

## Prevalence, Outcome and Associated Factors among Adolescents Delivering at Mbarara Regional Referral Hospital

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### Abstract

Globally, almost one in five women aged 20 to 24 (19 %) had a live birth by their 18th birthday. Adolescent pregnancies and deliveries are universally recognized to be associated with many complications. Although many studies have been done on adolescent mothers globally, not much has been documented on the prevalence, outcomes and associated factors especially in Uganda. This study aimed at finding out the prevalence of adolescent deliveries, delivery outcomes and potential factors influencing these outcomes among adolescent mothers at Mbarara Regional Referral Hospital (MRRH), in Southwestern Uganda. We conducted a cross sectional study at MRRH between June and October 2015. We consecutively sampled 786 adolescent mothers within 24 hours postpartum and obtained their characteristics and delivery outcomes. The prevalence of adolescent deliveries at MRRH was 23.4% of all deliveries. Majority of the participants were aged 18-19 years (median 18.5years, standard deviation 0.87). Majority had only attained primary education and almost all (90.5%) were married. Most had an average of 3 antenatal care visits, delivered by spontaneous vaginal delivery (59.4%). Caesarian section rate was 39.4% with the main indication of contracted pelvis (45.8%). Majority had good fetal outcome (80.7%) while 50.2% of mothers had poor outcome. The main obstetric complication was perineal tears (32.6%) followed by prolonged labour (23%). Being referred and delivery by vacuum delivery remained significantly associated with poor outcomes while episiotomy and delivery by Caesarian section were protective. The prevalence of adolescent deliveries at MRRH is high with most of adolescent mothers having poor sociodemographic characteristics. Commonest poor maternal outcome was perineal tears followed by prolonged labour. Fetal outcomes were good. Being referred and delivery by vacuum delivery were associated with poor outcomes while episiotomy and delivery by Caesarian section were associated with good fetal outcome.

**Keywords:** adolescent delivery, delivery outcome, maternal outcome, fetal outcome, associated factors

### Introduction

Adolescent pregnancy and motherhood has remained a major health and social concern worldwide and in Uganda because of its association with higher maternal and perinatal morbidity, mortality and negative socioeconomic effects (UDHS, 2011).

Uganda's National Adolescent Health Policy defines adolescents as people between the ages of 10 and 19 years.

Today's adolescents and youth are 1.8 billion and make up one quarter of the world's population, half of these being females. Globally, 16 million adolescent girls aged 15-19 years and 2 million girls under age 15 give birth every year. In the poorest regions of the world, this translates to roughly 1 in 4 girls bearing children by the age of 18 (UNFPA, 2012).

With 24% of adolescent girls becoming pregnant before the age of 19, Uganda has one of the highest rates of adolescent pregnancy in sub-Saharan Africa (Rutaremwya et al., 2011). According to Uganda Bureau of Statistics 2010, 1 in 4 teenage girls between 15 and 19 was found pregnant. This state of affairs has not spared either the school goers or the non-school goers. The effects spill over on to their health, economic and social status. According to UDHS 2011, about 14 % of young women and 16 % of young men had their first sexual encounter before the age of 15 while 57 % of young women had their first encounter before the age of 18

In Uganda, the initiation of sexual activity starts as early as 10-14 years of age with a mean of 15 years and is mostly unprotected resulting in a far-reaching health and social effects (Turyasingura, 1998). Among adolescents over 15 years old the leading cause of inpatient morbidity are associated with pregnancy and childbirth, which accounts for 24.5% of admission (UNFPA, 2012).

Several studies show that adolescent pregnancy is associated with an increased incidence of several adverse maternal and perinatal outcomes such as low birth weight preterm delivery, low apgar scores, small-for-gestational-age infants, perinatal death, eclampsia, operative vaginal delivery, obstructed labour, fistula, stillbirths, and neonatal death and maternal death (Conde et al., 2004). The risk of pregnancy-related death is

twice as high for girls aged 15-19 years and five times higher for girls aged 10-14 years compared to women above twenties. (UNFPA, 2012). Studies indicate that half of the world's burden of maternal, newborn and child death is occurring on sub-Saharan Africa with over 13000 mothers, newborns and children dying every day with a big proportion occurring among adolescent mothers. The United Nations Millennium Development Goals defined the aim to reduce maternal mortality by 75% and the mortality of children below the age of 5 years by 67% by 2015. However, these targets have not been achieved partly because of a large burden of complications associated with adolescent pregnancy (UNFPA, 2012).

A high rate of adolescent pregnancy in a country indicates gaps with the sexual and reproductive health of the youth (Monjurul et al., 2005). This has implications on other health issues such as the spread of sexually transmitted diseases (STDs) and HIV (Mashamba et al., 2014). The low contraceptive prevalence rate (CPR) and the unmet need of contraception worsen the situation. Study done in Busia, Uganda by Babirye in (2013), showed prevalence of modern contraception use among sexually active youths (15-24) at 62.2%. Use of other modern contraception other than condoms was at 26%. Nonuse of any modern contraceptive was high at 37.8%. In Kenya, the proportion that ever used any contraceptive method remained stable at 36% and 35% respectively between 1998 and 2003 before slightly increasing to 39% in 2008-2009 (Francis O et al 2011).

Uganda Demographic Health Survey (2011) revealed that more than one third (38%) of the girls 15-19 years are married and more than 68% of 20-24 years are married. Males enter into first union at a much later age than females. Early marriages expose adolescent girls to risks of early pregnancies that results in complications during delivery and eventual poor health. They are at higher risk of obstetric complications since their pelvises are not yet well developed, leading to obstructed labour and other complications such as prolonged labour, stillbirths and maternal distress. Since adolescent mothers are usually, single and school dropouts, in most cases they do not attend antenatal care because they are ashamed of their pregnancies or they might not realize that they are pregnant until later (MoGCD, 1995).

This study investigated the prevalence of adolescent deliveries, delivery outcomes and potential factors influencing these outcomes among adolescent mothers at MRRH

## Methods and Materials

**Study design:** We carried a descriptive cross sectional study employing analytical and methods

**Study site/ setting:** We did the study in the Post-natal unit of maternity ward of Mbarara Regional Referral Hospital (MRRH), located in Mbarara municipality, Mbarara district, Southwestern Uganda. Mbarara district 270 kilometers from Uganda's capital, Kampala. The hospital is a public hospital financed by the Government of Uganda through Ministry Of Health and serves 10 districts (Mbarara, Bushenyi, Isingiro, Sheema, Kiruhura, Ibanda, Ntungamo, Mitooma, Buhweju and Lyantonde) including some citizens of neighboring countries Tanzania, Rwanda and Democratic Republic of Congo. The hospital delivers about 10,000 mothers annually (Atukunda et al., 2014), with average of 27 deliveries per day, about 27.5% of these being mothers less than 20 years (Muwazi et al., 2014). It serves as a teaching hospital for both undergraduate and postgraduate medical students with specialists, consultants, midwives and nurses. The study site was deemed appropriate because of the diversity and large size of the population it serves both urban and rural

**Sampling method:** Consecutive case sampling.

**Sample size determination:** Using Kelsey et al formula and considering ANC attendance as the primary exposure and birth weight as primary outcome. A total of 780 adolescent mothers were studied

$$n_1 = \frac{(Z_{\alpha/2} + Z_{1-\beta})^2 \bar{p} \bar{q} (r+1)}{r (p_1 - p_2)^2}$$

**Study population:** All adolescent mothers, who delivered at MRRH and admitted to postnatal ward during the study period who met the inclusion criteria for the study

**Inclusion criteria:** We included all adolescent mothers within 24 hours after delivery at MRRH, at gestation age  $\geq 28$  WOA or birth weight  $\geq 1000$ g admitted on postnatal ward who consented to the study

**Exclusion criteria:** We excluded all mothers who delivered before arrival/ admission, and those who refused to consent

**Study variables:**

**The independent study variables:**

The main exposure variable was antenatal care attendance (number of visits). Additional exposure variables included maternal age, parity, level of education, referred or not, level of income, HIV status, marital status, skilled attendant at birth, duration of labor (first and second stage), mode of delivery (vaginal, vacuum or caesarean delivery)

**The dependent study variables:**

The primary fetal outcome was birth weight, secondary fetal outcomes included other fetal parameters including

gestational age at delivery (post term 42WOA, term 37-42WOA, and preterm 28-36WOA), Apgar score (normal 7-10/10, poor <7/10), intra uterine fetal death

Other secondary outcomes were mode of delivery (caesarian section, spontaneous vaginal delivery, assisted vaginal delivery), peripartum complications like preterm labor, premature rupture of membranes, prolonged labor, obstructed labor, ante partum hemorrhage, primary post-partum hemorrhage.

#### **Statistical analysis**

We used STATA version 11 to analyze the data. We used univariate analysis for descriptive statistics. We described the distribution of variables such as central tendency (mean, median, and mode), dispersion (range, quartiles), measures of spread (variance and standard deviation), and frequencies of categorical variables. To assess the relationship between two variables we used bivariate analysis using Cross-tabulations and contingency tables chi square tests for discrete variables and t-tests and Wilcoxon rank sum for continuous variables. We used multivariate regression models to evaluate associated factors that had significant p-values at bivariable analysis.

#### **Ethical approval**

Permission to carry out the study was sought from Department of Obstetrics and Gynecology and approval sought from Faculty Research Committee (FRC) and MUST Research Ethics Committee (REC). We explained to the participants what the objectives were and obtained informed consent after ensuring that they had understood what the study was about as well as the benefits and risks involved. We considered adolescent mothers below the age of 18 years as emancipated minors and therefore consented in a similar way as adults. Mothers who had adverse events like stillbirths, ENND, PPH were first counseled and stabilized before recruiting them into the study. We ensured confidentiality of all the information obtained by safely keeping data collected in a secure cupboard with a lock only accessed by the research team.

#### **Results**

##### ***Prevalence of adolescent deliveries at MRRH***

During the study period of 5 months (June to October 2015) a total of 3364 women delivered on maternity ward of MRRH (average of 673 monthly) and 786 of these were adolescent mothers (average of 157 monthly). Thus prevalence of adolescent deliveries at MRRH was  $786/3364 = 23.4\%$  of all deliveries. The proportion of babies with good outcomes was 80.7% and bad outcomes 19.3% while the proportion of mothers with poor outcomes was 50.2% and good outcomes was 49.8%

##### ***Socio demographic characteristics***

Majority of adolescent mothers studied were aged 18-19 years (89.3%), Catholics (43%), Banyankole (78.5%), residing in rural areas (50.8%) staying in Mbarara district (63.7%), attained primary education (63.1%), married (90.5%), peasants (41%), living in poverty (96.1%) i.e earning <108000 ushs with 52.5% of partners also poor earning < 108000 ushs most having been married at 18-19 years (58.3%) and having their first pregnancies between 18-19 years (73.3%), not referred (79.5%), HIV negative (88%) with HIV prevalence of 7.5%

##### ***Obstetric and Medical characteristics***

Majority of adolescent mothers were Primiparas (82.1%), knowing their LNMP (82.6%) and having delivered at 39.3 WOA. Most had an average of 3 ANC visits and with majority having 4 visits and above (41.9%) mainly at HC3 (40.3%) with over 95% having received haematinics, Fansidar and dewormed. Most presented in active labour (58.9%) at median cervical dilatation 6cm. Majority delivered by SVD (59.4%) and 24.6% of these had episiotomy. C/S rate was 39.4% with the main indication of contracted pelvis (45.8%) majority and were delivered by residents (41.2%)

## **DELIVERY OUTCOMES**

### ***Fetal outcomes***

Majority of babies were born alive (97.5%) with 97.3% having A/S >7/10 at 5 minutes, 74.7% weighed between 2.5 and 3.4kg at birth. Only 0.4% died in the first 24 hours of birth while 0.1% had other complications (Asphyxia, Prematurity, Hydrocephalus, Spina bifida). Majority had good overall outcome (80.7%)

### ***Maternal outcomes***

Majority of mothers delivered by SVD (59.4%), 24.6% of which were assisted by episiotomy while 39.4% delivered by C/S with main indication of contracted pelvis. The main obstetric complication was perineal tears (32.6%) followed by prolonged labour (23.7%). Overall rate of poor maternal outcome was 50.2% and 60% had poor overall foeto-maternal outcome.

### ***Factors associated with poor outcomes-Bivariate analysis***

Factors significantly associated with poor delivery outcomes in this population of adolescent mothers delivering at MRRH before adjusting for confounding included the following:

Level of partner's income < 108000 ( $p=0.0582$ ), having been referred ( $p=0.0001$ ), number of ANC care visits < 3 ( $p=0.0478$ ), delivery using vacuum extraction ( $p<0.0001$ ), not giving episiotomy in case of SVD ( $P<0.0001$ ), intern nurse being the health worker attending the delivery ( $p<0.0001$ )

During the 4 months study period, 780 adolescent mothers delivering at MRRH who met the inclusion criteria were recruited into the study. They were aged between 15-19 years with a median age of 18.5 years. Ethnic groups studied included Nyankole, Kiga, Ganda, Tooro, Konjo, Rwandese, and Congolese.

Majority of adolescent mothers studied were aged 18-19 years (89.3%), Catholics (43%), Banyankole (78.5%), residing in rural areas (50.8%) staying in Mbarara district (63.7%), attained primary education (63.1%), married (90.5%), peasants (41%), living in poverty (96.1%) ie earning <108000 ushs with 52.5% of partners also poor earning < 108000 ushs most having been married at 18-19 years (58.3%) and having their first pregnancies between 18-19years (73.3%), not referred (79.5%), HIV negative (88%) with HIV prevalence of 7.5%

**Factors associated with poor outcomes at multivariate/logistic regression**

After adjusting for confounding, the following factors were found to be independently associated with poor delivery outcomes: Being referred (p=0.011), delivery by vacuum extraction (p=0.03) were found to be significantly associated with poor outcomes while episiotomy (p<0.0001) and delivery by C/S (p=0.03)

**Tables of results**

**Table 1: Socio-demographic characteristics of adolescent mothers at MRRH**

Participant characteristics		N=786
Median age in years (sd)		18.5 (0.87)
Age categories, n (%)	≤15	12 (1.5)
	16-17	72 (9.2)
	18-19	702 (89.3)
Religion Sects, n (%)	Christian	681 (95.6)
	Moslem	96 (12.2)
	None	9(1.2)
Tribe n (%)	Munyankole	617 (78.5)
	Mukiga	61 (7.7)
	Muganda	76 (9.7)
	Others	32 (4.1)
Type of residence n (%)	Rural	399 (50.8)
	Urban	181 (22.9)
	Semi urban	206 (26.4)
District of residence n (%)	Mbarara	501 (63.7)
	Isingiro	156 (19.9)
	Others	129 (15.4)
Marital status n (%)	Married	710 (90.5)
	Single	76 (9.5)
Level of education n (%)	A-level & above	8 (1.0)
	O-level	214 (27.2)
	Primary	496 (63.1)
	None	68 (8.7)
Occupation n (%)	Peasant	322 (41)
	House wife	288 (36.6)
	Business	84 (10.7)
	Professional	13 (1.7)
	Service	61 (7.8)
	Student/pupil	18 (2.3)
Monthly participant's income in Ushs mean(sd)		33785 (44670.2)
Income categories n (%)	≥108,000/=	31 (3.9)
	<108'000/=	755 (96.1)
Partners' income: mean,(sd)		134543 (90520)
Income categories n (%)	≥108000	375(47.5)
	<108000	413(52.5)
Median age at marriage in years (IQR)		18 (17-19)
Age categories n (%)	<16	20 (2.8)
	16-17	282 (38.9)
	18-19	423 (58.3)

Table 2: Obstetrics and Medical characteristics of adolescent mothers at MRRH

Parity n (%)	1	<b>645 (82.1)</b>
	2	<b>141 (17.9)</b>
WOA n (%)	Knows LNMP	649 (82.6)
	Don't know LNMP	137 (17.4)
	Median WOA at delivery in years (IQR)	39.3 (38-40.4)
Median number of antenatal visits n (IQR)		3.0(3-4)
Number of visits n (%)	0	14 (1.8)
	1	27 (3.4)
	2	102 (13.0)
	3	314 (40.4)
	4	329 (41.9)
Level of facility for ANC visits n (%)	HC2	24 (3.11)
	HC3	309 (40.3)
	HC4	248 (33.4)
	HOSPITAL	47 (6.1)
	REFERRAL	134 (17.4)
Routine ANC Medications Got haematinics n (%)		755 (96.1)
	Got fansidar n (%)	744 (94.7)
	Dewormed n (%)	747 (95.1)
Stage of labour at admission n(%) (mean cervical dilatation in cm)	Latent	175(22.3)(2)
	Active	463 (58.9)(6)
	Second stage	148 (18.8)
Mode of delivery n (%)	SVD	467 (59.4)
	Caeserian section	310 (39.4)
	Vacuum	9 (1.2)
Episiotomy n (%)	Yes	24.6
	No	75.4
Main birth attendant n (%)	Intern doctor	50 (6.4)
	Intern nurse	15 (1.9)
	Midwife	306(38.9)
	Student	91 (11.6)
	Resident/specialist	324 (41.2)
Categorized indications for C/S n (%) N=310	APH	5(1.6)
	Contracted pelvis	142 (45.8)
	Fresh C/S scar	14 (4.5)
	Fetal distress	20 (6.5)
	PG with breech	6 (1.9)
Referred n, (%)	Yes	161 (20.5)
	No	625(79.5)
<b>HIV status n (%)</b>	<b>Positive</b>	59 (7.5)
	<b>Negative</b>	692 (88.0)
	<b>Unknown</b>	35 (4.5)

**Table 3: Fetal outcomes of adolescent mothers at MRRH**

<b>Outcome</b>	<b>N=786</b>
Status at birth n (%)	
Alive	766 (97.5)
Dead/Still birth	20 (2.5)
FSB	11 (55)
MSB	9 (45)
Median A/S at 1 min (IQR)	9 (8-9)
A/S Categories n (%)	
<4	9(1.2)
4-6	58 (7.6)
>=7	699 (91.3)
Median A/S at 5 min (IQR)	10 (10-10)
A/S Categories n (%)	
<4	4 (0.5)
4-6	17 (2.2)
>=7	745 (97.3)
Died in 24 hours after delivery n (%)	
Yes	3 (0.4)
No	763 (99.6)
Mean birth weight(kg) (sd)	3.0 (0.5)
Birth weight Categories n (%)	
< 2.5	76 (9.7)
2.5-3.4	587 (74.7)
>=3.5	123 (15.7)
Other fetal complications n (%)	
Asphyxia	30 (3.8)
Prematurity	12 (1.5)
Hydrocephalus	1(0.01)
Spina bifida	1 (0.01)
Overall fetal outcome n (%)	
Good	634(80.7)
Bad	152(19.3)

**Table 4: Maternal outcomes of adolescent mothers at MRRH**

Outcome	N = 786
Mode of delivery n (%)	
SVD	467 (59.4)
C/S	310 (39.4)
Vacuum	9 (1.2)
Episiotomy (%)	
YES	24.6
NO	75.4
Complications n (%)	
Perineal tears	152(32.6)
Prolonged labour	186(23.7)
Obstructed labour	110(14)
PROM	47 (6.0)
PPH	13(1.65)
Chorioamnionitis	20 (2.5)
PET/E	14(1.8)
Others(preterm labour, retained placenta, oligohydramnios)	5(0.01)
Overall Maternal outcome n (%)	
Good	391(49.8)
Poor	395(50.2)
Over all materno- fetal outcome n (%)	
Good	314(40)
Poor	472(60)

**Table 5: Socio-demographic factors associated with poor delivery outcomes at Bivariate**

Characteristics		Good outcome	Bad outcome	OR(95% CI)	P value
Age	<16	6(50)	6(50)	1.00(0.32-3.10)	0.546
	16-17	32(44.4)	40(5.6)	1.25(0.37-4.25)	
	18-19	276(39.3)	426(60.7)	1.0	
Religion	Christian	270(39.7)	411(60.4)	1.0	0.920
	Moslem	40(41.7)	56(58.3)	0.92(0.56-1.42)	
	None	3(42.9)	4(57.1)	0.88(0.19-3.94)	
Tribe	Nyankole	246(39.9)	371(60.1)	1.0	0.373
	Mukiga	24(39.3)	37(60.7)	1.02(0.6-1.75)	
	Muganda	35(46.1)	41(53.9)	0.78(0.48-1.25)	
	Other	9(28.1)	23(71.9)	1.70(0.77-3.72)	
Residence type	Rural	149(37.3)	250(62.7)	1.0	0.214
	Urban	81(45)	99(55)	1.22(0.91-1.64)	
	Semi-urban	84(40.8)	122(59.2)	1.19(0.79-1.78)	
District of residence	Mbarara	207(41.3)	294(58.7)	1.0	0.300
	Kiruhura	18(40.9)	26(59.1)	1.44(0.79-2.63)	
	Isingiro	64(41)	92(59)	1.0(0.50-1.97)	
	Bushenyi	17(31.5)	37(68.5)	1.51(0.66-3.46)	
	Others	8(25.8)	23(74.2)	1.99(0.73-5.43)	
Marital status	Married	288(40.6)	422(59.4)	1.0	0.320
	Single	26(34.7)	49(65.3)	1.29(0.78-2.12)	
Level of education	None	24(35.3)	44(64.7)	1.41(0.80-2.48)	0.1954
	Primary	196(39.5)	300(60.5)	1.0	
	O-level	93(43.5)	121(56.5)	1.18(0.85-1.63)	
	A-level and above	1(12.5)	7(87.5)	5.38(0.65-44.50)	
	Occupation	Professional	4(30.8)	9(69.2)	
Service	27(44.3)	34(55.7)	0.56(0.16-2.02)		
Business	38(45.2)	46(54.8)	0.54(0.15-1.89)		
House wife	112(38.9)	176(61.1)	0.70(0.21-2.32)		
Peasant	128(39.8)	194(60.3)	1.0		
Student	5(27.8)	13(72.2)	1.16(0.24-5.53)		
Level of income mother	≥108000	162(43.4)	211(56.6)	1.39(0.68-2.83)	0.8182
	<108000	152(36.8)	261(63.2)	1.0	
	Age at marriage	<16	6(30)	14(70)	
16-17	111(39.4)	171(60.6)	1.08(0.79-1.46)		
18-19	174(41.1)	249(58.9)	1.0		



**Table 6: obstetric and medical factors associated with poor delivery out come at bivariate**

Characteristic	Good outcome	Bad outcome	OR(95%CI)	P value
Age at first pregnancy				
<16	11(37.9)	18(62.1)	1.10(0.51-2.36)	0.9717
16-17	72(39.8)	109(60.2)	1.01(0.72-1.43)	
18-19	231(40.1)	345(59.9)	1.0	
Referral status				
Referred	43(26.7)	118(73.3)	2.10(1.43-3.10)	0.0001
Not referred	270(43.3)	353(56.7)	1.0	
HIV status				
Negative	274(39.6)	418(60.4)	1.0	0.3914
Positive	28(47.5)	31(52.5)	0.73(0.43-1.24)	
Unknown	12(34.3)	23(65.7)	1.26(0.62-2.57)	
Parity				
1	254(39.4)	391(60.6)	1.0	0.4870
≥2	60(42.6)	81(57.4)	0.87(0.61-1.27)	
Number of ANC visits				
0	5(35.7)	9(64.3)	1.44(0.47-4.38)	0.0478
1	5(18.5)	22(81.5)	3.51(1.30-9.50)	
2	36(35.3)	66(64.7)	1.46(0.92-2.32)	
3	122(38.9)	192(61.1)	1.25(0.92-1.72)	
≥4	146(44.4)	183(55.6)	1.0	
Level of facility for ANC				
HC2	11(45.8)	13(54.2)	1.45(0.63-3.34)	0.3471
HC3	114(36.9)	195(63.1)	1.0	
HC4	101(39.2)	157(60.9)	0.88(0.33-2.37)	
Hospital	23(48.9)	24(51.1)	1.04(0.44-2.50)	
Referral	60(44.8)	74(55.2)	1.18(0.53-2.64)	
Stage of labour at admission				
Latent	72(41.1)	103(58.9)	1.50(1.25-1.81)	0.891
Active	185(40)	278(60)	1.0	
Second stage	57(38.5)	91(61.5)	1.06(0.73-1.55)	
Mode of delivery				
C/S	80(25.8)	230(74.2)	0.35(0.26-0.48)	0.001
SVD	233(50)	234(50)	1.0	
Vacuum	1(11.1)	8(88.9)	2.78(0.34-22.6)	
Episiotomy in case of SVD				
Yes	130(67.36)	63(32.64)	2.22(1.87-2.65)	0.001
No	184(31.03)	409(68.97)	1.0	

**Table 7: Factors associated with poor outcome at multivariate analysis**

Characteristic	aOR	95%CI	P value
Referred	1.72	1.13-2.62	<b>0.011</b>
Mode of delivery			
C/S	0.67	0.47-0.97	<b>0.03</b>
Vacuum	11.1	1.31-94.1	
Episiotomy given	0.24	0.16-0.36	<b>0.001</b>

### Conclusions

- The prevalence of adolescent deliveries at Mbarara Regional Referral Hospital is high almost close to the national adolescent pregnancy rate of 25%.
- Adolescent mothers delivering at MRRH generally have poor baseline socio-demographic characteristics with most living in poverty, peasant farmers with low monthly incomes and having attained low education levels
- Poor maternal outcomes associated with adolescent deliveries are high
- The commonest poor maternal outcome associated with adolescent deliveries was perineal tears

followed by prolonged labour.

- Generally, fetal outcomes among adolescent deliveries were good
- Being referred and delivery by vacuum extraction were associated with poor outcomes among adolescent mothers while episiotomy and delivery by C/S were protective

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