is conducted; and study settings (primary and referral centers).

The high prevalence of episiotomy in this study may be due to the characteristics of the study participants. That is, the three Hospitals (TASH, ZMH, and GMH) are referral hospitals, so most women who attend labor in these hospitals are high-risk mothers.

Among factors influencing the practice of episiotomy, this study showed participants whose age ≥35 years had 83% of less likely to have episiotomy than participant whose age ≤24 years (AOR=0.17, 95%CI=0.055, 0.52). Similar association was found with the study done in Brazil[2]

This may be due to the fact that, as age increase, the number of deliveries may increase, and multi parity have a significant effect on reduction of episiotomy rate, as also evidenced by the study done at Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia in which primigravidas were three times more likely to have episiotomy as compared to multigravidas (AOR=3.14,95%CI:1.058,9.357)[15].

In this study, duration of second stage labor greater than 2 hours increase episiotomy rate by 3.4 times as compared to those with less than 1-hour duration. This finding was similar with the study done in Saint Paul's Hospital Millennium Medical College Addis Ababa, Ethiopia and Bahirdar city, in Ethiopia[15,16].

The possible explanation might be due to increased need of intervention for prolonged second stage labor in order to reduce obstetric complications.

This study also showed that those mothers who gave birth to babies weighing more than 4000gm were 5.3 times more likely to have episiotomy. Similar association was found in the studies done in Brazil, Akaki Kality, sub city of Addis Ababa, Ethiopia and Saint Paul's Hospital Millennium Medical College Addis Ababa, Ethiopia[2,10,15]. This might be due to the need to have adequate space for higher fetal weight in order to prevent perineal laceration.

Another statistically significant factor for episiotomy was the history of female genital mutilation in participants. That is, FGM increases the likelihood of episiotomy by 2.8 folds. This may be the result of the need to release the tight perineum resulting from scar tissue formed after FGM, as it won't stretch during second stage labor

CONCLUSION

In this study the prevalence of episiotomy was 49% (95%CI=44.0, 54.0) which is significantly high when compared with the WHO's recommendation (10%) (9). Variables that remained associated significantly with increased rate of episiotomy were primigravidity, duration of second stage of labor ≥ 2 hours, newborn weight ≥ 4000 grams and FGM. Variable that remained associated significantly with decreased rate of episiotomy was maternal age ≥ 35. A maximum effort should be made to reduce the prevalence of episiotomy by giving emphasis on the restrictive use and by adhering to the correct indications. Different stakeholders working on maternal health programs should work on those factors associated with episiotomy and

create awareness regarding FGM related obstetric complication in order to reduce the prevalence of episiotomy. I recommend further study by using another study design to ascertain cause relationships.

DECLARATIONS

Limitations and Strength of this study

The cross-sectional nature of the study is not able to assess variables related to postoperative outcome because the cause and effect relationships could not be determined.

There may be bias since the data collector was birth attendant.

This study was conducted in three hospitals which makes it more representative.

Abbreviations

CI: Confidence Interval; CHS: College of Health sciences; FGM: Female Genital Mutilation; NGO: Nongovernmental Organization; SVD: Spontaneous Vaginal Delivery; TASH: Tikur Anbessa Specialized Hospital; ZMH: Zewditu Memorial Hospital; WHO: World Health Organization

Authors' contributions

SH designed and implemented the study. This included seeking DRPC approval, collecting data, and cleaning data. EK SH and YF reviewed the reference articles, performed data analysis, and wrote the initial manuscript. EK contributed wrote the final manuscript.

Competing interests; All authors declare that they have no competing interests.

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