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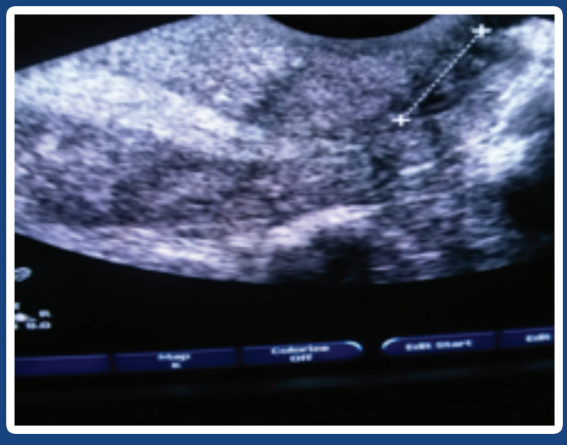

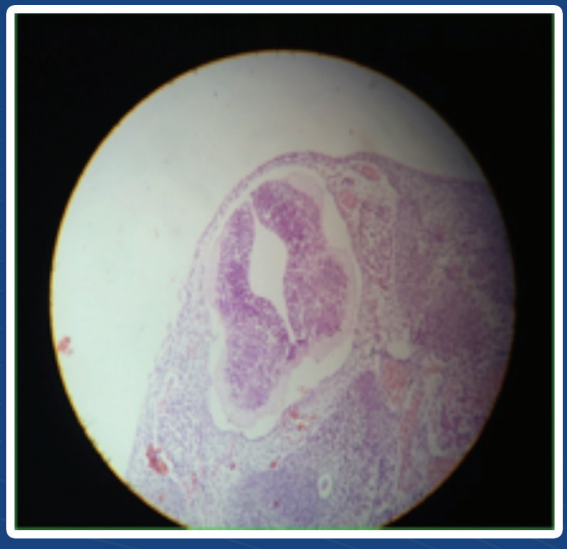

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PREVALENCE, INDICATION, TYPE AND COMPLICATION OF ELECTIVE HYSTERECTOMY IN A TERTIARY HOSPITAL IN ETHIOPIA

Ermias Abate Tinkishea, MD[1], Hale Teka, MD[1], Yibrah Berhe Zelelow, MD [1], Hailay Gebremichael, MSc[2], Wondwossen Terefe, PHD[3]

ABSTRACT

BACKGROUND: Hysterectomy is a surgical removal of the uterus. It is one of the commonly performed surgical procedures worldwide. In obstetric and gynecologic context, it is the second to cesarean section. The aim of this study was to analyze the rate, indications, complications, and type of elective hysterectomy in Ayder comprehensive specialized hospital.

METHODOLOGY: Retrospective study of all women for whom elective hysterectomy was done from January 2009-December 2016 in Ayder Comprehensive Specialized Hospital.

RESULTS: A total of 385 elective hysterectomies were done out of 1058 major gynecologic surgeries during the study period. This makes a rate of hysterectomy of 36.4%. Majority of the cases were in the age group of 41-50 years (31.6%) with the mean age of 47.5 years. The leading indication for elective hysterectomy was uterovaginal prolapse184 (57.3%), followed by leiomyoma 48 (15%) and ovarian tumor 47(14.6%). Vaginal hysterectomy was the commonest route of surgery 159(49.5%) followed by total abdominal hysterectomy (TAH) 75(23.4%). Half of the patients who had elective hysterectomy had pain during their hospital stay and 36.4 % of them were anemic after the operation.

CONCLUSION: The rate of elective hysterectomy was 36.4% of all major gynecologic surgeries during the study period and more than half the indication was done for uterovaginal prolapse. Post-operative surgical site pain was the most common complication identified in about half of the cases during the study period.

KEY WORDS: Total abdominal hysterectomy, vaginal hysterectomy, uterovaginal prolapse, ueiomyoma, ovarian tumer

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INTRODUCTION

Hysterectomy is a surgical removal of the uterus. It is one of the commonly performed surgical procedures worldwide. Hysterectomy is a major surgical procedure, which is done either under general or regional anesthesia. It can be done in different modalities. The distributions of the different surgical approaches are abdominal (64 %), vaginal (22 %), and laparoscopic (14 %) [1].

In developing countries, the commonest indication for hysterectomy remains uterine fibroid with or without menorrhagia, which is similar to that in developed countries except that uterine fibroid is generally larger and patients usually present late. Other indications include dysfunctional uterine bleeding, pelvic organ prolapse, adenomyosis, cervical polyp, premalignant lesions of the uterus and cervix after completion of family size, endometrial cancer, cervical cancer and chronic pelvic pain.

Complications that may occur following hysterectomy include hemorrhage, infection and injury to adjoining structures such as ureter, bladder and bowel. These complications could lead to severe morbidity and even mortality [1,2,3, 4, 5].

OBJECTIVE

The objective of this study was to analyze the rate, indications, complications, and type of elective hysterectomy in Ayder comprehensive specialized hospital.

METHODS

The study was conducted in Ayder Comprehensive Specialized Hospital, which is located in Mekelle town, Tigray, Ethiopia. The hospital is a teaching hospital for both undergraduate and postgraduate students and has 24 hours a day specialty care. It began its service in 2008 and gives service close to 8 million people living in the northern part of Ethiopia.

The study included all women who had elective hysterectomy and patient charts were retrieved from the archives. Data of important variables was collected from the patient documents. Data were cleaned, entered, and analyzed using IBM SPSS version 20. Descriptive analysis was used to estimate magnitude, indication, type and complication of elective hysterectomy. Ethical clearance was obtained from the research and community service committee of College of Health Sciences, Mekelle University.

RESULTS

A total of 385 elective hysterectomies were done out of 1058 major gynecologic surgeries during the study period. This makes a rate of elective hysterectomy of 36.4%. From the total of elective hysterectomies 321(83.4%) cards were retrieved and analyzed.

Majority of the cases 102(31.6 %) were in the age group of 41 – 50 years with a mean age of 47.5 years. Most of the cases (81.6 %) were from rural area. Most of the surgery were done for grand multipara (48.6%) followed by multiparous (46.7%) and nulliparous (4.7%). (Table-1)

Tables

Table-1. Sociodemographic and reproductive history of patients with elective hysterectomy, January 2009-December 2016 in Ayder Comprehensive Specialized Hospital, Northern Ethiopia

Variable	Number	Frequency (%)
Age (years)		
21-30	29	9
31-40	80	24.9
41-50	102	31.8
51-60	73	22.7
61-70	31	9.7
71-80	5	1.6
>81	1	0.3
Total	321	100
Residence		
Urban	59	18.4
Rural	262	81.6
Total	321	100
Parity		
0	15	4.7
1-4	150	46.7
>4	156	48.6
Total	**321**	**100**

The leading indication for elective hysterectomy was uterovaginal prolapse (UVP) 184(57.3%), while leiomyoma 48(15%) was the second most common indication followed by ovarian tumor (14.6%) (Table-2).

Table-2 Indication of elective hysterectomyJanuary 2009-December 2016 in Ayder Comprehensive Specialized Hospital, Northern Ethiopia

Indication	Number	Percent
UVP	184	57.3
Leiomyoma	48	15
Ovarian tumor	47	14.6
GTD	19	5.9
Cervical cancer	9	2.8
Endometrial hyperplasia	4	1.2
Endometrial cancer	3	0.9
Leiomyosarcoma	2	0.6
CIN II and CIN III	2	0.6
Elongated cervix	2	0.6
Adenomyosis	1	0.3
Total	**321**	**100**

From all the cases with elective hysterectomy, vaginal hysterectomy constituted the major route of surgery during the study period 159 (49.5%) followed by total abdominal hysterectomy (TAH) 75 (23.4%). Total abdominal hysterectomy with bilateral salpingeo-oopherectomy (BSO) was done for 51 (15.8%), the remaining type of elective hysterectomies were subtotal abdominal hysterectomy 18 (5.6%), radical hysterectomy and total abdominal hysterectomy with unilateral salpingeo-oopherectomy (USO) each contributing 9 (2.8%)(Table-3).

Table-3 Type of hysterectomy done for elective hysterectomy patients from January 2009 - December 2016 in Ayder Comprehensive Specialized Hospital, Northern Ethiopia

Type of hysterectomy	Frequency	Percent
Vaginal hysterectomy	158	49.2
TAH	76	23.6
TAH+BSO	51	15.8
Subtotal hysterectomy	18	5.6
TAH+USO	9	2.8
Radical hysterectomy	9	2.8
Total	**321**	**100**

During the study period, 156 (84.2%) cases of uterovaginal prolapse undergone vaginal hysterectomy and the remaining cases had subtotal or total abdominal hysterectomy with suspension procedures.

Thirty nine (81.3 %) cases of leiomyoma have undergone TAH. Five (10.4 %) cases have undergone TAH with USO. Two cases (4.2 %) had TAH and BSO and one case (2.1%) had sTAH, vaginal hysterectomy was done on a patient with delivered myoma and UVP.

All of the ovarian tumor patients have undergone TAH +BSO. From the 19 gestational trophoblastic disease 18(94.7%) had TAH while the remaining one patient undergone TAH +USO after intraoperative injury to one ovary. Nine radical hysterectomies were done for the patients with early stage cervical cancer. (Table-4)

Table-4: Frequency and percentage distribution of type of elective hysterectomy and their indication, January 2009-December 2016 in Ayder Comprehensive Specialized Hospital, Northern Ethiopia

	Type of elective hysterectomy						
Indication	TAHs	TAH	VH	RH*	TAH+BS	TAH+USO	Total
UVP	10	16	156	0	2	0	184
Leiomyoma	39	1	1	0	2	5	48
Ovarian tumor	0	0	0	0	47	0	47
GTD	18	0	0	0	0	1	19
Cervical cancer	0	0	0	9	0	0	9
Endometrial hyperplasia	3	0	0	0	1	0	4
Endometrial cancer	1	0	0	0	1	1	3
CINII and CIN III	1	0	0	0	0	1	2
Leiomyo-sarcoma	2	0	0	0	0	0	2
Elongated cervix	1	0	1	0	0	0	2
Adenomyosis	1	0	0	0	0	0	1
Total	**76**	**17**	**158**	**9**	**53**	**8**	**321**

Twelve (3.7%) patients had intra operative bleeding of more than 1000ml. Among these 12 cases three have undergone radical hysterectomy for cervical cancer. Two for each cases of leiomyoma, ovarian tumor, UVP and GTD ended up intraoperative bleeding of more than 1000ml. One patient, who ended up with bleeding of more than 1000ml, was diagnosed with endometrial cancer.

Three patients had adjacent organ injury. Two patients have sustained bladder injury and one ended up in ureteric injury. One patient ended up with a bladder injury while undergoing vaginal hysterectomy for UVP. The other bladder injury occurred during total abdominal hysterectomy for leiomyoma. The patient who had ureteric injury was undergoing subtotal abdominal hysterectomy for leiomyoma with previous cesarean scar with extensive adhesion. (Table-5)

Table-5: Intraoperative and postoperative complications of elective hysterectomy January 2009-December 2016, Ayder Comprehensive Specialized Hospital, Northern Ethiopia

Complication	Frequency	Percent
AIntraoperative complication		
Hemorrhage	12	3.7
Bladder injury	2	0.6
Ureteric injury	1	0.3
None	306	95.3
Total	321	100
Postoperative Complciations		
Fever	14	4.4
Post-operative pain	163	50.8
Anemia	117	36.4
Paralytic ileus	18	5.6
UTI	35	10.9
Wound infection	12	3.6
Transfusion	15	4.7
RTI	8	2.5
Vault prolapse	4	1.2
Repeat laparotomy	3	0.9
DVT	2	0.6
Vault hematoma	1	0.3
Death	0	0

Half the patients who were followed postoperatively complained surgical pain per documentation on progress note otherwise it was difficult to assess objective score. From the listed type of hysterectomy, post vaginal hysterectomy surgical site pain contributed the highest of all procedures 68(41.7%) followed by TAH 41(25.2%) and TAH +BSO 6(3.8%).

One hundred seventeen (36.4%) patients were anemic after the surgery. Post-operative hemoglobin was evaluated from the study groups. Fifty one (43.6%) patients are after vaginal hysterectomy followed by TAH 28(23.9%).The remaining are presented on table 6 with type of indication and anemia

A blood transfusion was required post operatively in 15 patients (4.7%).Most of the transfusion was given on the patients operated with vaginal hysterectomy 5(33.6%) and total abdominal hysterectomy 4 (26.7%). The remaining transfusion was given for the patients who were operated with radical hysterectomy 2(13.3 %), TAH+BSO 3(20%) and TAH+USO 1(6.7%).Two of the patients required repeat laparotomy to identify and treat the cause of bleeding.

Three of the patients ended up in explorative laparotomy after vaginal hysterectomy. All of the patients had intraabdominal bleeding during post-operative follow up

Four patients developed vault prolapse after vaginal hysterectomy. All of them came with mass protruding per vagina after they had been discharged with improved symptoms.

Table 6: frequency and percentage of anemia with indication of hysterectomy

Type of indication	Frequency	percent
UVP	54	46.2
Ovarian tumor	22	18.8
leiomyoma	19	16.2
GTD	12	10.3
Cervical cancer	5	4.3
Endometrial hyperplasia	2	1.7
CIN1 and CIN II	2	1.7
Endometrial cancer	1	0.8
Total	**117**	**100**

Deep venous thrombosis

Two (0.6%) patients developed deep venous thrombosis after TAH and TAH+BSO.

DISCUSSIONS

Hysterectomy is the second most common surgical procedure performed on women. Indications for hysterectomy vary across different regions of the world [6, 7, 8, 9,10,11,12]. In our study at Ayder comprehensive specialized hospital, the commonest indications for elective hysterectomy were Uterovaginal prolapse184 (57.5%), Leiomyoma 48 (15%) and ovarian tumor 47 (14.6%).The three major indications for hysterectomy in Tikur Anbessa hospital among 969 women were leiomyoma 396 (41.1%), uterovaginal prolapse 221 (23%) and ovarian tumors 188 (19.5%)[2] . In Nigeria a study involving about 196 hysterectomies, uterine myoma was the commonest indication in 62.3% followed by Utero vaginal prolapse 16.3% [6]. In India, most common indication for hysterectomy was symptomatic fibroid uterus (= 210 [39.9%]), followed by uterovaginal prolapse (= 86 [16.3%]) [13]. In USA uterine myoma was found to be the commonest indication in 32.4%, followed by abnormal vaginal bleeding in 16.6%. Other indications include genital organ prolapse, endometriosis, chronic pelvic pain and precancerous lesion in 12.2%, 11.9%, 7.1% and 4.3% respectively [14]. In our set up, the leading indication for elective hysterectomy was found to be uterovaginal prolapse. This increment could be due to free campaign organized and given by Ayder comprehensive specialized hospital for the patients with uterovaginal prolapse living in the rural and urban areas. The other reason could be due to higher incidence of parity and home deliveries in the study arrears.

IIn Ayder comprehensive specialized hospital the major types of hysterectomy were vaginal hysterectomy 159(49.5%), followed by total abdominal hysterectomy and TAH+BSO 51(15.9%).A retrospective analysis of 969 elective hysterectomies performed at Tikur Anbessa teaching hospital from February 1992-October 2000 showed that there was a preference for the abdominal approach to hysterectomy (77.3%) with vaginal hysterectomy being done in only 22.7 %5 .Retrospective studies of all the women attending Fakhruddin Ali Ahmed Medical College in India from March 2012 to February 2014 and requiring hysterectomy for benign and premalignant conditions. Total 270 hysterectomies were performed during the study period of which 70 (32.22%) were vaginal hysterectomy with pelvic floor repair, 17 (11.47%) were non-descent vaginal hysterectomy, 5 (1.85%). Hysterectomies were done laparoscopically and 178 (65.93%) were total abdominal hysterectomies[15].

The major route of elective hysterectomy in our set up was vaginal hysterectomy which had comparable approach on the study done at FAA Medical College. This was due to major indication on both hospitals were uterovaginal prolapse. However compared to Tikur Anbessa hospital, abdominal approach was preferable owing to higher incidence of Leiomyoma in this hospital.

There was comparable result on bladder injury (2patients) and ureteric injury (1 patient) from the study done in An Audit of Indications, Complications, and Justification of Hysterectomies at a Teaching Hospital in India[16].

In our hospital the intraoperative hemorrhage was documented on the operation note 94/321(30%). Out of these 37 patients had estimated blood loss of less than 300ml (11.5%) while 45 patients had 301-1000ml (14%) and 12 patients (3.7%) more than 1000 ml. From these patients only 15 (4.7%) were transfused. In Tikur Anbessa hospital Intraoperative hemorrhage rate was 135/969 (14%)[13]. This lower rate in our set up can be explained by 70% undocumented intraoperative estimated blood loss on the chart. However, there was higher incidence of anemia on the patients with normal hemoglobin after the operation.

Regarding postoperative course, 163 (50.8%) patients complained pain during the hospital stay. But it was difficult to assess objective score of pain as there was no documentation. However, most of the pain compliant was after vaginal hysterectomy 68 (41.7%) with and TAH 41 (25.2%). 117 patients (36.4%) are anemic after the surgery. Fifty one (43.6%) patients are after vaginal hysterectomy followed by TAH 28 (23.9%).This was less than from Tikur Anbessa hospital study which may be explained by poor intraoperative documentation.

There was no pulmonary thromboembolism, cardiovascular accident or death during the study period as compared to Hysterectomy in the Niger Delta of Nigeria. There were 6 deaths during the study period giving a case fatality rate of 3.9 %[2].

CONCLUSION

The rate of elective hysterectomy is 36.4%. Most of the indications are done for uterovaginal prolapse (57.3%), leiomyoma (15%) and ovarian tumor (14.6%). The surgery was done in the age group of 41-50 year (31.8%). The commonest route surgery were vaginal hysterectomy (49.5%) followed by TAH (22.4%) and TAH +BSO (15.9%). Nearly half of the patients complained pain during the hospital stay. One hundred seventeen patients (36.4%) are anemic after the surgery.

COMPETING INTERESTS

The authors declare that they have no competing interests.

Ethics approval and consent to participate

Mekelle University, College Health Sciences, Ethical review committee approved this study.

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EMERGENCY CONTRACEPTION: KNOWLEDGE AND PRACTICE AMONG FEMALE STUDENTS IN DILLA UNIVERSITY, SOUTHERN ETHIOPIA, 2018

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ABSTRACT

INTRODUCTION: Globally, despite the availability of effective contraception methods, the number of unintended pregnancy is high among an adolescent that leads to a higher risk of morbidity and mortality. Taking emergency contraceptive within the recommended time is highly effective to prevent unintended pregnancy. In Ethiopia, the high rate of unwanted pregnancy among female students in the Universities is a community and government concern. Thus, this study is aimed to determine the level of knowledge and practice of emergency contraceptives among female students in Dilla University, Southern Ethiopia, 2018.

METHODS: Descriptive cross-sectional quantitative study was conducted and multistage sampling technique was employed to enroll a total of 672 study participants. A systematic simple random sampling was used to enroll study units. Data was collected using structured self-administered questionnaire. The data was analyzed using the SPSS-20 software.

RESULT: Only 150(40.3%) had used emergency contraceptives after having unprotected sexual intercourse However, from the total respondents, 372(29.4%) were sexually active, 84(22.5%) had a history of unintended pregnancy and eighty (95.2%) of pregnancy ended up with abortion.

CONCLUSION: This study showed that the utilization of emergency contraceptives after unprotected sexual practice was low among female students in the University. Therefore, more effort is needed to access emergency contraceptives in the university, mainstreaming reproductive and sexual issues and community awareness on adolescents' reproductive and sexual rights may alleviate this burdened health risk of female students in the Universities.

KEY WORDS: Knowledge, emergency contraception practice, students, Dilla University

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BACKGROUND

Each year, 126,000 abortions had occurred due to unintended pregnancies regardless of availability of effective contraception methods worldwide. An unintended pregnancy can cause serious consequences for women, their families and countries[1-3]. In 2008, a small-scale survey in eighty countries have shown that the 208 million pregnancies have occurred; 41 percent were estimated as unintended[4-5].

In Africa, studies have shown that the annual number of induced abortion increased from 5.6 million to 6.4 million from 2003 to 2008. Most abortions occurred in Eastern Africa (2.5 million), followed by Western Africa (1.8 million), Northern and Middle Africa (0.9 million), and Southern Africa (0.2 million)[6-8].

According to the Demographic and health survey in Ghana, Kenya, Nambia and Brazil the proportion of unintended pregnancy among adolescent female were 46 percent, 50 percent,55 percent and 58 percent respectively and in Ethiopia 2014, a total number of pregnancies were 4.93 million and an unintended pregnancy accounted for 38% of pregnancy[9-11].

Globally, advocacy has been sought to improve access to emergency contraception for over a decades. However, in Africa, the successful utilization of emergency contraception service remains limited. The customer's level of knowledge towards emergency contraception among the population ultimately undermines the impact of such provision strategies. In the Zambia, and Senegal, about 10percent of women reported that they have ever heard of emergency contraception. In the many of Africa countries, less than 1% of all women have reported ever using emergency contraception after having unprotected sexual intercourse[12-14].

Even though, studies revealed that the total number of unintended pregnancies has decreased over in the past few decades, the percentage remains high among adolescents[15], that could be due to a discrepancy in awareness, attitude towards contraception, low accessibility of emergency contraception or as a result of forced sexual intercourse[16-18].

In Ethiopia, studies conducted among undergraduate female students in different university revealed that only 41.9% heard or had awareness about emergency contraception; but, only 6.8% used emergency contraception even though 28.9% of the students had practiced unprotected sexual intercourse[19-22]. Studies revealed that correct and consistent utilization emergency contraception can prevent unintended pregnancy and its complication. Emergency contraception service utilization also helps as a link to other sexual and reproductive health service for adolescents[23].

Therefore, determining the level of knowledge and practice on emergency contraception is important for all concerned bodies to prevent unintended pregnancy among female students and to create insight on how community taboo on adolescent reproductive right and sexuality hinders emergency contraception practice among adolescents.

Thus, this study was aimed to determine the level of knowledge and practice on emergency contraception among female students Dilla University, Southern Ethiopia 2018.

METHODS AND MATERIALS

Study design and population

A descriptive cross-sectional quantitative study was conducted among female students in Dilla University, Southern Ethiopia from March to April, 2018. All female students who were attending their study during data collection period were considered as source population. All undergraduate female students during actual data collection period were included in the study and postgraduate female students were excluded.

Sample size determination

Sample size was determined using a single population formula with assumption; p=69.9% of prevalence of knowledge on emergency contraception (24), 95% CI and 5% of marginal error. The sample size was 324. But total female students in the University were less than 10,000; we considered correction formula, design effect 2 and 10% nonresponse rate. The final sample size was 672.

Sampling Procedure

A multistage sampling technique was used to enroll 672 study participants. To draw study participants, sample size was distributed to all faculties in the university proportionally. And then, from each faculty, department were selected using simple random sampling method. Finally, a total of 672 undergraduate female students were enrolled using systematic random sampling technique from selected departments.

Data collection tools and quality assurance

A structured self-administered questionnaire was used to collect data. A questionnaire contains information about female students' socio-demographic characteristics, reproductive and sexual characteristics, knowledge and practice on emergency contraception. Questionnaire was developed in English by reviewing literatures used in this study. The questionnaires were checked for completeness and accuracy before data entry.

Data analysis

The data was entered and analyzed using Statistical packages for Social Science (SPPS) version-20 IBM Armonk, NY, USA. Simple descriptive statistics was done to describe socio demographic characteristics, sexual characteristics, and practice and knowledge of participants on emergency contraception. The result was described using tables and descriptions.

ETHICAL CONSIDERATION

Ethical approval for study was obtained from research Ethical committee of College of Health Science and Medicine, Dilla University. A research ethical committee was dedicated to approve all ethical issues of the research in the college. An informed written consent was obtained from study participants during data collection and the confidentiality was maintained by avoiding identifiers in the data collection tool.

RESULT

Socio-demographic characteristics of respondents

A full respon se was obtained from 600 female students (response rate 89percent). From the total respondents (n=600), 385(64.2%) were the age range of 17-20 years. Three hundred seventy-two (62%) among respondents (female students) were from the rural area of the country. Regarding respondents' family educational status; three hundred fifty (58.4%) of respondents' fathers were uneducated and three hundred ninety-five (65.8%) of their mother were uneducated respectively [Table_1].

Table-1: Socio-demographic characteristics among respondents Dilla University, Southern Ethiopia, 2018 [n=600]

Variables		Frequency	Percent(%)
Age (n=600)	17-20	385	64.2
	21-25	191	31.8
	> 25	24	4
Year level (n=600)			
	First year	183	30.5
	Second and above year	417	69.5
Residence (n=600)	Rural	372	62
	Urban	228	38
Father's educational level (n=600)	Uneducated (can't read and write)	350	58.4
	Educated	250	41.6
Mother's educational level (n=600)	Uneducated	395	65.8
	Educated	205	34.2

Reproductive and sexual characteristics of respondents

From respondents [n=600], 92(15.6%) age of menarche ranges 11-13 years. Three hundred seventy-two (62%) of respondents had sexual intercourse. From those who had a history of sexual intercourse practice (n=372), One hundred eight (29%), had it unwillingly/forced by their peer/students, intimate partners and an unknown person. From respondents who ever had sexual intercourse practice (n=372), eighty-four (22.5%) had an intended pregnancy and 80 (95.2%) of these pregnancies were ended in abortion [Table-2].

Table -2: Reproductive and sexual characteristics of female students in Dilla University, Southern Ethiopian, 2018 [n=600]

Variables		Frequency	Percent(%)
Age at menarche [n=600]	11-13	92	15.6
	>14	508	84.4
Ever had sexual intercourse practice [n=600]	Yes	372	62
	No	228	38
Practiced sex by [n=372]	Consent	264	71
	Forced	108	29
Forced sex performed by [n=108]	Peers/students	60	55.5
	An intimate relatives	12	11.1
	I didn't known	2	1.85
	No answer	34	31.45
Ever confronted unwanted pregnancy [n=372]	Yes	84	22.5
	No	288	77.4
Outcome of unwanted pregnancy [n=108]	Gave birth	4	4.8
	Induced abortion	80	95.2

Knowledge on emergency contraception

From the total respondents (n=600), 420 (70%) had heard about emergency contraception and from those who knew about emergency contraception, 168(40%) of heard about emergency contraceptives from health worker and 156 (37.1%) from media (radio, Television and social media). Regarding right time to use emergency contraceptives after having unprotected sexual intercourse; 193(44.9%) of respondents didn't know right time to take emergency contraceptives to prevent unwanted pregnancy [Table_3].

Table-3: Knowledge on emergency contraceptives among undergraduate female students in Dilla University, Southern, Ethiopia, 2018 [n=600]

Variables		Frequency	Percent(%)
Ever heard about emergency contraception [n=600]	Yes	420	70
	No	180	30
Source of information on emergency contraceptives [n=420]	Health professionals	168	40
	Friends/peers	84	20
	Media (Television, Radio, social media)	156	37.14
	leaflet	12	2.8
Time emergency contraceptive to be taken after unprotected sexual intercourse [n=420]	Within first 3 days	206	49
	Within first 5-7 days	176	41.9
	After one week	17	4
	Not sure	21	5
Types of emergency contraceptive methods you know [n=420]	Oral contraceptives	360	85.7
	Intrauterine contraceptive device	50	8.4
	Not sure	10	1.6
Time frame in which emergency contraceptives to be effective [n=420]	Within 3-5days	288	68.6
	Within 10 days	48	11.4
	Not sure	84	20.8

Practice of emergency contraceptive

Only 150(40.3%) had practiced emergency contraceptives after having unprotected sexual intercourse. However, from participants who had experienced unprotected sexual intercourse (n=372), two hundred twenty-two (59.7%) did not use emergency contraceptives consistently. The reason that respondents didn't use emergency contraception; they didn't know about emergency contraception 120(54%), a fear of social dishonor 90(40.5%) and no access to emergency contraceptives 12(5.5%) [Table_4].

Table_4: Practice of emergency contraceptives methods among undergraduate female students in Dilla University, Southern, Ethiopia, 2018 [n=372]

Variables		Frequency	Percent(%)
Emergency contraception's used consistently after unprotected sexual intercourse [n=372]	Yes	150	40.3
	No	222	59.7
Type of emergency contraceptives used consistently [n=150]	Oral contraceptive pills	150	100
	Intrauterine contraceptive device	-	-
Time ECs to be taken or used [n=150]	Within first 3-5 days	70	46.7
	After 10 days	80	53.3
	Not sure	-	-
Reason for not using emergency contraceptives after unprotected sexual intercourse constantly [n=222]	Don't know about emergency contraceptives	120	54
	Fear of social dishonor	90	40.5
	Not available	12	5.5

DISCUSSION

This study was aimed to assess the knowledge and practice of emergency contraceptive among undergraduate female students in Dilla University, Southern Ethiopia. Knowing the level of practice and knowledge on emergency contraceptives among female students is essential to improve contraceptive service of adolescents. This study revealed that the practice and knowledge of respondents on emergency contraceptive was 40.3% and 70% respectively.

In this study 420 (70%) of respondents had heard about emergency contraception which is high as compared to a study conducted in South Africa among female public sector primary health care clients only 22.8% and 20% in Kenya, Nairobi; but lower than a study conducted comprehensive school in Oxford shire, UK and a study conducted in Lothian, Southeast Scotland that is 85% and 93% respectively[18,19]. This is difference may be due to the socio-demographic difference of the study respondents.

Study done in Addis Ababa University shown that 19.5% had unprotected sexual intercourse from which 35.1% of them had unintended pregnancy and 71.8% of pregnancy was ended in abortion. But, in this study 62% of respondents had unprotected sexual intercourse and 22.5% had intended pregnancy and 95.2% pregnancies were ended in induce abortion[20-24]. The study finding is inconsistent with previous study finding. In this study there a high number of unprotected forced sexual intercourse.

This finding discrepancy might be due difference in time and size of study population.

In this study, 150 (40.3%) respondents used emergency contraception's after unprotected sexual intercourse to protect unintended pregnancy which is high as compared to study done Jimma University (11.6%)[25-27].

This discrepancy in finding may be due to difference in level of awareness on emergency contraception among students' and time of research done in different universities.

In this study, the result shown that the main reasons for not using emergency contraception after having unprotected sexual intercourse among female students were; lack knowledge on the emergency contraception, lack of access to emergency contraception and fear of community humiliation. These study findings were supported by other studies result.

CONCLUSION AND RECOMMENDATION

The magnitude of utilization of emergency contraception was relatively low among female students in Dilla University Southern Ethiopia. There were also frighteningly high unintended pregnancies that ended in abortion among female students.

Thus, all stakeholders must work hard to create awareness about emergency contraception, increasing access to emergency contraception in the Universities and community mindfulness on adolescents' reproductive and sexual issues may alleviate this burdened health risks of female students in the universities.

Increasing access to emergency contraception and creating awareness in the community on the adolescent and youth right on sexual and reproductive health may help to minimize the level of social stigma towards emergency contraception utilization among female students in the university.

Limitation of study: This study was simple description on knowledge and practice of emergency contraception among undergraduate female students in University.

DECLARATION

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MAGNITUDE OF PREMARITAL SEXUAL PRACTICE AND ASSOCIATED FACTORS AMONG ADIGRAT HIGH SCHOOL STUDENTS, ETHIOPIA, A CROSS SECTIONAL STUDY

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ABSTRACT

INTRODUCTION: Premarital sexual practice is sexual intercourse experienced before marriage. It usually leads to sexual and reproductive health problems that are the main causes of death, disability and disease among young people in the world particularly in Africa including Ethiopia.

OBJECTIVE: To assess the magnitude of premarital sexual practice and associated factors among Adigrat high school students, Ethiopia, 2015.

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METHODS: A school based cross-sectional study was conducted through self-administered questionnaires. The sample size was determined using single population proportion formula. Data was entered and cleaned using EPI info version 7 and exported and analyzed using Statistical Package for Social Sciences (SPSS) version 20. Logistic regression model was used to measure the association of outcome and independent variables.

RESULT: 567 Adigrat high school students participated in the study. This study revealed that 17.6% of the study participants had practiced premarital sexual intercourse before the study period. The variables found to be associated with premarital sexual practice were, educational level, attending entertainment programs, sexual communication with friends and use of addictive substances.

CONCLUSION AND RECOMMENDATION: There were a substantial proportion of high school students who practiced premarital sexual intercourse. Therefore, collaborative effort needs to address sexual and reproductive health issues of students related to premarital sexual practice.

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INTRODUCTION

Young people constitutes about 1.8 billion (27%) of the world's population with more than four fifths in developing countries[1]. There is a dynamic change in emotion, physical and sexual maturation of young people. It is a time when many of them experience critical and life defining challenges such as their first sexual experience, marriage, pregnancy and parenthood[2].

Though previously not given much attention, sexuality and reproductive health (SRH) became among the most fundamental aspects of life. Sexual activities among young people have been reported to be increasing worldwide. That is why young peoples' sexuality and its consequences has become a major public health concern all over the world. Inciting sexual activity is a natural transition made nearly by all humans. Nevertheless it is not the occurrence of this transition but its timing and circumstances under which it occurs that has significant implications[3].

Premarital sexual practice is sexual intercourse experienced before marriage. Most premarital sexual intercourse in youth is unprotected and therefore, they are frequently influenced to participate in risk-taking behaviors. These include early and unsafe sexual activities, having multiple sexual partners, use of alcohol and drugs, violence that could lead to unwanted pregnancy, unsafe abortion, and sexually transmitted illnesses (STIs) including HIV/AIDS, hasty and unpromising marriage, lesser employment opportunity, unplanned parenthood & dropping out of school but majority of these risky behaviors are often associated with premarital sex[2-4].

Since, almost all students in secondary schools are young people; they share changes and challenges[3].

Sexual health requires a positive approach to human sexuality and an understanding of the complex factors that shape human sexual behavior. These factors affect whether the expression of sexuality leads to sexual health and well-being or to sexual behavior that put people at risk or make them vulnerable to sexual and reproductive ill-health[5]. Sexual health problems are the main causes of death, disability and disease among young people in the world particularly in Africa[6]. In Ethiopia, sexually related problems in adolescents and females are at greater rate when compared with old ages and males respectively[7,8]. During young stage, the challenges that they face and the decisions they make can have a tremendous impact on the quality and length of their lives. Many important life events and health-damaging behaviors that are contributing for premarital sexual activities start during these years[9].

The vast majority of sexual intercourse in youth is unprotected leading to high mortality and morbidity related to unwanted pregnancy, unsafe abortion and STIs including human immunodeficiency virus/ acquire immune deficiency syndrome (HIV/AIDS). Besides, females, particularly young girls, may end up with teenage deliveries and various complications of these including death. In Ethiopia, unsafe abortion is among the most common cause of maternal mortality, accounting for up to 10% of all maternal deaths in the country. The situation is serious for those who are not physically matured[10].

The Federal Ministry of Health (FMOH) reports indicate that nearly 70% of women who seek medical care for incomplete abortion are less than 24 years of age and it is among the leading causes of maternal mortality in Ethiopia[10].

A study done among young students in Bale zone of Oromia regional state also shows that among sexually active students 47.7% of them had sex with multiple partners, 43.7% commence sex with causal partner, 38.9% with partner having multiple sexual partners and 20.5% with commercial sex workers[11].

Moreover, girls may drop out from school to rear their children and in most cases, they become economically dependent upon their parents. Students are usually interested to discover sex and are highly likely to practice premarital sex, which is usually unprotected.

The magnitude of premarital sex, risky sexual behavior and adverse health consequences related to premarital sexual practice are significantly increasing worldwide. So this assessment is believed to give the present magnitude of Adigrat high school students' premarital sexual practice and factors related to it.

Therefore, understanding of the magnitude and the factors associated with premarital sex will help the concerned bodies such as policy makers, program planners and implementers to design appropriate effective premarital sexual practice prevention strategies and to take interventions based on the findings.

METHOD AND MATERIALS

School based cross sectional study was carried out from October 05-16/2015 G.C. in Adigrat town to assess magnitude and factors associated with premarital sexual practices among high students at Adigrat Town.

The sample size required for this study was determined using single population proportion formula considering the nature of multistage sampling, a design effect of was used to multiply the sample size obtained at 5% degree of precision and 95% (CI). 10% non-response rate was added. Then at the end 572 study participants were selected by simple random sampling technique using lottery method from each cluster.

Sample size was distributed to each educational level proportional to their school, sex and number. Sample population was clustered according to their educational level as 9^{th}, 10^{th}, 11^{th} and 12^{th} grade. There were 165 sections (classrooms) in all six schools. Sections under each grade (educational level) were used as clusters. Then 57 sections were selected by simple random sampling technique using lottery method. Finally, lists of unmarried students (sampling frame) for each of the selected sections were prepared and proportionally 572 study participants were selected by simple random sampling technique using lottery method from each clusters.

Three MSc midwifery students who are studying at Mekelle University collected the data. Three supervisors were also been assigned from MSc students from Emergency surgery and obstetric care from the same university. Self-administered questionnaires, composed of closed-ended questions, were administered to the study units. A box was prepared in each classroom and students put their own questionnaire in a box by themselves. No school community member was allowed to enter in each room.

To assure the quality and reliability of data, training on the content of the questionnaire and objectives of the study was given to data collectors and supervisors by the principal investigator for one day before the pre-test.

The questionnaire was prepared in English then translated first to Tigrigna (local language) and back to English by the individuals who has good knowledge in both English & Tigrigna languages.

After data was collected, the response was coded, entered and cleaned using EPI info version 7 statistical package, and then exported to SPSS version 20 for analysis. To describe the findings, frequency, tables and graphs were used. Associations between dependent and independent variables were assessed and its strength was presented using odds ratios. Coefficients were expressed as crude Odds ratio (COR) and adjusted Odds ratio (AOR). P-value < 0.05 at 95% CI was taken as statistically significant.

Ethical clearance was obtained from Institutional Review Board (IRB) of College of Health Sciences, Mekelle University and letter of cooperation request was written by education office of the district to each of the six schools.

RESULT

There were 572 students invited to participate in the study, and 567 students participated in the study with the response rate of 99.1%.

1. Socio-demographic Characteristics of the Students

Among 567 students who participated in the study, 263 of them were males and 304 of them were females making the male to female ratio of 1:1.2. The age of the respondents ranges from 14-24 years and median of 16 years with mean and standard deviation of 16.1+1.394. About 88% of them were in the age group of 15-19 years. From the total respondents, 379 (66.8%) were urban while the rest were rural residents. Majority (90.3%) of the respondents were from Tigre ethnic group.

Of the total respondents, most of them were Orthodox Christians (85.5%). Majority of the respondents were living with both their father and mother (61.4%). Regarding their educational level, 40.7% of the sampled population was from Ninth (table 1).

Table 1: - Socio-demographic characteristics of Adigrat high school students, Tigray Regional State, Northern Ethiopia, 2015

Variables	No of participants N = 567	Percent (%)	
Sex	Male	263	46.4
	Female	304	53.6
Age group	10-14 years	57	10.0
	15-19 years	497	87.7
	20-24 years	13	2.3
Educational level	9th	231	40.7
	10th	216	38.1
	11th	57	10.1
	12th	63	11.1
Ethnicity	Tigre	512	90.3
	Erob	50	8.8
	Others*	5	0.9
Religion	Orthodox	485	85.5
	Catholic	60	10.6
	Muslim	15	2.7
	Others**	7	1.2
Place of residence	Urban	379	66.8
	Rural	188	33.2
With whom a student live	Mother & father	384	61.4
	Father only	56	9.9
	Mother only	11	1.9
	Other family members	92	16.2
	Friends	18	3.2
	Alone	33	5.8
	Other***	9	1.6

Key: * Amhara or Afar; ** Protestant or no religion, *** Grandmother, missionary organization or teachers

2. Family Characteristics

Most study participants (92.2%) reported that their parents were both alive and 458 (80.8%) of them perceived that they are from middle income families and 87.1% the parents were not consuming addictive substances. A little higher than one-half of the parents (46.7%) were both literate (table 2).

Table 2: - Family characteristics of Adigrat high school students, Tigray Regional State, Northern Ethiopia, 2015.

Variables		No of participants N = 567	Percent (%)
Both parents alive	Yes	523	92.2
	No	44	7.8
Parents literacy	Both attended formal education	265	46.7
	Both not attended formal education	105	18.5
	One attended formal education	197	34.8
Parents job status	Both have job	417	73.5
	Only father have job	111	19.6
	Only mother have job	31	5.5
	Both do not have jobs	3	1.4
Fathers' occupation		N = 562	
	Farmer	186	32.8
	Government employee	155	27.3
	Non-government employee	57	10.1
	Merchant	119	21
	Other*	12	2.1
Mothers' occupation		N = 529	
	Farmer	150	26.5
	Government employee	99	17.5
	Non-government employee	63	11.1
	Merchant	127	22.4
	Household	99	17.5
	Other**	1	0.2
Perceived economic status of the family		N = 539	
	Poor	49	8.6
	Middle class	458	80.8
	Rich	60	10.6
Addictive substance consumer in the family	No	494	87.1
	Yes	73	12.9

Key: * Driver, contractor, carpenter, ** Waiter,

3. SRH Related Communication with Parents and Friends

Most of the respondents 430 (75.8%) and 379 (66.8%) were not communicating about sexual and reproductive issues with their father and mother respectively. Nearly half 285 (50.3%) of them were not communicating sexual related issues often with their friends.

4. Last Year Academic Achievement

Concerning the respondents last year academic achievement, majority 237 (41.8%) of them scored a cumulative average ranging from 50-74%.

5. Having Pocket money, Attending Religious Service and Entertainment Programs of the students

Of the total respondents, 127 (22.4%) respondents have had pocket money. Of the 51 (9%) addictive substance users, 28 (4.9%) of them were using alcohol followed by hashish 16 (2.8%).

6. Sexual Character of Students

Among all the study participants, 100 (17.6%) respondents reported that they ever practiced premarital sexual intercourse before the data collection period, of which 46% of them were males and 54% females. The

median age of first sexual intercourse was 15 years and range from 13-20 years. The mean age was 15.2+1.4 years. Among sexually active participants, 58% of them begun sexual intercourse at an age below the mean. Almost all sexually active respondents had their first sexual intercourse before the age of 18 years (95%). Among 34 students who practiced premarital sex after taking addictive substances, 15 (44.1%) of them reported that addictive substances were their reason for premarital sex.

7. Sexual Information and its Source

About 75.1% of respondents had information regarding sexuality and reproductive health issues and the main source of information 144 (18.9%) was friends followed by families 143 (18.8%).

8. Reason for the Initiation of Sex

The main reason for the initiation of sexual intercourse was peer pressure accounting 36 % followed by being fallen n love (21%) and sexual intercourse to get pleasure (19%).

Factors Associated with Premarital Sexual practice

The bivariate analysis showed that some of the variables had significant association with premarital sexual practice of the students. The multivariate analysis supported some of the findings of the bivariate analysis (table 3).

Multivariate regression shows that 12th grade students were about eight times (AOR = 7.587 and CI = 3.448, 16.696) more likely practiced premarital sex than 9th grade students did. Communication of issues related to sexuality and reproductive health with people other than their families, like friends, indicated as having association with premarital sexual practice. For example, students who often communicate the issue with people other than their families, like friends were about six times more likely practiced premarital sexual intercourse than those who never communicate (AOR= 5.627 and 95% CI = 2.372, 13.346). Likewise, students who were taking addictive substances were about twenty three times more likely practiced premarital sexual intercourse than their counter parts (AOR = 22.927 and 95% CI = 9.018, 58.286)table 3.

Students who have had pocket money were two times more likely to be exposed to premarital sex than those who did not have pocket money (AOR = 2.225 and CI = 1.252, 3.953). As compared to students who didn't attend entertainment programs, those who attended entertainment programs were three times more likely practiced premarital sex (AOR = 2.921, CI = 1.705, 5.003) table 3.

Table 3: Factors associated with premarital sexual practice among Adigrat high school students, Tigray Regional State, Northern Ethiopia, 2015.

Variables	Practiced premarital sex		COR (95% CI)	AOR (95% CI)
	Yes	No		
Age				
10-14	3 (5.3%)	54 (94.7%)	1.00	
15-19	92 (18.5%)	405 (81.5%)	4.089 (1.251, 13.366)	
20-24	5 (38.5%)	8 (61.5%)	11.250 (2.243, 56.421)	
Perceived economic status of family				
Poor	14 (28.6%)	35 (71.4%)	1.00	
Middle class	68 (14.9%)	390 (85.1%)	.436 (.223, .853)	
Rich	18 (30%)	42 (70%)	1.071(.467, 2.457)	
Substance user among family member				
Yes	37 (50.7%)	36 (49.3%)	7.031 (4.141, 11.940)	
No	63 (12.7%)	431 (87.3%)	1.00	
Have information about sexuality and RH				
Yes	89 (20.9%)	337 (79.1%)	3.121 (1.616, 6.028)	
No	11 (7.8%)	130 (92.2%)	1.00	
Educational level of students				
9th	21(9.1%)	210(98.9%)	1.00	1.00
10th	28(13%)	188(57%)	1.489 (.818, .2.711)	1.527 (.778, 3.000)
11th	20(35.1%)	37(64.9%)	5.405 (2.671, 10.940)	5.585(2.471,12.625)*
12th	31(49.2%)	32(50.8%)	9.687 (4.971, 18.871)	7.587 (3.448, 16.696)*
Communication about sexual issues with friends				
Often	25(39.7%)	38(60.3%)	5.592(2.976, 10.508)	5.627(2.372, 13.346)*
Occasionally	45(20.6%)	174(79.4%)	2.198(1.333, 3.626)	1.945 (1.002, 3.775)**
Never	30(10.5%)	255(88.5%)	1.00	1.00
Addictive substance use				
Yes	42(82.4%)	9(17.6%)	18.510(8.510, 41.630)	22.927(9.018, 58.286)*
No	58(11.2%)	458(88.8%)	1.00	1.00
Having pocket money				
Yes	40(31.5%)	87(68.5%)	2.912(1.833, 4.626)	2.225(1.252, 3.953)**
No	60(13.6%)	380(86.4%)	1.00	1.00
Attending entertainments				
Yes	56(30%)	131(70%)	3.264(2.095, 5.86)	2.921(1.705, 5.003)*
No	44(11.6%)	336(88.4%)	1.00	1.00

Key: * p-value < 0.01, ** p-value < 0.05

DISCUSSION

The overall magnitude of premarital sex among Adigrat high school students was high (17.6%) of which 46% were males and 54% females. This finding is in line with study done on prevalence of in school youth in Shendi, West Gojjam zone[23]. However, it is lower than several research findings in Ethiopia as well as abroad. For example, a school-based study done in Bahir Dar revealed that the prevalence of premarital sex was 30.8% and in Nekemte high school students, it was 21.5%[21,22]. In high school students of eastern part of Ethiopia, the prevalence was 24.8%[20]. Similarly, a study conducted in Sub Saharan Africa indicated that the figures were much higher than the current finding which was 45-52% for both sexes[18]. This difference may be because of cultural difference and societal acceptance

that maintaining virginity until marriage may be the norm. That is, absence of virginity at time of marriage is culturally unacceptable and it is a societal taboo in the area. The other possibility could be reduced age at school, which is the age of students was decreasing relative to the age before.

When compared to students who did not use addictive substance, students who were consuming addictive substances were about twenty three times more likely to be engaged in premarital sexual intercourse (AOR = 22.927 and 95% CI = 9.018, 58.286). Using addictive substances was also a significant associated factor for students' premarital sexual intercourse in similar studies conducted in different parts of Ethiopia[22,23]. Similarly, other studies report that alcohol drinking and chat chewing are strongly associated with rape and early initiation of sex[28,43]. This might be because; those students who are consuming addictive substance may have more exposure to peer pressure and/or loss self-control, thereby exposed to premarital sexual intercourse. This study indicated that students who were communicating about sexual and reproductive health related issues with people other than their families were practicing premarital sexual intercourse about six times more likely than those who never communicate (AOR= 5.627 and 95% CI = 2.372, 13.346). This finding is also in line with the research findings in Jimma and Nigeria[27,29]. It is easier for the students to discuss sensitive issues such as sexuality with peers than family members. Peer pressure might enforce them towards use of addictive substances thereby exposing them for practice sexual practice. Students could discuss issues concerning sexuality and reproductive health while consuming addictive substances. A student, who is chewing khat, most of the time, may drink alcohol. Drinking alcohol can decrease self-control and may predispose to premarital sexual intercourse.

According to their level of education, 12th grade students were about eight times (AOR = 7.587 and CI = 3.448, 16.696) more likely practiced premarital sex than the 9th grade students did. This finding is also in line with studies from Bahir Dar and eastern Ethiopia[20,22]. As the educational level increases, the age of the student, exposure to peer pressure, access of SRH information from friends and/or exposure to addictive substance may increase. These may be the reason for the higher educational level are more likely being practiced premarital sex than the lower educational level.

As compared to students who did not attend entertainment programs, those who attended entertainment programs were about three times more likely practiced premarital sexual intercourse (AOR = 2.921). There are studies supporting this research finding that exposure to pornographic movies, going to bars and nightclubs predispose students for premarital sexual intercourse than their counter parts[24,27]. This might be because those students who went to entertainment areas like bars, nightclubs, trips etc. may use alcohol or other addictive substances. Therefore, they may loss their self-control and practice premarital sex.

Students who have had pocket money were about two times more likely to practiced premarital sexual intercourse than their counter parts (AOR = 2.225 and CI = 1.252, 3.953). This study finding is similar with the findings in Nekemte, Jimma and eastern part of Ethiopia20,21,27. For example, in Jimma respondents who had pocket money were more likely to have pre-marital sexual practice than those who had not (COR = 1.58). This might be because students who have pocket money may not manage it properly. They can better attend different entertainments programs, exposed for addictive substances and/or exposed to different Medias that initiate sex that can lead them to be engaged to premarital sex.

STRENGTHS AND LIMITATIONS

Strengths

The data were primary and collected anonymously by putting students at far space between them to maintain privacy and confidentiality of the respondents and probability sampling method employed to minimize sampling bias. High response rate and large sample size could be considered as other strengths of the study.

Limitations

Since this study touches a very sensitive and very personal issue and the outcomes are based on self-reported information, the possibility of underestimating

the magnitude of premarital sexual practice cannot be ruled out. The study was school based and small scale; it is difficult to generalize the result of this study for the completely young population outside the school. Since it is a cross sectional study, it does not indicate cause and effect association.

CONCLUSION

The study found that there is a substantial proportion of unmarried high school students were practicing premarital sexual intercourse in the study area. The most frequently mentioned reason for student's engagement in premarital sexual practice was peer pressure.

The variables like educational level, having pocket money, attending entertainment programs, consuming addictive substances and communication of sexual issues with friends were found to be factors associated with premarital sexual practice. That is those students who have pocket money, attained entertainment programs, use addictive substances, and communicate about sexual and reproductive health related issues with friends or other people outside the families are more likely to be engaged in premarital sex.

RECOMMENDATIONS

The Adigrat health and education offices in collaboration with local and national NGOs need to assess and expand the safety and accessibility of recreational areas. They also need to make students access to information concerning reproductive health, clubs, youth centers and sexuality issues.

The concerned government bodies, like youth and sport office of the town, need to create recreational and sports facilities in the community, thus diverting youth's attention in other healthy areas and keeping them constructively busy in mind and spirit.

DECLARATIONS

COMPETING INTERESTS

The authors declare that they have no competing interests.

Authors' **contributions**

KB and LH wrote the proposal, participated in data collection, analyzed the data and drafted the paper. Daniel Bekele, ,Balem Dimtsu approved the proposal with some revisions, participated in data analysis and revised subsequent drafts of the paper. All authors read and approved the final manuscript.

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CONSENT FOR PUBLICATION

Not applicable.

ETHICS APPROVAL & CONSENT TO PARTICIPATE

This study is a primary data, which was taken from Adigrat high school students.Ethical review for data collection was taken from Ethical Approval committee, Mekele University, college of Health sciences. Further, this study was registered and approved by the Mekele University, college of health sciences, approval Committee.

AVAILABILITY OF DATA AND MATERIALS

All data pertaining to this study are available in this document.

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PREVALENCE OF STILLBIRTH IN AYDER COMPREHENSIVE SPECIALIZED HOSPITAL, NORTH ETHIOPIA: A DESCRIPTIVE RETROSPECTIVE STUDY

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ABSTRACT

INTRODUCTION: Stillbirth continues to confound scientists and providers, claiming 18.4 per 1000 births globally in 2015. The rate is much higher in low and middle-income countries, including Ethiopia. Stillbirth is tied to maternal age, infection, non-communicable disease, nutrition and lifestyle factors, and inadequate antenatal care. Lack of quality data, including in Demographic and Health Surveys and national vital statistic registries, limits understanding of the causes and possible solutions of stillbirth.

OBJECTIVE: To assess the prevalence of stillbirth in Ayder Comprehensive Specialized Hospital.

METHODS: We conducted a retrospective chart review of births from January 2014 to May 2015 at Ayder Comprehensive Specialized Hospital, the largest referral hospital in northern Ethiopia. Stillbirth was defined as birth at, or after, 28 weeks' gestation or fetal weight >1000g without reliable dating with no observable sign of life. For the present study, the data are reported as descriptive statistics.

RESULT: A total of 4,582 live births and 315 stillbirths were recorded at Ayder Comprehensive Specialized Hospital over the study period. Removing lethal congenital anomalies, we observed a corrected stillbirth rate of 54.6 per 1000 deliveries. Nearly two-thirds of stillbirths occurred intrapartum. Among stillbirths arriving at Ayder Comprehensive Specialized Hospital with positive fetal heart tone, 36 (44.4%) occurred during the second stage of labor. Nineteen percent of all stillbirths also occurred in transit from a referral institution. Nearly 40% of stillbirths were classified as "unexplained".

CONCLUSION: A significant proportion of stillbirths occurred after arrival or while in transit. Improved identification of high-risk pregnancies with expedited transfer for emergency obstetric care and improved intrapartum care could help decrease the number of stillbirths.

KEYWORDS: Stillbirth, Ayder, Ethiopia, Africa

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INTRODUCTION

The World Health Organization (WHO) defines stillbirth as, "a baby born with no signs of life at or after 28 weeks' gestation"[1]. The estimated global stillbirth rate (SBR) was 18.4 per 1000 births in 2015, a decrease from 24.7 in 2000[2]. Half of all stillbirths occur during labor when the baby would be expected to survive[3]. Seventy-seven percent of stillbirths occur in south Asia and sub-Saharan Africa and 98% occur in low and middle-income countries (LMICs). In Ethiopia, the SBR is 30 per 1000 births[4]. Other local studies report the SBR between 25.5 to 85 per 1000 births5,6.

Globally, risk factors for stillbirth include maternal age > 35 years, maternal infection, non-communicable disease, nutrition, lifestyle factors[3], and inadequate antenatal care (ANC). In Africa, and specifically in Ethiopia, studies have shown that maternal age ≤ 24 years, prolonged labor (> 12 hours), low blood pressure in late pregnancy, abruptio placentae, uterine rupture, gestational hypertension, pre-eclampsia and/or eclampsia, as well as lower education and wealth are all associated with higher rates of stillbirth[5,7-10]. In contrast, a study in southern Ethiopia showed that referral from another facility, ANC attendance, and vaginal delivery were all associated with decreased risk of stillbirth[11].

Lack of quality data continues to inhibit scientists' understanding of stillbirth. A review of 114 DHS (demographic health surveys) across 70 LMICs showed substantial variation in the measurement of stillbirth[12]. These studies had limited documentation of risk factors. Another review showed that stillbirths remain uncounted in many national vital statistics systems[13].

The present study aims to assess the prevalence of stillbirth in Ayder Comprehensive Specialized Hospital.

METHOD

This study was a retrospective chart review of stillbirths delivered between January 1, 2014 and May 31, 2015 (17 months) at Ayder Comprehensive Specialized Hospital (ACSH), a tertiary hospital in Mekelle, Tigray, northern Ethiopia, with a catchment population of over eight million people. Mekelle is the capital of the Tigray Region and ACSH accepts referrals from Tigray as well as the neighboring regions of Afar and northern Amhara. All cases seen during the study period were reviewed.

For the purposes of this study, stillbirth was defined as birth at, or after, 28 weeks' gestation with no observable sign of life. Additionally, fetal deaths weighing > 1000 grams without reliable dating criteria were reviewed to ensure inclusion of all possible cases of stillbirth. Gestational age was determined based on last normal menstrual cycle or early ultrasound. Fresh stillbirth was defined as the presence intact skin and suspected death during labor. Macerated stillbirth (MSB) was defined as the presence of skin desquamation, discoloration of the umbilical cord, reduced soft tissue, collapsed cranial bone or, suspected death, before the onset of labor.

Data was collected retrospectively by reviewing delivering obstetricians' documentation on a standardized WHO stillbirth recording form [14]. And by reviewing the documented physical examination of fetus and placenta. At referring institutions in Tigray, Pinard stethoscope is the sole method of auscultation of fetal heart rate. At ACSH, cardiotocography is used for constant fetal heart rate monitoring but it is only read in real-time on the LCD monitor. There is no fetal heart tracing pattern interpretation on paper or on computer monitors. Providers therefore rely on live fetal heart rate at any given time, similar to evaluation with a Pinard stethoscope, to assess fetal-wellbeing and consequently may make decisions regarding cesarean delivery.

Simple descriptive data analysis was completed using SPSS version 20 (IBM, Armonk, NY, USA). Data was presented as frequency, mean, SD and range.

The study was approved by the Ethics Committee of College of Health Sciences, Mekelle University (Institutional Review Board Number ERC 0836/201) and the Institutional Review Board of the University of Illinois at Chicago (Institutional Review Board Protocol Number 2016-0830). As this was a retrospective chart review with no greater than minimal risk to participants, waiver of consent was requested and granted by the Ethics Committee and Institutional Review Board listed above.

RESULTS

Over the 17-month study period, there were 4,582 live births and 315 stillbirths at ACSH, yielding a crude stillbirth rate of 64.3 per 1000 deliveries, including 193 fresh stillbirths (39.4 per 1000 deliveries) and 122 macerated stillbirths (24.9 per 1000 deliveries). There were 50 lethal congenital anomalies, making the corrected stillbirth rate 54.6 per 1000 deliveries.

Of the 315 women experiencing stillbirth, 104 (33.3%) were primiparous, 220 (69.9%) rural dwellers, 141 (44.8%) housewives, and 188 (59.6%) had less than secondary education. Just 13 (4.1%) women did not receive any antenatal care (ANC), while 221 (70.2%) received ANC at the health center level. Average maternal age was 27 years. Seventeen percent of women (n=53) were > 35 years of age and 6.4% (n=20) were < 20 years of age. Nearly one-fourth of women had one or more pre-existing medical problems, including pre-eclampsia (n=35, 11.1%), chronic hypertension (n=17, 5.4%) and history of malarial attack (n=22, 7%) (Table 1).

Table 1. Maternal Characteristics and Risk Factors of Stillbirth in ACSH, 2014-2015.

Variable name	Category	N (%)
Geographic distribution	Urban	95 (30.1)
	Rural	220 (69.9)
Regional distribution	Tigray	301 (95.6)
	Afar	12 (3.8)
	Amhara	2 (0.6)
Employment status	Employed	47 (14.9)
	Unemployed	141 (44.8)
	Unknown	127 (40.3)
Highest level of education	No education	93 (29.5)
	Elementary (<7th grade)	95 (30.2)
	High school (8-12th grade)	91 (28.9)
	Some college	16 (5.1)
	Completed college or higher	5 (1.6)
	Unknown	15 (4.8)
Marital/relationship status	Married/marriage-like relationship	258 (81.9)
	Separated	14 (4.4)
	Divorced	6 (1.9)
	Widowed	3 (1)
	Never married	9 (2.9)
	Unknown	25 (7.9)
HIV status	Positive	14 (4.4)
	Negative	282 (89.6)
	Unknown	19 (6)
Hemoglobin at admission	>7	301 (95.6)
	<7	12 (3.8)
	Unknown	2 (0.6)
Prenatal care provided at	Health center	221 (70.2)
	Hospital	61 (19.4)
	No prenatal care	13 (4.1)
	Unknown	20 (6.3)
Pre-existing condition	Chronic HTN	17 (5.4)
	Pre-eclampsia	35 (11.1)
	Eclampsia	4 (1.3)
	Diabetes	5 (1.6)
	Malaria	22 (7.0)
	Hydrops	12 (2.8)
	Syphilis	16 (5.1)
	Multiple gestation	10 (3.2)

One hundred and five (33.4%) stillbirths occurred before 37 weeks' gestation and 18 (5.7%) occurred post-term. One hundred (31.8%) were low birth weight and 47 (14.9%) were very low birth weight. Placental and cord abnormalities were present in 61 (19.3%) and 20 (6.3%) stillbirths, respectively (Table 2).

Table 2. Characteristics of stillbirths in ACSH, 2014-2015.

Variable name	Category	N (%)
Gestational age	Post-term (>=42w)	18 (5.7)
	Late-term (41 to < 42w)	28 (8.9)
	Full-term (39 to <41w)	50 (15.9)
	Early-term (37 to <39w)	42 (13.3)
	Late Pre-term (32 to <37w)	66 (21.0)
	Very pre-term (28 to <32w)	39 (12.4)
	Unknown	72 (22.8)
Fetal weight	<1000g	6 (1.9)
	1000-1499g	47 (14.9)
	1500-2499g	100 (31.8)
	2500-3999g	132 (41.9)
	>4000g	13 (4.1)
	Unknown	17 (5.4)
Delivered infant status	Macerated	122 (38.7)
	Fresh	193 (61.3)
Fetal sex	Male	191 (60.7)
	Female	105 (33.3)
	Unknown	19 (6.0)
Placental abnormalities (small, large, hematoma, clot, infarct)	Present	61 (19.3)
	Absent	228 (72.4)
	Unknown	26 (8.3)
Cord abnormalities (length, knot, prolapse)	Present	20 (6.3)
	Absent	269 (85.4)
	Unknown	26 (8.3)

Most (n=193, 61.3%) stillbirths occurred intrapartum. Ninety-two (29.2%) stillbirths occurred at referring institutions, 71 (22.7%) upon self-presentation to ACSH, and 60 (19.0%) during transfer to ACSH. For the demises occurring after arrival to ACSH (n=81), eight (9.9%) occurred before start of labor or induction, four (4.9%) during latent phase, three (3.8%) during active phase and 36 (44.4%) during the second stage of labor (Table 3).

Table 3: Timing of Detection of Fetal Death in ACSH, 2014-2015.

Variable name	Category	N (%)
Time of death	Antepartum	122 (38.7)
	Intrapartum	193 (61.3)
Location of death	At referring institution	92 (29.2)
	At presentation to Ayder (if not referred)	71 (22.5)
	During transfer to Ayder	60 (19.0)
	After arrival to Ayder	81 (25.8)
	Unknown	11 (3.5)
Timing of death after arrival to Ayder (n=81)	Before start of labor/induction	8 (9.9)
	Stage 1 latent phase	4 (4.9)
	Stage 1 active phase	3 (3.8)
	Stage 2	36 (44.4)
	After delivery	21 (25.9)
	Unknown	9 (11.1)

The top five identifiable causes of stillbirth were abruptio placenta (16.5%), fetal congenital anomalies (15.9%), birth asphyxia (10.8%), cord accidents (7.0%), and infection (4.8%). Additionally, 125 (39.6%) stillbirths were unexplained (Table 4).

Table 4. Causes of Stillbirth in ACSH, 2014-2015.

Category	N (%)
Unexplained	125 (39.6)
Abruptio placenta	52 (16.5)
Congenital anomalies	50 (15.9)
Birth asphyxia	34 (10.8)
Cord accidents	22 (7.0)
Infections	15 (4.8)
Bleeding accidents	10 (3.2)
IUGR	2 (0.6)
Birth trauma	1 (0.3)
Other	4 (1.3)

DISCUSSION

Our retrospective chart review demonstrated that the stillbirth rate is high among women delivering at ACSH (54.6 per 1000 deliveries) compared to global averages (15-25 per 1000 deliveries). This may be due to difference in quality of care.

In our study, a high proportion of stillbirths occurred intrapartum (61.3%), which is similar to many LMICs[15], and was caused by abruptio placenta, congenital malformation, birth asphyxia and cord accident, which points to a lack of rapid intrapartum interventions and delayed referral to emergency obstetric care. An additional 60 (19.0%) stillbirths occurred during transit from referring institutions. One study showed that obstetric complications were the second leading cause of emergency transport in Africa[16]. And women and families may face financial hardship when considering emergency transport[17].

Two other leading risk factors for stillbirth in LMICs are lack of ANC and low socioeconomic status[15]. In our study, only a few women (4.1%) had no ANC and ANC uptake continues to increase in Ethiopia[18,19], which will likely help decrease stillbirth rates. Of women who attended ANC, the majority did so at the health center level, possibly pointing to an issue of quality of care, but not necessarily so. Most women experiencing stillbirth in our study had less than a secondary education (59.6%), lived in rural areas (69.9%), and had low parity, which is consistent with other studies[20,21].

Nearly 40% of stillbirths in our study were classified as unexplained (39.6%). This is similar to other studies in developing countries[22], but different from developed countries, where cause of stillbirth is unexplained in only 5% of cases. Separating cause of stillbirth from the range of possible contributing factors can be challenging[23], but unexplained stillbirths resulting from poor inquiry inhibits efforts to understand the problem[24] and is an area where more thorough documentation and greater utilization of autopsy would likely result in significant improvement.

In our study, 5.1% of women were seropositive for syphilis similar with other studies in low resource countries which reported seropositivity rate of 5-9 %20 ,23. Syphilis is a contributor to stillbirth, which could merit additional screening and treatment. Successful interventions with syphilis could therefore have an important impact on stillbirth.

Seven percent of women in our study had a history of malaria during pregnancy which is lower than a recent meta-analysis which showed that as many as 20% of the stillbirths in malaria-endemic sub-Saharan Africa are attributed to P. falciparum malaria in pregnancy[25]. The discrepancy may be due to poor screening practice of stillbirths for malaria in our setup. Thus, pointing to the need for screening, prevention and treatment of malaria.

LIMITATIONS

There are two important limitations to consider when interpreting the results of this study. First, it is not possible to precisely determine whether stillbirth occurred before or during labor among patients that arrived in labor with negative fetal heartbeat. This is especially true for women experiencing prolonged labor. A second important limitation is that stillbirths observed in our study are not representative of obstetric care provided at ACSH given that most (70.7%) of women were admitted as stillbirth.

CONCLUSIONS

Stillbirth continues to be a significant problem in northern Ethiopia, with nearly two-thirds of stillbirths occurring intrapartum and 19.0% while in transit from referral institutions. Further prospective study should be done to assess the delay in referral and transfer of high-risk pregnant mothers. Moreover, the cause for significant proportion of stillbirths is unexplained and most stillbirths occurred intrapartum, underscoring the necessity of further prospective study.

Ethics approval and consent to participate

The study was approved by the Ethics Committee of College of Health Sciences, Mekelle University (Institutional Review Board Number ERC 0836/201) and the Institutional Review Board of the University of Illinois at Chicago (Institutional Review Board Protocol Number 2016-0830). As this was a retrospective chart review with no greater than minimal risk to participants, waiver of consent was requested and granted by the Ethics Committee and Institutional Review Board listed above.

COMPETING INTERESTS

None

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AUTHORS' CONTRIBUTIONS

GG was the principal investigator; GG and AY designed the study, collected data, and wrote first and final drafts of the manuscript. YZ facilitated the initial discussion of the project concept, helped develop the protocol and identified key research personnel to be included. SM, EC, and AW assisted with data collection, analysis, and manuscript development. AR assisted with data analysis and manuscript review. KD assisted with manuscript development. MS guided data analysis and reviewed the final manuscript.

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PREVALENCE OF EPISIOTOMY AND FACTORS ASSOCIATED WITH PRACTICE OF EPISIOTOMY AT SAINT PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE: A CROSS SECTIONAL STUDY

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ABSTRACT

INTRODUCTION: Episiotomy is a surgical incision made on the perineum to widen the vaginal opening for delivery. Although rate of episiotomy decreased, it is still one of the most commonly performed procedures in obstetrics (1).

OBJECTIVE: The objective of the study is to determine the prevalence of episiotomy and identify risk factors associated with the practice of episiotomy at (Saint Paul's Hospital Millennium Medical College) SPHMMC.

METHODOLOGY: Hospital-based cross-sectional study was conducted from February 1/2016 to July 1/2016. All mothers who gave birth vaginally were included in the study. Data was entered in to epi info version 7 and exported into SSPS statistical package version 16 and analyzed. Both bivariate and multivariate analysis were used to see the association of the dependent and independent variables with p-value <0.05 considered statistically significant.

RESULT: A total of 405 participants were included in the study. The prevalence of episiotomy was 65.4%. Both Bivariate & Multivariate analysis showed that nulliparity, duration of second stage of labor more than 90-minute, instrumental delivery, assisted breech delivery & birth weigh more than 4,000 gm were strongly associated with episiotomy (p- value < 0.005).

CONCLUSIONS AND RECOMMENDATIONS: The prevalence of episiotomy (65.4%) at SPHMMC is higher than the findings in other studies in Ethiopia & the WHO's recommendation of 5-10%. Nulliparity, duration of second stage of labour more than 90 minutes, instrumental & breech vaginal deliveries and birth weight of more than 4000 gm were independent risk factors for episiotomy.

KEYWORDS: Episiotomy, prevalence, risk factors

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INTRODUCTION

Episiotomy is a surgical incision made on the perineum to widen the vaginal opening for delivery.it is one of the most commonly performed procedures in obstetrics[1]. Routine use of episiotomy originally began by Pomeroy in 1918 & this routine practice was accepted and taught in obstetrics services till 1970s when the first consistent clinical trials questioning the value of episiotomy were published. Since then many studies, reviews and meta-analyses have evidenced that there is no scientific basis for maintaining the routine practice of episiotomy. The procedure is shown to increase intra and post-operative complications, suggesting its practice to be restricted to selected deliveries[2, 4, 5]. Multiple studies have demonstrated complication after episiotomy, including severe perineal tears, anal sphincter laceration, fecal & urinary incontinence & dyspareunia[13, 17, 18,19].

Episiotomy rates around the world range from 9.7% (Sweden) to 100% (Taiwan)[8]. For nulliparous women a range from 63.3% (South Africa) to 100% (Guatemala) has been recorded, indicating overall greater likelihood for primiparas to receive an episiotomy at birth[8]. There is a large variation in the use of episiotomy from country to country and also within countries. The prevalence of episiotomy is highest in Latin America and lower in Europe[10,11,12].

Even though WHO suggested episiotomy rates of 10 % for primigravida & 5 % for multipara, the "Argentine Episiotomy Trial Collaborative Group" reported that episiotomy rates of 30 % & 40 % for multipara & primigravida, respectively[6,7]. Though current studies show the prevalence of episiotomy is decreasing worldwide, its prevalence is still high in the developing country including Ethiopia despite the current recommendation[1, 2, 9, 16].

Different factors affect the practice of episiotomy. Studies done in Brazil, Nigeria & Ethiopia showed younger (adolescence) age, age over 35 years, primiparity, occipito- posterior position, instrumental delivery, vaginal breech delivery, duration of the second stage of labor more 90 minutes & a history of caesarean section 3, 6,9,16.

In Ethiopia, studies on episiotomy are limited to few hospitals and there is no study at SPMMC. Hence, this study was undertaken with of determining the prevalence & risk factors associated with episiotomy at SPHMMC.

METHOD

A cross sectional study was conducted at St. Paul's hospital, Addis Ababa, Ethiopia from February 1, 2016 to July 1, 2016. The Sample size was determined using a single population proportion formula with Z=1.96 for 95% confidence level, d (degree of precision expected) of 0.05, and p of 40% (9). With a non-response rate of 10%, the desired sample size was 405.

All women who gave birth vaginally at SPHMMC during the study period & willing to participate were considered in the study. The study participants were selected by systematic random sampling. Over previous 6 months before the study, 1800 mothers gave birth vaginally. The expected total possible participants of 1,800 was then divided by the sample size (405) to get the sampling interval of 4. The first mother card number was selected using lottery method, then every fourth mother who delivered vaginally during the study period was selected until the desired sample size was achieved. Those whose chart were lost were excluded.

A structured & pretested questionnaire assessing sociodemographic characteristics, obstetrics factors & mode of deliveries were prepared in English & the introductory part was translated to Amharic language & it was filled by two trained midwifes. Pretesting of the questionnaire was conducted on women who gave birth before the study period & appropriate modification was made. All filled questionnaires were checked daily for completeness, accuracy, consistency & necessary corrections were made by cross checking with the patients' clinical records.

Data was entered in to epi info version 7 and exported to SPSS statistical package version 16. Data cleaning was performed by checking outliers, missing values & inconsistencies. Descriptive statistics, bivariate and multivariate analysis was performed using SPSS. Taking the p- value < 0.2 as a cut of point logistic regression analysis was performed. Practice of episiotomy was the dependent variable whereas socioeconomic, and

relevant clinical variables were considered as explanatory variables.

Ethical clearance was obtained from the Institutional Review Board of SPHMMC. The privacy of the client and confidentiality of the information was maintained.

RESULT

The mean age (±SD) of the participant was 25 (± 4.94) years, majority (n=361, 89.1%) were 20 – 34 years old. The majority were orthodox by religion (n=201, 49.6%) married (n=389, 96%), Addis Ababa residents (n=256, 62.2%), Oromo (n=104, 47.9%), were Amhara (128, 36.6%), housewife (200, 49.4%), merchant (88, 21.7%), and with secondary school or above (161, 39.8%) (Table 1).

Table 1. Sociodemographic characteristics of mothers who gave birth at SPHMMC, Addis Ababa, Ethiopia, 2016/17 (n=405)

Variables	Frequency	Percentage
Age (in years)		
< 20	22	5.4
20-34	361	89.1
35-45	22	5.4
Religion		
Orthodox	201	49.6
Protestant	110	27.2
Muslim	94	23.2
Marital status		
Single	11	2.7
Married	389	96.0
Divorced	3	0.7
Widow	2	0.5
Ethnicity		
Amhara	128	31.6
Oromo	194	47.9
Gurage	48	11.9
Tigre	9	2.2
Other	26	6.4
Place of residence		
Addis Ababa	252	62.2
Oromia region	150	37.0
Others	3	0.7
Educational status		
No formal education	121	25.2
Primary school	123	30.4
Secondary	130	32.1
Above secondary	31	7.7
Occupation		
Government employee	69	17.0
Merchant	88	21.7
Daily laborer	17	4.2
Housewife	200	49.4
Farmer	17	4.2
Other	14	3.5

One hundred ninety-seven of the participants (48.6%) of mothers were primigravida and 208 (51.4%) of mothers were multigravida. Two hundred fifteen (53.1%) were nullipara and 190(46.9%) were multipara. Three hundred twelve (77.0) of the mothers had ANC follow up (Table 2).

Table 2. Reproductive performance of the study participant at SPHMMC, Addis Ababa, Ethiopia, 2016/17 (n=405)

Variables	Frequency	Percentage
Gravidity		
Primigravida	197	48.6
Multigravida	208	51.4
Parity		
Nullipara	215	53.1
Para ≥ 1	190	46.9
Abortion		
Yes	353	87.2
No	52	12.8
ANC follow up		
Yes	312	77.0
No	93	23.0
Place of ANC		
SPHMMC	35	11.2
Catchment H/C	185	59.3
Non C H/C	92	29.5

Majority of the deliveries were singleton 378(93.3%) and the rest 27(6.7%) were twin delivery. Majority of the babies 343(79.5%) were in the normal birth weight range, 78(18%) between 1000 and 2499gm, and 11(2.5%) of babies were macrocosmic (> 4000gm) (Table 3).

Two hundred seventy-one (66.9%) of the participants had spontaneous labor. The majority of the fetal presentation (n=374, 92.3%) were in vertex presentation (Table 3), and most of them (n=318, 78.5%) were delivered by spontaneous vertex delivery, while 70 (17.3%) and 17 (4.2%) had instrument and assisted breech vaginally delivery, respectively. The duration of second stage of labor was more than one and half hour among 272 (67.2%) of the mothers.

Table 3. Obstetrics characteristics of the study participant at SPHMMC, Addis Ababa, Ethiopia, 2016/17 (n=405)

Variables	Frequency	Percentage
Gestation		
Singleton	378	93.3
Twin	27	6.7
Presentation		
Vertex	374	92.3
Breech	17	4.2
Face	14	3.5
Onset of labor		
Spontaneous	271	66.9
Induced	134	33.1
Sex of baby		
Male	220	50.9
Female	212	49.1
Birth weight		
1000 – 2499 gm	78	18.0
2500 – 3999 gm	343	79.5
≥ 4000 gm	11	2.5

The prevalence of episiotomy was 65.4% (n=265) had episiotomy. The prevalence of episiotomy in primiparas and multipara was 64.5% and 68.3%, respectively. In the bivariate / multivariate analysis gravidity, parity, presentation, duration of second stage of labor, mode of delivery, instrumental delivery, birth weight of the babies, maternal age and maternal disease were found to be significant risk factor for having episiotomy with p-value < 0.05.The above variables were included in the logistics regression model and finally gravidity, parity, presentation, duration of second stage of labor, mode of delivery and birth weight of the babies were found to be independent factors for episiotomy.

Gravidity is significantly associated (p-value≤0.039) with having episiotomy. Primigravida mothers are 3.1 times more likely to have episiotomy than multigravida mothers (AOR= 3.146,95%CI:1.058,9.357). nulliparous women are also 6 time more likely to have episiotomy than multiparous mothers (AOR=6.385,95%CI:3.690,11.050). This study also shows that mothers having breech baby presentation are 11 times more likely to have episiotomy during delivery than those mothers having cephalic presentation (AOR=11.638,95%CI:1.297,104.4). Those mothers whose duration of second stage of labor was greater than one & half hour are 8 times more likely to have episiotomy during delivery than those whose duration of second stage of labor was less than one hour (OR=7.6,95%CI:5.9,8.6). Both instrument or assisted breech delivery are 9 times more likely to have episiotomy than those mothers who delivered though SVD (AOR=8.9,95%CI:7.4,9.5). Finally, those mothers who gave birth to babies weighing ≥ 4000gm are 9.4 times more likely to have episiotomy than those who gave birth to babies weighing < 4000gm (AOR=9,4,95%CI:4,6,9.9).

Table 5. Bivariate and Multivariate analysis, obstetric and sociodemographic characteristics of the study participants by the outcome variables (episiotomy), SPHMMC, Addis Ababa, Ethiopia 2016/17 (n= 405)

Variable	Episiotomy				p- value
	Yes		No		
	number	(%)	Number	(%)	
Gravidity					
Primigravida	171	64.5%	26	18.6%	0.000
Gravida ≥2	94	45.2%	114	81.4%	
Parity					
Nullipara	181	68.3%	34	24.3%	0.000
Multipara	84	31.7%	106	75.7%	
Presentations					
Vertex	241	90.9%	133	95.0%	0.021
Face	10	3.8%	4	2.9%	
Breech	14	5.3%	3	2.1%	
Duration of second stage					
< 90 minutes	58	21.9%	75	53.6%	0.000
≥ 90 minutes	207	78.1%	65	46.4%	
Mode of delivery					
SVD	188	70.9%	130	92.9%	0.000
Instrument delivery	63	23.8%	7	5.0%	
ABD	14	5.3%	3	2.1%	
Birth weight of babies					
1000 – 2499gm	40	15.1%	33	23.6%	0.012
2500 – 3999gm	216	81.5%	106	75.7%	
≥ 4000gm	9	3.4%	1	0.7%	
Maternal age					
< 20 years	18	6.8%	4	2.8%	
20- 34 years	240	90.6%	121	86.4%	
35 – 49 years	7	2.6%	15	10.7%	0.001
Maternal disease					
Yes	65	24.5%	60	42.9%	
No	200	75.4%	80	57.1%	0.000

Table 6. Logistic regression model to show factors associated with episiotomy in SPHMMC, Addis Ababa, 2016 (n= 405)

Variables	Episiotomy		p- value	COR(95%CI)	AOR(95%CI)
	Yes	No			
Gravidity					
Gravida ≥2	94	114		1	1
Primigravida	171	26	0.039	8.7(7.9,9.2)	3.146(1.0258,9.357)
Parity					
Multipara	84	106	0.000	1	1
Nullipara	181	34		8.5(7.6,9.1)	6.385(3.690,11.050)
Presentations					
Cephalic	251	137	0.028	1	1
Breech	14	3		1.86(0.340,10.246)	11.64(1.297,97.32)
Duration of 2nd stage					
< 90 minute	58	75	0.000	1	1
≥ 90 minute	207	65		4.118(2.65,6.405)	7.6 (5.9,8.6)
Mode of delivery					
SVD	188	130	0.000	1	1
Instrument/ABD	77	10		8.3(6,3,9.2)	8.9 (7.4,9.5)
Birth weight of babies					
1000 – 2499gm	40	33	0.012	1	1
2500 – 3999gm		216		106	4.1(1,6.4) 6.8(6.9,9.9)
≥ 4000gm	9		1	0.135(0.014,1.118)	9.4 (4,6,9.9)

DISCUSSION

This study revealed that the prevalence of episiotomy is quite high (65.4%). This prevalence was lower than the finding in Argentina but higher than those result found in developing countries and previous studies in Ethiopia [9,11,16]. Rate was >65 % overall & 87% among primigaravid. Though our patient profile is different This is quite high by most standards. In developing countries studies shows prevalence range from 36% to 40%[11]. A study done in Ethiopia the prevalence of episiotomy ranges from 25% in Jimma to 40% in Addis Ababa[9,16].

Among factors influencing the practice of episiotomy this study showed that primigravids were 3 times more likely to have episiotomy as compared to multigravidas(AOR=3.14,95%CI:1.058,9.357). This finding was similar with the study done in Brazil (60%) and also the study done in Ethiopia[6,9,15]. nulliparas was 6 times more likely to have episiotomy as compared to multiparas (AOR=6.385,95%CI:3.690,11.05). Similar association was found in studies done at Brazil and Ethiopia[6,9,15]. Breech presentation were 11 times more likely to have episiotomy as compared to vertex presentation. (AOR=11.63,95%CI:1.297,97.32).

The duration of second stage of labor more than 90 minute is strongly associated with having episiotomy 78.1% with p- value <0.000 when compared to those mothers whose duration of second stage of labor is less than 90 minute (21.9%). duration of second stage of labor more than 90 minute were 7.6 times more likely to have episiotomy as compared to duration of second stage of labor is less than 90 minute AOR=7.6 (5.6, 8 9).This finding was similar with the study done in Ethiopia, as the duration of second stage of labor lasts longer than one and half hour the rate of episiotomy reaches up to 76%[16].

Mothers who gave birth through instrument or breech delivery were 8.9 times more likely to have episiotomy than those mothers who gave birth through spontaneous vertex delivery AOR=8.9 7.4,9.5. Similar association was found with the study done in Ethiopia and Nigeria [3,4,16].

This study also showed that those mothers who gave birth to babies weighing more than 4000gm were 9.4 times more likely to have episiotomy than mothers who gave birth to babies weighing between 2500 to 3999gm AOR= 9.4 (4,6,9.9).

Maternal age and maternal disease at the time of delivery was not significantly associated with the practice of episiotomy. This might be due to the number of those mothers who delivered were few (5.4%) and the mean age of mothers who delivered was 25 years ± 4.92.

The study done in Argentina showed that the rate of third or fourth degree perineal tear was 1.5% and it was most occurred in routine use of episiotomy[2,6,19]. In this study one mother had third degree perineal tear (0.2%) after she had episiotomy.

CONCLUSION

More than two third of mothers who deliver in SPHMMC have episiotomy. This is much higher than the results found in developing countries and previous studies in Ethiopia. This is also quite higher than WHO recommendation (5-10%). Though further study is needed to explore reasons for the higher prevalence of episiotomy, high prevalence could be due to the high risk population as the hospitals deals with referral cases. Although there are many factors that influence the practice of episiotomy, primigravidity, nulliparity, duration of SSOL more than 90 minutes, instrumental & assisted breech delivery and baby weight more than 4000 gm were independent risk factors for episiotomy.

RECOMMENDATIONS

1. In depth studies into the high prevalence of episiotomy is recommended to explore underlying reasons.
2. we recommend criterion based audit of episiotomy as part of quality improvement to decrease unjustified episiotomies and promote practice of elective episiotomy to decrease the high prevalence of episiotomy which was found in the study.

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ASSESSMENT OF NEONATAL OUTCOME OF OPERATIVE VAGINAL DELIVERY AND ITS DETERMINANTS AT DILLA UNIVERSITY REFERRAL HOSPITAL, SOUTH ETHIOPIA

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ABSTRACT

INTRODUCTION: Assisting laboring women to deliver vaginally using specialized instruments is a practice that dates back several centuries. Forceps and vacuum are the most popular of the operative vaginal procedures used in medical practice. Both are associated with increased risk of neonatal morbidity when compared to normal spontaneous vaginal delivery.

OBJECTIVE: This study was aimed to assess neonatal outcome of operative vaginal delivery and its determinants.

METHODS: Hospital based cross sectional retrospective study of women delivered between September 2013 and August 2015 in Dilla University Referral Hospital was conducted. All records of women delivered within the specified period of time was used as a total sample size. Data was entered into SPSS version 20 for analysis. Descriptive, bivariate & multivariate logistic regression was done to assess factors associated with the neonatal outcome.

RESULT: Data was collected from 216 women delivered by operative vaginal delivery of which 133 (61.6%) were delivered by vacuum, 76 (35.2%) were delivered by forceps and 7 (3.2%) by sequential use. Significant number of neonates 91(42.1%) delivered by operative vaginal delivery ended up with poor APGAR score. Birth weight of the neonate [AOR: 3.08, (CI: 1.16, 8.20)] and indication for operative vaginal delivery [AOR: 2.56 (CI: 1.22, 5.38)] were found to increase the risk of poor neonatal outcome.

CONCLUSIONS: Neonatal outcome with respect to APGAR score was significantly poor among operative vaginal deliveries in this study. Neonates with lower birth weight and operation done with the indication of fetal distress resulted in higher risk of poor outcome.

KEYWORDS: APGAR Score; Operative vaginal delivery; Dilla University Referral Hospital

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INTRODUCTION

Operative vaginal delivery is delivery accomplished vaginally with the aid of instruments including vacuum and forceps. It is carried out by applying direct traction on fetal skull or scalp for the maternal or fetal indications or both. It is a procedure with a long history spanning more than two centuries. In the lay and medical media, forceps and vacuum are the most popular of the operative vaginal procedures with comprehensive documentation of their development and use[1].

Vacuum and forceps was used for long time as important facet of modern obstetric practice. Vacuum and forceps assisted vaginal delivery account for a fairly constant rate at different countries of the world. Even though there are some scholars who still argue for a place of operative vaginal delivery in modern obstetric practices especially in low income countries, instrumental vaginal deliveries increases the risk of poor fetal outcome specifically in terms of APGAR scores[2].

The use of forceps has become increasingly uncommon and instead caesarian delivery is dramatically increasing. The use of forceps should always be preceded by an assessment of the risks and benefits measured against the cesarean section. This is because of the skill and experience required to effectively utilize forceps and the potential complications associated with inappropriate use may be severe. The use of forceps is associated with different fetal complications like transient facial paralysis, and intracranial damage, cephal and subgalial hematoma. The use of vacuum-assist is similar to that of forceps and the use of vacuum-assist rather than forceps does not alter the necessary steps prior to delivery[3,4].

WHO and other UN agencies previously consider assisted vaginal delivery as one of six critical functions of basic emergency obstetric care[5] and seen as one of the underutilized and least available emergency obstetric care signal functions in resource poor countries[6]. World-wide, instrumental vaginal deliveries (forceps and vacuum extraction) account for 7–11% of deliveries[7,8]. Fairly similar figure 5- 16% prevalence was reported from different health institutions in Ethiopia[9,10] though a study from Debre Birhan reported much higher (26%) use of instrumental delivery[11].

However recent assessments found that in most countries assisted vaginal delivery was the least likely function to be performed in basic facilities and currently some countries are substituting operative vaginal delivery by cesarean section. This is due to the fact that assisted vaginal delivery is associated with higher risk of both mothers and new born morbidities[12,13]. Operational vaginal deliveries are associated with increased risk of maternal and neonatal morbidity when compared to other mode of deliveries[14].

Ethiopia, a developing country with high perinatal and maternal morbidity and mortality is one of the countries in which instrumental delivery is widely practiced until recently[15]. Similar to other part of the country this procedure is the alternative option in Dilla University Referral Hospital as one method to intervene laboring mother. However there is a visible gap in the evidence for the actual risks associated with using operative vaginal delivery particularly with respect to it risk on fetal outcome. Hence this study is aimed to delineate the neonatal outcome of operative vaginal delivery and associated factors in Dilla University Referral Hospital particularly with respect to APGAR score which express the morbid effects of using instrumental delivery on neonate. The study will provide important evidence for the existing truth and gap about operational vaginal deliveries.

METHOD AND MATERIALS

Study Design and Setting

Hospital based cross sectional retrospective record review study of women delivered by operative vaginal delivery between September 2013 and August 2015 in Dilla University Referral Hospital was conducted. The hospital is found in Gedeo zone, Dilla town, South Ethiopia located at 360 km from the center of the country. Dilla University Referral Hospital is governmental hospital which provides preventive, curative and rehabilitative services for more than 2 million population in the catchment area. Obstetrics service is one of the major services provided by the hospital for the community. This study was conducted in January 2016.

Population and sample size

Population for this study was all laboring mothers who gave birth by operative vaginal delivery at obstetrics ward of Dilla University Referral Hospital during the specified period. Mothers diagnosed with intra uterine fetal death (IUFD). For a sample size all mothers who gave birth by operative vaginal delivery during 2013-2015 were included in the study.

Data collection instruments and techniques

The data extraction check list was adapted from similar literatures conducted previously and the content of tools was designed to obtain information on socio-demographic characteristics, operative vaginal delivery immediate neonatal outcome, parity, GA, indication for intervention, skill of operator and availability and type of instrument. The data was collected by reviewing charts of the clients for secondary data from delivery registration log book, patients' card, and discharge registration books by English version instruments. The data was collected for 7 days by five diploma midwives nurses who were working out of assigned health facility, and trained & and have experience in data collection. Two BSc midwives nurses who have been trained & experience in supervision was recruited and participated as a supervisor in the study.

Data quality control and analysis

Properly designed and structured record review format was pre-tested before actual study. Completeness of the questionnaire was cross checked and substantially incomplete registries were discarded.

The collected data was entered into SPSS version 20 statistical software. The data was checked for inconsistencies and missing. Descriptive analysis like frequency, percentage, cross tabulation and regression. OR with their corresponding confidence interval was used to assess the relationship of independent variable with the dependent variable by using logistic regression the association is declared at $p<0.05$.

Operational definitions

- APGAR score: Aronym for appearance, pulse rate, girmis reflex, activity & respiratory rate which used to assess health status of new born with first five minutes.
    - Poor: ≤ 6 at 5 minutes of life
    - Normal Apgar: ≥7 at 5 minutes of life
- Operative vaginal delivery: Instrumental vaginal delivery.

ETHICAL CONSIDERATION

Ethical clearance was obtained from institutional review board of college of health sciences and medicine. Confidentiality of the collected information was secured.

RESULTS

Socio-demographic and obstetric information of study population

During study period a total number of 2,613 laboring mothers were admitted and managed of which 2,294 (91.14%) of deliveries were effected by SVD whereas 216 (8.66%) were by **operative vaginal delivery**. From the total of 216 of mothers who gave birth vaginally by operative vaginal deliveries during study period most of them 131(60.6%) were within the age range of 19-35 years and 126(56.3%) were from rural area. Majority pregnant mothers were married 210(97.3%) at their presentation for labor. Among mothers who gave birth by operative vaginal delivery 97(44.9%), were multiparas. At admission, the fetal presentation for almost all 214(99%) of the laboring
mothers was cephalic (vertex) (table 1).

Table: 1 Socio demographic and obstetric information of mothers delivered through operative vaginal delivery at DURH, January 2016.

Variables	Category	Frequency	Percentage
Age in years	< 19	37	17.2
	19-35	131	60.6
	> 35	48	22.2
	Total	216	100
Residency	Urban	90	41.3
	Rural	126	58.7
	Total	216	100
Marital status	Unmarried	4	1.9
	Married	210	97.
	Divorced	2	0.9
	Total	216	100
Parity	Nulli-para	97	44.9
	Primi-para	31	14.4
	Multi-para	88	40.7
ANC	Yes	167	77.3
	No	49	22.7

Labor related information of deliveries

Among women delivered with operative vaginal delivery, the commonest indication to intervene labor was NRFHRP (42.6%) followed by poor maternal effort (31%). The station during application of instruments was +2 and below for most 130(60.2%) of the deliveries and the cervix was fully dilated for 198(91.7%) (table: 2).

Table 2: Labor related information of deliveries conducted in DURH, South Ethiopia January 2016

Labour related information		Forceps N =76		Vacuum No=133		Both N =7		Total N=216	
		No	%	No	%	No	%	No	%
Indication	Prolonged SSOL	19	25	33	24.8	5	71.4	57	25.3
	NRFHRP	41	53.9	50	37.6	1	14.3	92	42.6
	Poor maternal effort	16	21.0	50	37.6	1	14.3	67	31.0
Station	+1 & above	28	36.8	54	40.6	4	57.1	86	39.8
	+2&below	48	63.2	79	59.4	3	42.9	130	60.2
Cervix fully dilatation	Fully dilated	72	94.7	120	90.2	6	85.7	198	91.7
	Not fully dilated	4	5.3	13	9.8	1	14.3	18	8.3

Intra-partum, post-partum information and delivery outcome

Among women delivered with operative vaginal delivery, 133 (61.6%) were delivered by Vacuum Extraction, 76(35.2%) were delivered by forceps and 7(3.2%) were by sequential use. Out of 216 neonates 91(42.1%) were delivered with poor APGAR. Segregating in to different types of used instruments, 43.4% of those who delivered with forceps had poor APGAR score. Similarly among those who delivered with vacuum application, the proportion of neonates with poor APGAR score was 39.1% and 85.7% among sequential use. After birth,

80(37.0%) of new born required aggressive resuscitation and 51(23.6%) referred to NICU for further care and management plan. From the total mothers delivered with operative vaginal delivery, 26(12%) mothers developed intra-partum operative delivery related complications (table 2).

Table: 3 Intra-partum and post-partum information and delivery outcome of deliveries conducted in DURH, January 2016.

Intra-partum and postpartum information		Forceps N =76		Vacuum No=133		Both N =7		Total N=216	
		No	%	No	%	No	%	No	%
Birth injury	Yes	19	25	22	16.5	7	100	48	22.2
	No	57	75	111	84.5	0	0	168	77.8
Referred to NICU	Yes	22	28.9	23	17.3	6	85.7	51	23.6
	No	54	71.1	110	82.7	1	14.3	168	76.4
Early Neonatal death	Yes	2	2.6	1	0.8	4	57.1	7	3.2
	No	74	97.4	132	99.2	3	42.9	209	96.8
APGAR @1&5th min.	Poor (0-6)	33	43.4	52	39.1	6	85.7	91	42.1
	Normal (≥7)	43	56.6	81	60.9	1	14.3	125	57.9
Birth Weight (kg)	1.5 – 2.499	20	26.3	18	46.2	1	2.6	39	18.4
	2.5 – 3.999	41	53.9	79	64.2	3	2.4	123	58.0
	>4	14	18.4	34	68.0	2	4.0	50	23.6
Resuscitated	Yes	33	43.4	43	32.3	7	100	83	38.4
	No	43	56.5	90	67.7	0	0	133	61.57
Fetal sex	1. Male	37	48.7	72	54.1	2	50	111	51.4
	2. Female	39	51.3	61	45.9	2	50	102	47.9
Maternal complication	Yes	10	13.2	14	10.5	2	28.6	26	12.0
	No	66	86.8	119	89.5	5	71.4	190	88.0
Type of complication	PPH	2	20.0	6	42.9	1	50.0	9	34.6
	Laceration	7	70.0	6	42.9	1	50.0	14	53.6
	Incontinence	1	10.0	2	14.3	0	0	3	11.5

Factors associated with Poor Neonatal outcome (poor APGAR score)

Merely use of instrumental application might not resulted in poor APGAR among neonates delivered with operative vaginal delivery. In this study attempts were made to assess factors that further contribute for poor neonatal outcome among women who delivered at Dilla University Referral Hospital. Accordingly, indication for using instrumental delivery and birth weight were found to increase the risk of poor neonatal outcome. From the multivariable analysis result neonates delivered by assisted delivery with indication for NRFHRP were 2.5 times more likely to have poor APGAR score compared to those with indication for poor maternal effort [AOR: 2.56 (CI:1.22,5.38)]. Compared to neonates of birth weight greater than or equal to 4 kg delivered with instrumental delivery, those delivered with birth weight of less than 2.5 were 3 times more likely to be with poor APGAR score [AOR: 3.08, (CI: 1.16,8.20)]. Parity of the mother and station of the labor progress were not found to increase the risk of poor APGAR score among the neonates (table 4).

Table: 4 Determinants of fetal outcome among deliveries conducted with operative vaginal delivery among women delivered at DURH, January 2016.

Variables		APGAR Score		COR(95%CI)	AOR (95%I)
		Poor	Normal		
Age of mother	<19yr	9	28	1.84(0.74,4.5)	0.70(0.21,0.35)
	19-35	60	71	0.95(0.488,1.85)	1.29(0.51,3.24)
	>35	22	26	1	1
Address	Urban	35	55	1	1
	Rural	56	70	1.26 (0.73,2.18)	1.24(0.67,2.29)
ANC	Yes	66	101	1	1
	No	25	24	0.63(0.33, 1.19)	1.94(0.94,4.00)
Indication	Prolonged SSOL	21	36	0.69(0.32,1.51)	1.15(0.50,2.66)
	NRFHRP	50	42	0.36(0.18, 0.69)	2.56(1.22,5.38)*
	Poor maternal effort	20	47	1	1
Cervical dilatation	Fully dilated	81	117	1	1
	Not fully dilated	10	8	0.55(0.21, 1.46)	2.34(0.78,7.07)
Station	+1 and above	13	1	1	1
	+2 and below	48	82	0.59(0.34,1.02)	0.76(0.41,1.41)
Episiotomy	Yes	49	82	0.61(0.35, 1.06)	1
	No	42	43	1	1.21(0.64,2.29)
Sex	Male	54	57	1	1
	Female	34	68	1.89(1.10, 3.30)	0.64(0.35,1.18)
Birth weight	≤2.499	20	19	0.37(0.15, 0.89)	3.08(1.16,8.20)*
	2.5-3.999	53	70	0.51(0.25, 1.05)	2.21(0.98,4.98)
	More than 4 kg	14	36	1	1
Parity	Nulli-para	13	18	0.65(0.36,1.16)	0.79(0.34,1.83)
	Prim-para	42	46	0.79(0.35,1.81)	0.84(0.28,2.47)
	Multipara	36	61	1	1

DISCUSSION

This study was tried to assess the neonatal outcome of operative vaginal delivery in Dilla University Referral Hospital. Operative vaginal delivery is thought as effective instrument that may avoid unnecessary Caesarean sections and its complications[16]. In this study proportion of operative vaginal delivery was found to be 8.66%. This level of operative vaginal delivery in Dilla University Referral Hospital (DURH) is comparable to finding from Jimma University Medical Center (JUMC)[15] and the level of operative vaginal delivery rates in UK which have remained stable at between 10% and 13%. However this proportion is much higher than 1.4% magnitude of operative vaginal delivery in Istanbul[17].

The commonest indication for operative vaginal delivery in DURH is non reassuring fetal heart rate pattern which is in agreement with studies elsewhere[15-17]. Other studies found the frequent indication for operative vaginal delivery to be to cut short the second stage of delivery[18].

This study revealed that large number of neonates 91(42.1%) delivered by operative vaginal delivery were delivered with poor APGAR score. This finding is much higher than 8.2% poor APGAR score found from study at Istanbul Kanuni Sultan Süleyman Education and Research Hospital[17] and 13.6% proportion from study conducted in Uttarakhand, India[18]. It is also much higher than 13.2% level of poor APGAR score among neonates delivered by operative vaginal delivery in JUMC[15]. This difference in the level of poor APGAR score may be due to the difference in the status of

quality of service in the institutions and difference in the study population. Considerable number of mothers were also developed operative vaginal delivery related complications.

In this study instrumental delivery increased the risk of poor neonatal outcome and particularly sequential use of instruments was substantially increased the risk of poor APGAR score. In this regard 85% (6 out of 7) of the neonates delivered with sequential use were with poor APGAR score. Similarly in study conducted at JUMC type of instrument applied for operative vaginal delivery was the strongest predictor of neonatal outcome[15]. The risk of poor APGAR score was also higher among neonates delivered with operative vaginal delivery with the indication of non-reassuring fetal heart rate pattern in this study. This may be due to the fact that the intrauterine fetal distress that prompted the use of instrumental delivery may contribute for the poor APGAR score after delivery. Birth weight was also found to have statistically significant effect on the neonatal outcome of operative vaginal delivery in our study. Neonates with lower birth weight were at higher risk of poor APGAR score. This might be due to the fact that neonates with lower birth weight are more susceptible to birth injury.

CONCLUSSION

In general neonatal outcome among operative vaginal deliveries with respect to APGAR score in this study is significantly poor. While applying operative vaginal delivery, birth weight should be critically taken into consideration. Stronger studies using primary data should be studied conducted to further investigate and risk analysis of the cons and pros of using operative vaginal delivery.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

Abbreviations

APGAR=	Appearance, pulse rate, girmis reflex, activity & respiratory rate
AOR=	Adjusted odd ratio
DURH=	Dilla university referral hospital
IUFD =	Intrauterine Fetal Death
NICU=	Neonatal Intensive Care Unite
NRFHRP=	Non Reassuring Fetal Heart Rate Pattern
SVD=	Spontaneous Vaginal Delivery

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PROCESS EVALUATION OF CURRICULUM BASED SEXUAL AND REPRODUCTIVE HEALTH EDUCATION AMONG FIRST YEAR STUDENTS IN ARBA MINCH UNIVERSITY: QUALITATIVE STUDY

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ABSTRACT

INTRODUCTION: Curriculum based sexual and reproductive health education is one of the effective strategies to prevent youths from risky sexual activity. However, providing this education for youth in higher institution requires exploration from the perspective of youths, providers, and key individuals which will help improving and continuation of this education.

OBJECTIVE: The aim of this study is to evaluate a process of curriculum based sexual and reproductive health education among first year students in Arba Minch University, Ethiopia.

METHODS: Qualitative study was conducted among the first year Arba Minch University students. Focus group discussions were conducted with selected students' representatives. In depth interviews were conducted with instructors who teach this course and key informant interviews were conducted with different stakeholders who participated during course curriculum developments. Interview guide was used to collect data. The data was analyzed through thematic content analysis method.

RESULTS: In this study, we identified five main themes. The main themes are contents of the course which have four subthemes, mode of delivery of the course which have two subthemes, barrier for implementation with four subthemes, acceptability of the course that have two sub themes and perception on course nomenclature with two sub themes.

CONCLUSION: Finding of this study revealed that this course was an important and essential course for youth. However, mode of delivery of the course, lack of coordination and lack of comprehensiveness of contents may affect effectiveness. Therefore, for better effectiveness of this course, it requires strong coordination with different stakeholder.

KEYWORDS: Curriculum based sexual and reproductive health, qualitative study

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INTRODUCTION:

According to world health organization (WHO) youths are key population group characterized by physical, mental, and psychological change[1]. Youths are the largest population there were 1.80 billion people between the ages of 10 and 24 years, of them 70% are living in developing countries[2]. In Ethiopia from the total population 20.04% were between 15-24 years[2,3].

Most of youths in higher institution practice unprotected sex, even if they are joining for academic reason[4,5]. Reports show that worldwide youths are at a high risk of HIV infection, accounting for 20% of new HIV infections[6]. Seventy nine percent of these infections occur in sub-Saharan Africa (SSA)[6]. Also youths were vulnerable to unwanted pregnancies each year 7.4 million and 3 million girls experience unintended pregnancies and unsafe abortions, respectively[7].

In Ethiopia, higher education institutions host youths aged between 19-24 years and they are the largest segment of the population[4,8]. However, separation from their parents exposes them to sexual and reproductive health problems [9]. These problems put youths at risk for morbidity, mortality and limiting their educational and employment opportunities[7,10]. To solve those problems, Ethiopia started making sexual and reproductive health and HIV prevention information and services accessible to youths especially for those in higher learning institutions through curriculum based education on sexual and reproductive health since 2016 in Ethiopian Universities[9]. Despite the fact, there is no study conducted on its process evaluation on curriculum based sexual and reproductive health education among first year students in Arba Minch University, Ethiopia.

METHOD

Study Design and Setting: A qualitative, phenomenological study was carried out at Arba Minch University in February 2018.

Data Collection Procedures: To extract the required information, discussion guide was prepared in relevant local languages (Amharic). The focus group discussions, key informant interview and in-depth interviews were conducted by experienced MPH professionals who were fluent in Amharic Language. The data collectors were trained on how to conduct key informant interview, focus group discussions (FGDs) and in-depth interviews (IDIs). Before beginning discussion, participants were informed about the purpose of the study and voluntarily to participate in this study. The participants were encouraged to share their genuine ideas and discuss freely in the session. The participants' nonverbal expressions were noted in addition to recording their verbal responses. After completing the discussion, the moderator summarized the discussion and key points with the participants to check for accuracy. A total of five FGDs were conducted among purposely selected students' representative and able to speak Amharic language. The FGDs had 6 to 10 participants in each group. On average, an estimate of 50 to 90 Minutes was taken to conduct one FGD. Four in-depth interviews were conducted with both men and female instructors. Key informant interviews were conducted with cross cutting issue directorate and HIV mainstreaming officers.

Data analysis: All collected data were recorded, translated, and transcribed verbatim. Transcripts were coded and analyzed thematically using open code software version 3.6.2. Each research team independently read the codes. To resolve any differences in coding discussion was done with research team. A final consensus agreement was reached on the coding.

Data quality assurance: To assure the quality of data we used strategies like data trustworthiness, data credibility and dependability.

Ethical consideration: Ethical approval letter was obtained from the institutional review board of College of Medicine and Health Sciences in Arba Minch University. Written consents from all participants were obtained after being fully informed about the objectives and procedures of the study. The confidentiality and privacy of participants were actively protected.

Results

Participants

In total, 56 first years Arba Minch university student representative participated in focus groups. The number

of participants in each focus group ranged from 6 to 10. Participants ranged in age from approximately 18 and 24 years, with mean age of the participants was 19.48 ±1.13years. Four in-depth interviews were conduct with both men and female instructors. Two key informant interviews were conducted with different stakeholders

Key themes and sub themes identified in this study

Content analysis of the transcripts identified the following five main themes, each of which embraces two to four sub-themes. Theme 1: Contents of the course, Theme 2: Mode of delivery of the course, Theme 3: Barrier for implementation, Theme 4: Acceptability of the course and Theme 5: Course nomenclature. Each category is presented and discussed in detail with appropriate descriptions and quotes cited in the text to support the categories using elements of paradigm model which is analytical tool.

Table 1: Key themes and sub themes identified in this study

Main theme		Sub theme
Theme1	Content of the course	comprehensiveness of the contents content based on local social asset stake holder involvement logical order of the content
Theme2	Mode of delivery of the course	students' view on mode of delivery of the course Instructors' experience on mode of delivery of the course
Theme3	Barrier for implementation	shortage of Human power lack of collaboration with student service lack of awareness among department heads managing the course by two college
Theme 4	Acceptability of the course	students' experience on the course Instructors' view on potential impacts
Theme 5	Course nomenclature	Instructors' view on course nomenclature students' views on course nomenclature

THEME1: CONTENTS OF THE COURSE

The first main theme was the contents of the course, with four sub-themes: Comprehensive of contents, contents were developed based on local social asset, stakeholder involvement and logical order of the contents.

Sub-themes: Comprehensiveness of the contents

Most of the participant of the FGD said that the content of the course was comprehensive and included all the content required for freshmen students to meet the objective of the course which was abstinence promotion. One of participant said "I think the content is sufficient for me as per the semester based course. It includes each transmission and prevention methods of HIV. However, the contents on STI somewhat small it does not include all STI in briefed way. The objective of the course was abstinence promotion, but it is better to include the need of freshman university students, rather than telling him not to be relaxed, better to tell students all alternatives" (P1, FGD3).

In addition to the above one of our study participant said: "The content is little for me, because most of the students are at fire age, so this course should provide enough information for those students and I did not think the course is comprehensive. It is theoretical. The content is also minimal for me" (P7, FGD3).

Another point mentioned by the participants was this course lacks the most important topics. In this regard, one of the participants said: "I think there are some things, however still it lacks some other things. Basically it has HIV/AIDS, some part of sexual reproductive health like unintended pregnancy and STI, early marriage. However, it lacks main contents require for youth example substance abuse. Substance abuse should be included in this course focusing on prevention methods and predisposing factors" (34 years instructor). Another finding from FGD also support this finding they said: "substance abuse should be included because most of

the time university students were affected by substance abuse than HIV in really. I think most educated people keep themselves from HIV, but they did not keep themselves from substance abuse. So it will be better to include substance abuse at portion ....."(P3, FGD4).

Sub-themes: Logical order of the contents

Most of the study participants said that it is better if we begin from life skill section of the course. One of our study participants said: "Initial this course given at first year .....At the beginning it was better if we start by life skill section... because this course is given for freshman students there are lots of problem. For example in life skill section there were a lot of things....including study methods.....,but this means don't mean HIV section was not important. SRH and HIV section was very important for female because the come they separate from their family during this time.....So I think it was better if life skill come first"(P4, FGD4).

However some of FGD participants said that order of the course content was ok and HIV section should be the first chapter of the course. One of study participant said that "HIV topic should come before life skill for me this is appropriate because the course of HIV is important to alarm us" (P5, FGD3).

One of our IDI instructors said that "If the course is sexual and reproductive health ....HIV is sub content of SRH because SRH has several elements among those STI from it HIV was one of the part.so I did not support HIV as a big chapter. If the course is Sexual and reproductive health for adolescent we can start with big picture of SRH that means it cover from adolescent up to maternity. This SRH have two parts clinical aspects and public aspects. We should focus public aspects which focus on health promotion rather focusing on clinical aspects because it applied by professionals" (32 years instructor).

Sub-themes: Contents of the course should base on local social asset

Most instructors teaching this course said that this course was not designed based on our local social asset. One of instructor said that "I did not think that this course included our social values. In our culture pre-marital sexual intercourse was not acceptable in our culture even in our religion, but when we teach about family panning or Pregnancy prevention options we say that it was positive.....I think if you practice pre-marital sexual intercourse you will be affected by HIV and Pregnancy, but if we teach the prevention methods I think if you practice it you can prevents by those methods.....Other than that, pre-marital sexual intercourse was no longer positive in the our culture and not recommended in our community....." (32 years instructor).

Another instructor teaching this course said that "I think it doesn't include all our social values. The content was current issue like HIV, SRH and gender. I think it was both western culture as well as our Ethiopian culture. For example IV drug users. In our country there were some people who were IV drug users which were in secret. It is better to teach a lot of things. So some of documents were directly western culture" (34 years instructor).

Sub-themes: Stakeholder involvement during curriculum developments

Finding from key informant interview done with cross cutting directorate director said that "during the development of this course involves different stakeholders and experienced professional like Vice-presidents of university, public health expertise and curriculum professionals" (54 years old male). Also HIV mainstreaming officer also said that "different stake holder were involved during course development" (30 years old female).

However, one of instructor said that "I think at development of this curriculum professional were not involved. When we see the curriculum there is three topics, but the aim of this course is to create comprehensive knowledge. I think those topics were not compressive because the contents even overview, but not detail" (29 years old instructor).

THEME 2: MODE OF DELIVERY OF THE COURSE

Mode of delivery of the course was the second main category with two sub-categories like students' view on mode of delivery of the course and instructors' experience on mode of delivery of the course

Sub-themes: Students' view on mode of delivery of the course

Many males and females (in many FGDs) said that way of

delivery of this course was delivered in different teaching methods rather than focusing on finishing the course. Many males and females (in many FGDs) said that way of delivery of this course should be student centered focus on providing change in behavioral. One of our study participants said: "I think the mode of delivery of the course is not enough to bring behavioral changes because it lacks practical sessions. It was still necessary to do a practical example especially on life skill it was just theoretical that was only reading the slide" (P9, FGD5).

Another point mentioned by the participants was the most instructors' were dependent only on handout. In this regard, one of the participants said: "most of the instructors were dependent on the handout only I did not have more information both in life skill and HIV because they did not show any practical things……" (P10, FGD5).

Most of males and females (in many FGDs) said that this course should be given by experienced teachers. One of our study participants said that "Most instructors teaching this course do not have confidence because most of them teach for one or two days…… (10:10). But, this course should taught for with long period of time because it is important for knowing ourselves. If it is we it should not be given within one or two days." **የምናውቅበት እስከ ሆነ ድረስ ሰፋ ብሎ ነው መሰጠት ያለበት ግን በአንድ ቀን በሁለት ቀን እንደዚህ አድርገው ሸፈፍነው ይሄደሉ።ሸፈፍነው የሄድነው** subject **ደግሞ ተሸፋፍኖ መሄድ የለበትም።የህይወት ጉዳይ እስከ ሆነ ድረስ** ….." "In general this course lack quality" (P1, FGD4).

Sub-themes: Instructors' experience on mode of delivery of the course

One of instructor who teaches this course said that "I did not think this course included multiple teaching methods. Because most of the instructors were overloaded and applied most as a lecture methods. Most of the instructors have five and six sections and apply the simplest method rather to give chance for student to discus, role play even it did not promote self-learning" (32 year old instructor). Another instructor said that "Different teaching methods were included in the course curriculum. However, it was difficult to apply it due to large class size like Eighty students to apply group discussion for 80 students even the class room was not adequate although in the module it included different methods" (34 year old instructor).

THEME 3: BARRIER FOR THE IMPLEMENTATION OF THE COURSE

Sub-themes: Lack of collaboration with students' services

Most of males and females instructors participated in IDI said that for better effectiveness of this course there should be integration between student services and course delivering instructors.

One of instructor said that " This is good idea by making SRH clinic as one department or opening SRH clinic in each campus was good……However I only teach the student they can get those service form the clinics. Also in the campus there is guiding and counseling service that was provided by psychology department. In SRH course we teach about testing and counseling, guiding and counseling section, but we refer the student…….So SRH course coordination office or our college should appoint one focal person in each service…..(32 year old instructor).

Sub-themes: Shortage of Human Power

During the in-depth interviews, finding from instructors who teaches this course mentioned that "By this condition I did not think we keep the quality, even there may be quality comprise, but it provide information that will reduce exposure status. To apply continuous assessment it was challenging due to large class size as well overloaded of the instructors. In generally being overloaded of the instructors will compromise the quality…." (34 year old instructor).

Sub-themes: Lack of Awareness among department heads

Most of student participant in the FGD said that most of the schedules were in afternoon. One of our study participants said that "Most of the time our schedule was from 9:00 up to 11:00 local time. I think about the schedule they should think critically even I don't think the schedule was not planned because most the class was in the afternoon which is boring, most of the student were absent from the class because they will be easily tired" (P7, FGD2).

For better effectiveness of this course one of our study participant said that" I think lack of value was one of problem of this course for example in our campus most of students gives value for another course not for HIV.....Also those instructors should be experienced to delivery this course. Furthermore to be more effective better to have school clubs focusing on life skill and reproductive health" (P4, FGD3).

As one of the instructors who participate in IDI said that " In generally the weak side were related to administration, lack of focus for the instructors who teach this course, lack of transportation, lack of office for instructors and lack of awareness in administrative of the campus because they think of it as unnecessary" (32 year old instructor).

One of the instructor said "For improvement of this course delivery the first may be department managers should be aware about this course and should prepare the schedule series. In order to teach student well that means to do class room discussion, role paly, to show video and to show people experience the department head should prepare schedule in sequence order if possible all the three hour should be within one day"(29 year old instructor).

Sub-themes: Being managing by two college

Most of student participant in the FGD said that being managing this course by two colleges was one of the challenges to implementation of this course. One of our study participants said that, "While we begin HIV section it is good time, but life skill was not started timely. I don't know the reason it may be shortage of teacher, but we start at end of the semester which means only two week is reaming to end semester even for two days which highlight only. So the timing is not correct because immediately after we finish the HIV lesson we should start the life skill lesson" (P1, FGD4). Another participant also said:" I think there is misusage/ inappropriate usage of time between HIV and Life skill teacher because we lost all most one months after we finish Hive course to begin life skill portion" (P1, FGD3).

THEME 4: ACCEPTABILITY OF THE COURSE

Sub-themes: Teachers' view on the potential impact of the course

Finding from IDI interview conduct with instructor said that, "This course is very necessary!!! It is necessary. Also this course should start at high school at 9th, 10th, 11th and 12th grade by including substance abuse in order to prevent those adolescents from substance abuse and Sexual reproductive risky behavior at early. I think this course was definite necessary" (32 year old instructor).

Another instructor also said that, " It is necessary for the students other than other course because it will give baseline information that may help for their lifelong as well university was new environment for them previously lived with their families this may put them for different thing this course may help them as prevention way" (29 year old instructor).

Sub-themes: Students' experience of the intervention

Many males and females (in many FGDs) said that this course was necessary during this time especially for university student. One of our study participants said that "it is hundred percent necessary!!!. I have learned a lot, especially in life skill. Especially about peer pressure...I had two friends who were dismissed. They did not come second semester because they were lost their time with graduating class students. Most of the time graduating class students start relationship especially with fresh students. Those fresh students start to pass even the off the class..... I just see the consequence on my friends by this time they already dismissed due to them did not have enough results to continue. Also she said in Amharic" "**ሁልጊዜም የሚቀድመው ህይወት ነው". እኛ በህይወት ስንኖር ነው ትምህርት ሁሉም ነገር የሚቀጥለው እና እሄ ነገር ደግሞ ለህይወታችን በጣም አስፈላጊ ነው።እኛ ታመን መቼም አንማርም ወይም ደግሞ ብያንስ አርግዘን እዚህ ግቢ ውስጥ ቁጭ ብለን አንማርም።ለሁሉም ነገር የሚቀድመው ነገር ነው ሌለው ነገር ከሱ የሚቀጥል ነው የሚመስለኝ**" (P4, FGD4".

Another study participant also said that "This course help me to develop a sense of self confidence for the coming 3 years in the campus. It is just that we believe in what we believe in we should resist if we just do not want to do that (27:36)" (P6, FGD5). "Similarly, another

study participant said that "Life skills help me to make open communication, goal setting and personality like making judgment is not true way because every person have its own personality. Also it helps me how to manage time effectively" (P2, FGD2). Furthermore, one of our study participant said that "really after taking the course the knowledge helped me to strengthen my behaviors not to be engaged in risky sexual behaviors" (P5, FGD5).

THEME 5: COURSE NOMENCLATURE

The last category was naming of the course, which contains the two sub-categories students' views on course nomenclature and teachers' view on course nomenclature

Sub-themes: Students' views on course nomenclature

Almost all the focus group participants were not satisfied by the name of the course and recommend being comprehensive name based on naming standards. One of our study participant said that "when you want to buy a book, you will buy after you read the title if the title is attractive you will buy it." so this name don't fit with this course. **አይመጥንም። እኔ የሆነ ጊዜ ቤት HIV እየተማርኩ ነው ስላቸው ..... ሰው በጥሩ ነገር አያየውም** (P4, FGD4)". Another study participant also said that "I think the name of this course should be changed. For example we call the instructors by HIV which may affect psychology of the teacher. So I think it is better to change this name to one of health related name..." (P5, FGD4).

Sub-themes: Teachers' view on course nomenclature

Finding from one of IDI participant said" the course name was the most boring. It was difficult even for calling the name. Therefore, RH professional should give good name for this course. This name is statement I think it doesn't follow naming criteria because it include the entire chapter" (34 year old instructor). Another instructor said that "Normally, this course has three chapters like HIV, SRH and life skill. Almost those were SRH. So better if we call it by SRH" (32 year old instructor).

DISCUSSIONS

In general, this qualitative study explored the view, perception and experiences of on process of curriculum based sexual and reproductive health education intervention. It focused on examining the view, perceptions and experiences of students' and instructors' on the intervention in Arba Minch University. According to the participants in this study, this course is vital for the life of youth in higher institution. In this discussion, we identify themes emerging from this qualitative study and reflect on how these interventions can be strengthened, specifically.

The finding of this study revealed that the content of curriculum based sexual and reproductive health education was not comprehensive which lacks the most important topics like substance abuse that was one of predisposing factors for any risk sexual behaviors. The content was not detailed focusing on behavioral changes activities among youths in higher institution. This finding is not consistent with study conducted in South Africa and Chain[11,12].

Furthermore, the content of curriculum based sexual and reproductive health education was based on our local asset. However some of the topics like sexuality, premarital sexual intercourse and trans- gender were a taboo in most of our community and against the religious norms. Also promotion of family planning especially, condom use among young people remains a controversial topic, surrounded by myths and fear. This finding is supported by study conducted in Uganda and other study conducted in developing country[13,14]. This also supported by national adolescent and youth strategy of Ethiopia in which said that comprehensive sexuality education curricula should be based social asset, age appropriate and promote abstinence among youths[15].

Finding of this study revealed that curriculum based sexual and reproductive health education was implemented mainly in lecture methods. This finding was not supported by study conducted in South Africa[16]. International technical guidance on sexuality education publications, recommending that effective curricula use participatory teaching methods that actively involve learners and help them internalize and integrate information[17]. Our study suggested that ways of delivery of this course required different teaching methods. However, most of instructors who teach this course were using only lecture methods due to large class

size and overload of most instructors.

As our study participants stated, some of instructors who teaches curriculum based sexual and reproductive health education were directly familiar with the course contents and highly committed to teach this course. This finding was in line with other study conducted in Sub-Saharan Africa[13]. However, this finding is not supported by one study conducted in south Africa[6]. This could be explained by the fact that highly committed teachers feel the need to adapt the programme to suit the students' needs more than less committed teachers[13]. An alternative explanation could be that highly confident teachers could feel free to skip a lesson when they felt it was irrelevant or did not fit the setting compared with less confident teachers.

The most frequently mentioned barriers to implementation were personal, cultural, religious norms and beliefs, large classes' size and unavailability of student reference manuals were serious challenges for teachers implementing sex education. This finding is in line with other studies[14,18]. In addition to above-mentioned factors, instructors mentioned, shortage of trained human power, lack of collaboration between student services and course coordination office and lack of awareness among department head were barriers for full implementation of this course. Similar findings are found in other studies in a Sub-Sahara African context[14,18,19].

Curriculum based sexual and reproductive health education program in higher institution was the most essential to make informed choices about whether to be sexually active or not, with whom and how to protect themselves from coerced sex, unintended pregnancy and STIs, including HIV. In focus group discussion students mentioned that " It is hundred percent necessary!". In the in-depth interviews finding also mentioned that "This course is very necessary. It is necessary for the students other than other course because it will give baseline information that may help for their lifelong. University was new environment for them. They previously lived with their families, This may expose them for different thing this course may help them as a protection". Also this course should start at high school at 9th, 10th, 11th and 12th grade by including substance abuse in order to prevent those adolescents from substance abuse and sexual reproductive risky behavior at early age. Furthermore, from an education point of view, the Ministry of Health (in collaboration with the Ministry of Education) promotes comprehensive sexuality and life skills education through the National School and higher education institutions (HEIs) to Increasing access to AYH information[15]. Africa. Also this finding was supported by qualitative study conducted in sub-Saharan Africa[13,16,18].

CONCLUSION AND RECOMMENDATION

Finding of this study reveal that this course was the important and essential for youth in higher institutions. However, mode of delivery of the course was mostly lecture methods rather than student centered. The main barrier for implementation of this course were lack of awareness among department heads, shortage of human power and lack of coordination with student services and the course name was also one of the challenges for implementation of this course. Furthermore, another challenge during the implementation of this course being two instructors forms different college. With regards, on the contents of the course most of the topics were the important for the youths especially in higher institution. However, the contents like premarital sexual intercourse, sexuality and trans-gender issues were not acceptable by local social cultural and religion. Furthermore, the contents like substance abuse were the most important topics, but those contents were lacking in this course.

In recommendation, all concerned stakeholders should strengthen implementation of basic curriculum based sexual and reproductive health education as the first step to protect and control sexual and reproductive health problems and to subsequently improving the behavior of youths in higher institutions. Motivating instructors, continuous monitoring and creating coordination with different reproductive health service should also be there. Effort should be made to equip the necessary materials and human power. Finally, Arba Minch University and other stakeholder should include

this course under curriculum both for regular as well extension students and closely collaborate with students' service like student clinic and counseling services and reproductive health clubs for better effectiveness of this course.

COMPETING INTERESTS: The authors declare that they have no conflict of interest regarding the publication of this paper.

AUTHORS' CONTRIBUTIONS

NB, SH and MS conceived and designed the study. NB and SH coordinated the running of the study. NB,TS, SS, SA, EZ, ND and ZT conducted data collection . NB, SH, WG,WG and EZ were participated in data analysis. NB and SH drafted the manuscript. NB, SH,MS,SS,TS, EZ,WG,SA, WG, ND and ZT contributed to the interpretation of the analysis and critically revised the manuscript. All authors read and approved the final manuscript.

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SPONTANEOUS BILATERAL TUBAL PREGNANCY: A CASE REPORT

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ABSTRACT

BACKGROUND: Ectopic pregnancy is implantation outside the uterine cavity and its one of obstetrics emergency and it is among the common causes of maternal death in the first trimester of pregnancy. It complicates up to 2% of all pregnancies, but bilateral tubal pregnancies are among the rarest medical occurrence and its incidence 1 in 1580 to 1 in 200,000 pregnancies.

CASE: This is a case report of a 38-year-old woman who presented with lower abdominal pain and vaginal bleeding of 3 days. She had left sided unruptured tubal ectopic and right sided ruptured tubal ectopic pregnancy. Trans abdominal Ultrasonography revealed a 5 X 3cm left adnexal mass suggestive of ectopic pregnancy, uterine cavity was empty and free fluid was seen in the pelvis and paracolic gutter. The diagnosis of bilateral tubal ectopic was made intraoperatively. Bilateral salpingectomy was performed. Histopathology examination confirmed bilateral tubal ectopic pregnancy.

CONCLUSION: It is very important to carefully review both adnexa during sonographic evaluation and when exploratory laparotomy or laparoscopy is undertaken for ectopic pregnancy.

KEYWORDS: Pregnancy, tubal, ectopic, bilateral, salpingectomy

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INTRODUCTION

Ectopic pregnancy is implantation outside the uterine cavity and its one of obstetrics emergency and among the common causes maternal death in the first trimester of pregnancy. It complicates up to 2% of all pregnancies, but bilateral tubal pregnancies are among the rarest medical occurrence and its incidence 1 in 1580 to 1 in 200,000 pregnancies[1,16]. Due to increasing incidence of pelvic infection the incidence of ectopic pregnancy is generally increasing. The risen incidence may it due to assisted reproductive technology or due to early detection of ectopic pregnancy with advanced scanning[2-5]. Even though exact cause of bilateral tubal

CASE REPORT

A 38-year-old gravida II Para I mother who came to our hospital with complaint of lower abdominal pain and spotting vaginal bleeding of 3 days. She claims to be amenorrhic for the past three months. She was not on any type of contraception, no history of pelvic surgery, no history of STI treatment or symptoms. She is known HIV positive patient on highly active anti retro viral treatment. On examinations Pulse rate was 120 beats per minute and the other vital signs were normal, on the abdomen she had diffused abdominal tenderness.

Ultrasound was done and shows empty uterus, 5 x 3cm left adnexal echo-complex mass and free fluid in the pelvis and paracolic gutter.

With the diagnosis of ruptured ectopic pregnancy laparotomy was done and intra-operative finding was left side unruptured ampullary ectopic pregnancy with right side ruptured ampullary ectopic pregnancy and about 1200ml of haemoperitoneum. Haemoperitoneum sucked out and bilateral salpingectomy was done, the patient discharged on 5th post op day. Histopathology Section from both fallopian tubes shows multiple chorionic villas having capillaries with nucleated RBC, fetal tissues and hemorrhage admixed with areas of fibrinous inflammation and the conclusion was the Fallopian tube bilateral ectopic pregnancy.

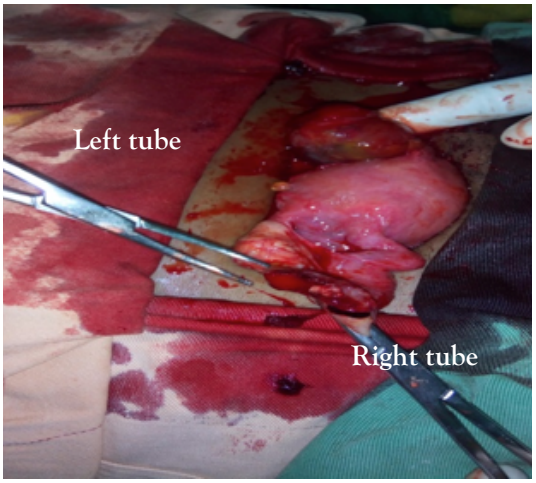

Figure 1: A picture taken intra-operatively

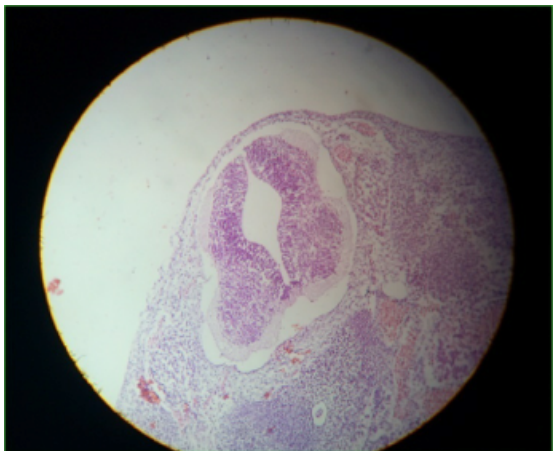

Fig2 Fetal tissue with neural plates

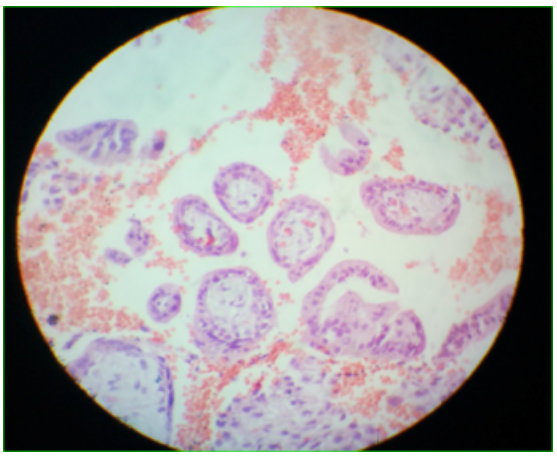

Fig3 Villi with fetal RBC

DISCUSSION

TThe rarest form of ectopic pregnancy is bilateral tubal pregnancy, which occur spontaneously[6]. Two hundred case reports of bilateral tubal ectopic pregnancy have been observed in the literature, in which most cases occurred after using assisted reproductive technique[6]. In these cases there was no history of infertility treatment. We just found one published case report in Ethiopia[17]. Even though HIV infected patients have increased risk of ectopic pregnancy due to high prevalence of concomitant pelvic inflammatory disease, we could get only one published case report of bilateral tubal ectopic pregnancy in HIV infected patients.

Though tuboplasty and assisted reproductive technology have resulted in increased rates, sexually transmitted infections remain the most important risk factor. Still, many patients with ectopic pregnancy have no identifiable risk factors. It is also suggested that the larger cell mass of the fertilized twin zygote may result in retarded tubal transport with consequential tubal implantation. In our patient, there was no identified risk factor for ectopic pregnancy and for twining.

Ectopic pregnancy remains a diagnostic challenge due to its varied clinical presentation and can result in significant morbidity and mortality. Transvaginal ultrasound is very effective in diagnosing an intrauterine pregnancy by 24 days post-ovulation with 90% sensitivity, 99.8% specificity, 93% positive predictive value and 99.8% negative predictive value[7]. In our case, the patient had a transabdominal ultrasound which identified 5 x 3cm left adnexal echo complex mass with free fluid in the cul-de-sac and paracolic gutter. Ultrasonography in our case failed to make a diagnosis of bilateral tubal pregnancy. In most cases of bilateral ectopic pregnancy, they failed to make a diagnosis based on ultrasonography and was made intra-operatively[8,9,10]. Al Quraanet. al and Brady et.al reported bilateral tubal ectopic pregnancy with one tube ruptured and the other intact[10,11].

In this case the right tube had ruptured, the left tube was distended, ecchymotic and easly bleeding upon touching so that we were not able to save tube. Final bilateral salpingectomy was done. Comprehensive clinical guidelines for the treatment of ectopic pregnancy have been published by the Royal College of Obstetricians & Gynecologists[14]. Because of its rarity, synchronous ectopic pregnancy is not covered, but the principles of treatment can still be applied. Laparoscopic surgical treatment is preferred to open surgery, because the patient recovers more quickly and subsequent rates of intrauterine and ectopic pregnancy are similar[15]. Our patient, because of acute symptoms and extensive blood in the pelvis was not suitable for either laparoscopic surgery or medical management with methotrexate. Therefore, exploratory laparotomy was performed.

It is very important to identify and close examination of both adnexa when exploratory laparotomy or laparoscopy is undertaken for ectopic pregnancy.

CONCLUSION

Even though it is rare, bilateral ectopic pregnancy should be considered in all patients with ectopic pregnancy, and contralateral adnexa has to be examined during sonographic evaluation, laparoscopy or laparotomy.

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PRECONCEPTIONAL TRANSABDOMINAL CERVICAL CERCLAGE: CASE REPORT OF A WOMAN WITH SIX FAILED TRANSVAGINAL CERCLAGES

Mustefa Negash Abdella, MD[1], Diana Curran, MD[2], Delayehu Bekelle, MD, MPH[1]

ABSTRACT

Preconception transabdominal cervicoisthmic cerclage is a safe and effective option for selected group of patients with cervical insufficiency and have failed conventional conceptional cervical cerclages or with severely damaged cervix. We present here a preconception transabdominal cervicoisthmic cerclage which was placed by laparotomy for a woman with six failed conceptional transcervical cerclages with recurrent late second trimester pregnancy losses. The woman conceived spontaneously and delivered at term with an alive male healthy new born with no maternal and fetal complications. A brief discussion of the indication, procedure and complications of Preconception transabdominal cervicoisthmic cerclage is also included.

KEY WORDS: Transabdominal cerclage, Cervical insufficiency, Recurrent pregnancy loss

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INTRODUCTION

Cervical incompetence affects 0.5% to 1% of all pregnan¬cies and the risk of recurrence is estimated to be 30%. The typical pres¬entation is pelvic pressure and cervical dilatation without uterine contraction or leakage of liquor in the first and second trimester of gestation[1].

Cervical cerclage is performed both for treatment and prophylactic purposes in cases of cervical insufficiency. Commonly it is done through vaginal approach at the end of first trimester in cases diagnosed with cervical insufficiency during pregnancy. The vaginal approach is not always feasible to perform in small group of patients who have anatomic cervical distortion. In such patients the transabdominal approach has been done successfully1. The transabdominal cerclage was first described in 1965 and the laparoscopic modification was first reported in 1998. Published reports suggest very high neonatal survival rates with both approaches, with delivery rates of viable infants consistently in the range of 85 to 90%. The procedure has been done in pregnant women, either towards the end of the first trimester or early in the second trimester. Since the non-pregnant cervical isthimus is firm, it gives the opportunity for the surgeon to avoid injuring the blood vessels[1-3].

A history of midtrimester pregnancy loss, the circumstances of previous failed cerclage and a seriously deficient cervix are major indications for abdominal procedure[4]. Here we describe a case with severe cervical damage with failed six cervical cerclages ending up six consecutive pregnancy losses.

CASE PRESENTATION

A 38 years old GIX PIII with two live children presented with recurrent pregnancy losses spanning for the last 16 years. Eight of the pregnancies were with transvaginal cerclages done on each pregnancy. Cerclages were done since the first pregnancy ended up in mid-trimester pregnancy loss. She was told to have "cervical problem" and, during her second pregnancy, she had a transvaginal cervical cerclage. The pregnancy progressed to 33 weeks at which time she developed preterm labor and delivery. The preterm baby survived. She also had cerclage with the third pregnancy delivered a live female baby at 40 weeks of gestation. The fourth pregnancy, with cerclage, culminated in preterm labor and delivery at the 28th week and the neonate didn't survive. The fifth, sixth, seventh and eighth pregnancies also ended up in second trimester abortions after transcervical cerclages. The first five cerclages were done in Ethiopia while the seventh and eighth pregnancy were undertaken abroad. The seventh and eighth pregnancies failed at 20th and 25th week of gestation, respectively.

She presented to St. Paul's Hospital Millennium Medical College after five years of the eighth pregnancy. Her general medical history was unremarkable.

Her blood pressure was 110/70 mmHg, PR 84 beats per minute and respiratory rate was 18 breaths per minute.

Vaginal speculum examinations revealed a ragged cervix with healed old tears and remnants on postero-lateral on the left side. It has a gap on the posterior aspect on the left side reaching to the isthmus and irregularities alongside (Figure 1).

The uterus was eight weeks sized central anteverted and anteflexed. The adnexae were unremarkable. The rest of the physical findings were unremarkable.

Transvaginal ultrasound measured the cervical length to be 18 mm with good endometrial outline. Both ovaries visualized with good numbers of follicles (Figure 2).

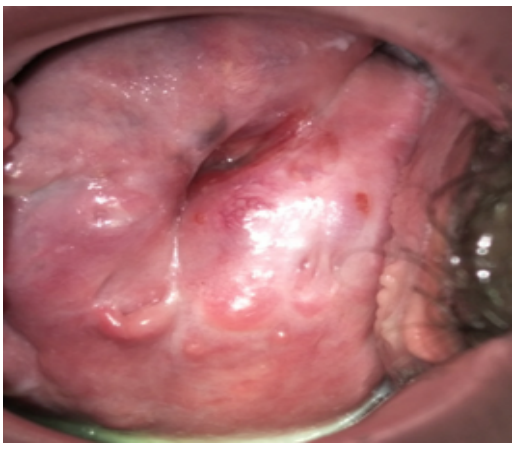

Figure 1: The appearance of cervix on inspection with vaginal speculum showing the left lateral tear cleft on the exo cervix which extends to the internal cervical os.

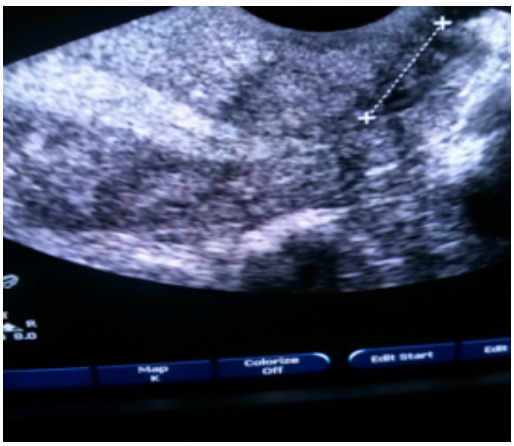

Figure 2: Transvaginal ultrasound scanning which shows open cervical canal and very short cervix as measured 18 mm.

Cervical insufficiency with very short and damaged cervix and failed transvaginal cerclages during previous pregnancies ending in recurrent second trimester pregnancy losses was entertained.

She was counseled on the risks and benefits of interval transabdominal cerclage placement. The concerns of the patient were discussed in two sessions. After ascertaining her understanding of and her agreement with the innovative nature of the interval transabdominal cerclages, the procedure was done on 28/02/2017.

THE PROCEDURE: The anesthesia was spinal with sedation. The abdomen entered through pfannenstiel incision with clear anatomy of the peritoneal cavity with no adhesions. The uterus was normal sized with healthy looking tubes and ovaries bilaterally. The uterus was mobilized from the pelvic cavity. The lower segment was accessed. The bladder peritoneum was reflected and the isthmus exposed. The avascular space of window created between the uterine vessels and the uterus. This was done on both sides. The merseline tape disconnected from the needles passed on the window on the left side anteriorly then posteriorly through the window created on the right side to tie anteriorly and fixed with 0 silk. It was tight enough just to appose on the isthmus. The knot is then secured further by taking each free end to the underlying band, and the peritoneum is sutured over the knot. Hemostasis secured. The abdomen closed in layers after counts declared correct. The patient left the operation theater stable. She had smooth post-operative course and discharged from the hospital on the next day of surgery. She was allowed to conceive after three months of surgery.

She conceived spontaneously after 8 months of the surgery. She was given progesterone dydrogesterone 400 mg twice daily vaginal suppositories for the first sixteen week of gestation. She had smooth pregnancy courses. She was given dexamethasone four doses at 28 weeks of gestation anticipating preterm labor and delivery. Termination by cesarean section was done at 37 weeks and 3 days of gestation since she had frequent Braxton Hicks contractions. The intraoperative finding was formed lower uterine segment with intact uterus. The tape was totally covered with seroasa all round. The outcome was a male neonate weight 3115grams with APGAR scores of nine and ten in the first and fifth minutes, respectively. The cerclage was not removed since she was considering one more child.

Removal of the tape was left to the subsequent cesarean delivery. Both the mother and the newborn were discharged from the hospital in stable conditions. On subsequent evaluations both the mother and baby were quite healthy.

DISCUSSIONS

Cervical insufficiency can be of congenital or acquired causes. In case of acquired cervical incompetence the causes are: an injury during previous labor, previous abortions (especially in cases when the uterus cervix was dilated more than 10 mm) or conization of the cervix[2].

Functional cervical insufficiency is most frequently caused by a multiple pregnancy or influence of relaxin and prostaglandins on cervix tissue. In our case birth trauma was the likely cause.

The indications for trans-abdominal cerclage before conceptions are: previous vaginal cerclages which had failed to work, extremely short cervix like in cases of cervical conization, extremely lacerated cervix with deep rupture, agenesis of the cervix[2]. Transabdominal placement of preconception cervical cerclage is accepted

as the treatment of choice in women at high risk with previously failed vaginal cerclage or very short vaginal portions of the cervix. Severely lacerated cervix was the indication for the last transabdominal cerclage (We are unable to retrieve adequate information for the initial indication of the first transvaginal cerclage).

Majority of reports present favorable outcomes with pregnancies after transabdominal cerclage, 80-85% of pregnancies were terminated at 38 weeks of gestation by cesarean section. Some authors described cases of successful laparoscopic cerclage performed even in early second trimester[2].

The main disadvantage of the transabdominal approach is the need for two open laparotomies, one for cerclage and one for cesarean section. Postoperative bowel adhesion & longer hospitalization and recovery are also the disadvantages of open procedure[1]. Two possible disadvantages of interval procedures are first trimester miscarriages and post-procedure infertility. It would appear sensible to limit dissection of the paracervical tissues to minimize the possibility of adhesion formation in the pelvis. First trimester miscarriages are usually possible to manage expectantly or by surgical evacuation, as the presence of a suture does not prevent insertion of a suction canula large enough for this gestational age[1].

Some of the complications of transabdominal cerclage placement by laparotomy are; bleeding, visceral injury, loss of pregnancy and anesthetic risk none of which happened in our patient. Preterm labour, midtrimester rupture of membranes and intrauterine fetal death are challenging complications after transabdominal cerclage. In this situation either the suture needs to be removed or the pregnancy is terminated via hysterotomy. The other reported complications of transabdominal cerclage, such as suture migration, rectouterine fistula some years later uterine rupture and intrauterine growth restriction are rare. In cases of posterior knot, the suture may be removed via a posterior colpotomy[5].

The transabdominal approach is beneficial in women with short cervices of congenital origin or secondary to previous surgical procedures, and in those with severely lacerated cer¬vices due to obstetric trauma.

Potential advantages of transabdominal cerclage include higher placement relative to the level of the internal os, decreased incidence of slippage, and the ability to leave the stitch in place between pregnancies[3].

Laparoscopic surgical techniques have now increasingly re¬placed traditional abdominal approaches. Laparoscopic place¬ment of cervical cerclage has many theoretic advantages. The procedure can be safely performed before pregnancy, avoiding the need for surgery during pregnancy[1]., Dawood and Farqhuarson reported on a comparison of 21 preconceptual cases and 40 first trimester cases of open transabdominal cervical cerclage, concluding that preconception cerclage yields a more favorable pregnancy outcome[1]. This case is an eye opener in our set up for those patients with damaged cervix due to different reasons. This is the first case in this country to our knowledge. The future outlook will be laparoscopic approach which offers an opportunity to produce fewer adhesions, less drug administration and lower costs of treatment, faster recovery, less post -operative pain and shorter hospitalization[2].

CONCLUSIONS

Transabdominal cerclage is a promising option in the treatment of cervical insufficiency in selected group of patients. This case is an eye opener for the future of interval cervical cerclage both with laparotomy and laparoscopic approach in set ups like ours.

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