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IS SEXUAL REPRODUCTIVE HEALTH EDUCATION FOR UNIVERSITY STUDENTS NECESSARY? THE CASE OF UNDERGRADUATE FEMALE STUDENTS' AT MAKERERE UNIVERSITY, UGANDA

Joseph Oonyu[1], PhD

ABSTRACT

BACKGROUND: Studies on sexual and reproductive health education (SRH Education) in universities are rare, and yet there is evidence of knowledge gaps and misconceptions in sexual and reproductive issues among students. This study sought to assess the need for SRH Education in order to strengthen health knowledge and practices of Makerere University female students.

METHODS: Using stratified simple random sampling, a total of 450 questionnaires were administered, of which 398 (88.4%) were duly completed. Data were entered in to SPSS version 23. Descriptive statistics were used to describe data.

RESULT: The findings indicated that there was a high demand for SRH Education by 264 students (66.3%) to help them overcome barriers such as the inability to get reliable and accurate information, to empower them in decision making and to overcome inadequate education from parents and the university.

CONCLUSION AND RECOMMENDATIONS

It was concluded that SRH Education is still necessary for university students in order to deliver correct and adequate information about Sexual Reproductive Health (SRH). It was recommended that SRH Education modules be developed and delivered either as standalone modules or mainstreamed into the current curricula.

KEY WORDS: Sexual and reproductive health education, female university students

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1 Makerere University, Uganda

INTRODUCTION

Sexual and reproductive health education (SRH Education) gained additional importance and urgency from the 1980s with the onset of HIV/AIDS pandemic especially in developing countries4. It equips people with knowledge of sexual and reproduction concepts, appropriate attitudes and skills to make informed decisions and prevent reproductive health problems, and includes messages to encourage abstinence and promote the use of contraceptives by those who are sexually active, in an effort to prevent pregnancy, HIV/AIDS and other sexually transmitted infections (STIs). SRH education can reduce sexual risk behaviors by delaying age at first intercourse, reduce levels of sexual activity and increase contraceptive use16. It can also reduce misinformation, clarify values and reinforce positive attitudes, and strengthen decision-making and communication skills. Sexual and other reproductive health knowledge and practices can largely be influenced by the level of SRH Education received by the target groups4.

Many studies on Sexual Reproductive Health (SRH) reveal the lack of accurate information and the existence of many myths on contraception thus justifying the need for SRH education even at university level6, 7, 8. Moreover, the education received in secondary schools often is not sufficiently rigorous because of the perception that if younger children receive this education, it is likely to cause them into early sexual activity. Students therefore continue their education to universities without a good foundation of SRH Education, and therefore have incorrect information, negative self-worth, and weak capacities to make informed decisions, thus rendering them vulnerable.

Studies on sexual and reproductive health knowledge and practices of female university students are critical because of several reasons. The first is that they are part of the youth group (30 years and below) that constitutes the largest fraction of Uganda's population (75%) 18, 19. While this is expected to be a healthy period of life, many of them are less informed, less experienced, and less comfortable accessing reproductive health services such as contraceptives or counselling services particularly from older adults. Although they may have access to a lot of information from the social media, a lot of it is both confusing and less accurate thus exacerbating their information needs, which in turn can influence their contraceptive practices. Secondly, many parents consider these students to be young adults that do not require much of their guidance and counsel. Thirdly, many do not feel comfortable discussing SRH with these young women for cultural reasons4. Likewise, parents, health care workers, and educators frequently are unwilling or unable to provide complete, accurate, age-appropriate SRH information to them. This is due to their own discomfort about the subject or the false belief that providing the information will encourage sexual activity15. This lack of accurate information coupled with low access to contraceptives may increase the risk of sexually transmitted infections (STIs), HIV, unintended pregnancy, and other health consequences14. Fourthly, empowerment of the females would help fight against unwanted pregnancies, abortions and other challenges such as drop-out rates that are common among women. Fifthly, they are at the age of active sexual life, but often desire to delay becoming mothers. Children born to very young mothers are at increased risk of sickness and death. Lastly, because of the high prevalence of misconceptions about reproductive and sexuality issues arising from cultural related factors16, little is known about their knowledge and practices. Yet evidence exists that indicates that these youth are sexually active17, 12. The result is that these youth have low family planning utilization rates and limited knowledge about reproductive health in general, and they account for a higher proportion of the region's new HIV infections. This study carried out in 2017 sought to investigate the needs of female students of Makerere University, Kampala – Uganda, for SRH Education.

Specific objectives

The specific objectives of the study were to assess:

(i)   Establish their needs for Sexual and Reproductive Health Education by female undergraduate students

(ii)   Female students' perceptions of the type of SRH Education and how it should be delivered

(iii)   Ascertain what the female undergraduate students perceive to be the benefits of SRH Education

METHOD

A cross sectional descriptive survey design guided the study in order to gather information about the present condition, with emphasis on both describing and interpreting the desire for SRH Education among undergraduate female students with various characteristics3.

Makerere University is the oldest and largest university in East Africa with a student population of nearly 40,000 students of which 18,000 (45%) are female. The estimated undergraduate population is 36,000 students, most of whom reside in Hostels near the main University Campus, while the remainder reside in the 9 undergraduate Halls of residence. There are only three Halls of residence for undergraduate female students. The University operates a collegiate system of governance. There are seven colleges and one School, six of which participated in the study. The participant colleges are College of Agriculture and Environmental Sciences (CAES), College of Business and Management Sciences (COBAMS), College of education and External Studies (CEES), College of Humanities and Social Sciences (CHUSS), College of Natural Sciences (CONAS) and College of Veterinary Medicine, Animal Resources and Bio-security (COVAB) with an estimated population of 30,000 students, half of whom are females.

The estimated parent population of undergraduate female students from the sampled colleges is 15,000. Using sample size determination table9, this gave us a sample population of 450. However, only 398 answered the questionnaire giving a questionnaire return of 88.4%, a good response rate. Not all the questions in the questionnaires were answered by all respondents, thus accounting for the differences in the responses in the result section. The target population was stratified on the basis of college i.e. 75 per college and then on the basis of department to which the student belonged. The sample was then chosen randomly by choosing every 10th female student on generated random numbers. This is in line with the recommendation for the selection of a random sample from the sampling frame15.

The main survey instrument used in this study was the pretested valid and reliable questionnaire. Both the content validity index and reliability were established to be 0.84 and 0.89, which were considered above the expected 0.7 value1. Questionnaires were administered by both the researcher and two Research assistants. Questionnaires enable responses to be gathered in a standardized way, and is reasonably quick and easy to collect large information3, 2. The questionnaire for this study had five sections. Section one had items on background variables. Section two had items on students' needs for SRH Education, while Section three focused on their perceptions of the type of SRH Education and how it should be delivered. The last section obtained information on the perceived benefits of SRH Education to the students.

After gathering all the completed questionnaires from the respondents, data cleaning and coding was done. The collected data was fed into the Statistical Package for Social Scientists (SPSS) Version 23 software for analysis. The data was then presented using descriptive statistics in form of tables, bar graphs and pie charts.

RESULTS

Majority of respondents (67.8%) were aged 20-24 years followed by those who were 18-19 years (19.6%). The majority belonged to Anglican faith (37.2%) and Catholic faith (30.4%). They stayed mainly in the hostels (41.2%), came from home (37.4%) or stayed in the Halls of Residence within the University (13.8%).

The first objective was to assess the extent to which SRH Education was seen as necessary by the female undergraduate students. Figure 1 below summarizes the extent of need.

Table 1: Background Characteristics of Respondents

		Frequency	%
Age	18-19	78	19.6%
	20-24	270	67.8%
	25+	50	12.6%
Year of study	One	160	40.2%
	Two	112	28.1%
	Three	114	28.6%
	Four	12	3.0%
Religion	Catholic	121	30.4%
	Anglican	148	37.2%
	Islam	75	18.8%
	Born-again	38	9.5%
	Others	16	4.0%
Residence	Hall	55	13.8%
	Hostel	164	41.2%
	Home	149	37.4%
	Other arrangements	30	7.5%
College of study	Veterinary Medicine, Animal Resources and Bio-security	72	18.1%
	Agriculture and Environmental Sciences	57	14.3%
	Education and External Studies	60	15.1%
	Humanities and Social Sciences	68	17.1%
	Natural and Applied Sciences	68	17.1%
	Business and Management Sciences	73	18.3%

Do you require SRH Education?
% of respondents, n=398

■ Yes ■ No ■ Not Sure
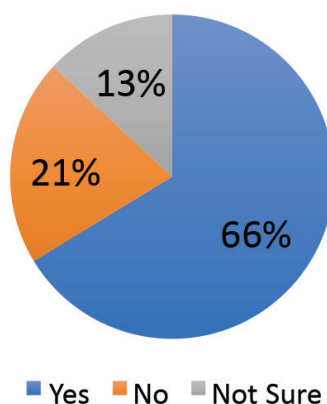
Figure 1: Extent to which the respondents perceived SRH Education to be necessary for them (proportion of respondents)

Seven out of every 10 students agreed on the need for SRH education and even suggested some topics in order of their priorities. About one fifth (21%) opposed it, while 13% were not sure. Overall, majority demanded formal and systematic SRH education be delivered to them. The demand was higher among the Year 1 students compared to students in other years (Table 2). The demand for SRH Education varied with Year of study.

Table 2: The need for Sexual and Reproductive Health Education by Year of Study (proportion of respondents), n=264

Year	Do You Require SRH Education?					
	Yes		No		Not Sure	
One	11 8	73.8 %	2 0	12.5%	2 2	13.8 %
Two	70	62.5 %	2 8	25.0 %	1 4	12.5 %
Three	70	61.4 %	3 0	26.3 %	1 4	12.3 %
Four	6	50.0 %	4	33.3 %	2	16.7 %
Overal l Total	26 4	66.3 %	8 2	20.6 %	5 2	13.1%

The leading topics that the respondents wanted SRH to include (Table 3) were: contraception and the whole range of issues around contraception (22.6%), psychological factors and religious beliefs including issues of abortion (17.5%), HIV/AIDS (12.6%), parental involvement (10.1%) and anatomical and physiological changes associated with SRH (99.5%).

Table 3: Major topics that the respondents wanted Sexual and Reproductive Health Education to Include (proportion of respondents), n=316

Topic to be included	Which one topic do you want included in SRH Education?	
	Frequency	Percentage
Contraceptives including Emergency contraception	68	21.4%
Life skills: self- esteem, decision making, SRH rights, communication	58	18.3%
HIV/AIDS and other STIs	40	12.6%
Parental involvement, rights and obligations	29	10.1%
Anatomical and Physiological changes of the body	36	9.5%
Abortion, ethics and related topics	25	9.2%
Cultural and religious influences	20	6.3%
Youth SRH friendly services	20	6.3%
Urological and gynecological disorders	15	4.7%
Others e.g. Cancers	05	1.6%
Total	**316**	**100.0%**

The majority of respondents wanted SRH Education to include contraceptives (21.4%), life skills such as self-esteem, decision making and communication (18.3%). Other suggested topics included HIV/AIDS and other STIs (12.6%), parental involvement in SRH issues (10.1%), anatomical and physiological changes (9.5%) and abortion, ethics and the rights of a woman. It was however noted that some of these topics are already being covered in the different course units under a wide range of programmes offered in the different colleges. For example, some of these topics are covered under Population Studies, Bachelor of Science prograpmme (Biological), Bachelor of Science with Education programme, Bachelor of Social Work and Social Administration to mention but a few, many respondents reported that the emphasis is on biological knowledge. They are not empowered with skills in decision making and communication for example.

Students were asked to identify the major topics to be covered under the SRH Education and how these topics should be delivered. On the approaches of delivery and incorporation into their programmes, they had varying views by year of study (Table 4 and Figure 2). Except for Year I students, the majority of respondents in Year II-Year IV preferred that the topics should be introduced by mainstreaming into existing programmes rather than be introduced as standalone courses. This is because they perceived the current programmes to be already overloaded and did not wish to have any student miss these topics. They also preferred SRH Education to be delivered through seminars, peer education activities and use of videos and other e-learning strategies.
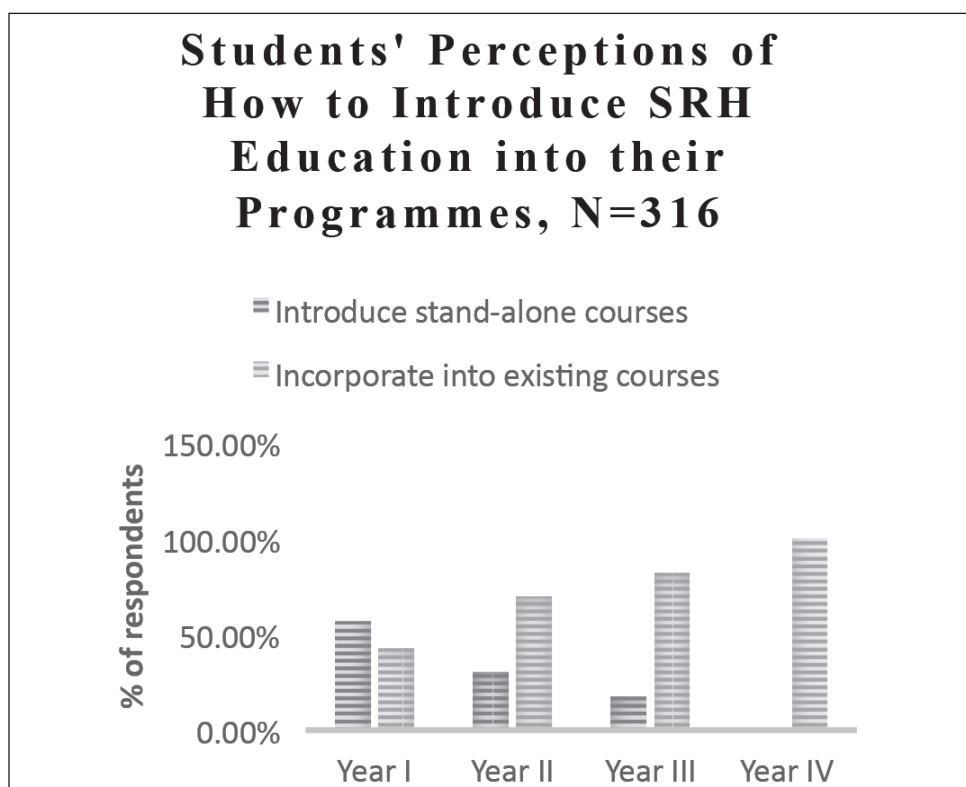
Figure 2: Approaches to be used in the Introduction of Sexual and Reproductive Health Education (% of respondents

Table 4: Identified Pedagogical Approaches to be used in the Delivery of Sexual and Reproductive Health Education by Makerere University Students, Uganda by Year of Study, n=316

Pedagogical/Andragogical strategies	Year of Study			
	Year 1	Year II	Year III	Year IV
Interactive lectures/Discussions	20 (14.3%)	10 (11.2%)	09 (11.4%)	01 (12.5%)
Seminars	40 (28.6%)	31 (34.8%)	30 (38.0%)	03 (12.5%)
Peer education activities	35 (25.0%)	30 (33.7%)	20 (25.3%)	01 (12.5%)
Use of videos & other e-learning strategies	40 (28.6%)	20 (22.5%)	26 (32.9%)	03 (37.5%)
Others	05 (3.6%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Total WHY TOTAL IS 316 & NOT 388/9???	140 (100%)	89 (100%)	79 (100%)	08 (100%)

Most of the students (28.5%) preferred pedagogical approach for all study years was the use of seminars followed by peer education activities (24.1%).

Table 5: Perceived benefits of SRH Education on recipients (proportion of respondents), n=389

Benefits	Proportion of respondents	
	Frequency	Percentage
Better and more accurately informed respondents on Sexual Reproductive Health; and reduced misconceptions	102	25.6%
Empowered with attitudes (self-esteem) and skills such as negotiation, decision making and communication	98	24.6%
Healthier respondents free from HIV/AIDS and other STIs, and other associated diseases	90	22.6%
A better understanding of body changes during growth	60	15.1%
Healthier relations with peers and adults	28	7.0%
Others e.g. greater parental involvement, better access to youth friendly services	20	5.0%
Total	389	100.0%

DISCUSSION:

The study of female university undergraduate students of Makerere University has demonstrated that SRH Education is necessary for university students. Since the 1980s, significant expansion occurred of formal education about HIV/AIDS, birth control, STIs and how to say no to sex among the youth worldwide but particularly in developing countries such as Uganda. Uganda adopted the Abstinence, Be Faithful and Use of Condoms (ABC) strategy to reduce the HIV prevalence among its population from the nearly 30% prevalence in the early 1980s to about 7.4% in the recent years[12]. SRH Education should occur throughout a student's schooling, with information appropriate to students' age, religion and cultural background and should go beyond the current focus on biological aspects of sex and reproduction, thereby neglecting attitudes, values and skills.

Some studies on Sexual Reproductive Health (SRH) have demonstrated the lack of accurate information and the existence of many myths on reproductive health, thus justifying the need for SRH education even at university level[6, 7, 8]. The lack of accurate information is exacerbated by the inadequate and poorly delivered SRH education in secondary schools[11,13]. Students therefore continue their education to universities without a good foundation of SRH Education, and therefore have incorrect information, negative self-worth, and weak capacities to make informed decisions, thus rendering them vulnerable.

Most students (264 or 66.3%) wanted more SRH Education to help them overcome barriers such as their inability to get reliable and accurate information, the fear and embarrassment associated with cultural and religious upbringing, and inadequate education from parents and the university faculty. Therefore, some of the factors contributing to students' poor knowledge of SRH include: the cultural context in the home and community, the church and religious teachings about sex and sexuality, as well as the school and teachers' perspectives and values. They perceived benefits of SRH Education to include better and more accurately informed university students, empowerment with skills such as negotiation, decision making and communication, healthier respondents free of STIs and other diseases associated with unprotected and reckless sex, and a better understanding of body changes, and healthier relations with peers among others. These young university women are faced with important decisions about relationships, sexuality, and sexual behavior which can impact their health and well-being for the rest of their lives.

From the study, it is concluded that SRH Education is necessary for university students because just over half of the female undergraduate students wanted more SRH Education.

The findings of this study have the potential to inform Makerere University community of the need to support SRH Education of its undergraduate students. Use of peer educators has been shown to be effective in many such interventions in other countries. Another potential avenue for improving sexual and reproductive health outcomes for young women is parent-child communication. However, most of Uganda's parents were not taught about sexual and reproductive health by their own parents or even in school, leaving them unable to pass on crucial knowledge to their own children. The discomfort many parents feel about talking to their children about sexuality further impedes their ability to provide guidance.

While this study is an important step in understanding the extent of demand for SRH Education by Makerere University female undergraduate students, it also leaves some questions open for future research. First, this study was conducted in only one Ugandan public university, which may not reflect the experiences of a nationally representative sample of female undergraduates. Hence, in order to generalize and validate the findings of this study, it is suggested that a similar study be conducted in other universities in Uganda. Secondly, a study is also required of male undergraduate students of Makerere University and other universities to complete the picture of SRH Education need among university students.

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OBSTETRIC REFERRALS AT SAINT PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE (SPHMMC): PRE-REFERRAL CARE AND APPROPRIATENESS

Mustefa Negash Abdella, MD[1], Jenberu Meskelu, MD, MPH[2], Alula M. Teklu, MD, MPH[1], Delayehu Bekele, MD, MPH[1]

ABSTRACT

BACKGROUND: Referrals between health care facilities is crucial in emergency obstetrics care to ensure appropriate level of care to women and newborns. The timely decision and appropriate pre-referral care will significantly affect maternal and perinatal outcome.

OBJECTIVE: The aim of our study was to assess the pre referral care and referral appropriateness of mothers referred to SPHMMC.

METHODS: A cross sectional study was conducted that involved all mothers referred to SPHMMC for obstetric emergency from January 25 to March 5, 2017. They were interviewed at emergency department and the pre-referral care given and the process of patient transfer was assessed using a structured tool. Data was entered cleaned and analyzed using SPSS Version 22. Descriptive statistics and Pearson correlation was used to present results assess the relationship between referral and arrival diagnosis.

RESULT: A total of 1080 mothers were transferred to SPHMMC from BEmONC centers during the study period. Majority of clients 718(65.5%) were from outside Addis Ababa and 362 (33.5%) of clients were from Addis Ababa. Prolonged labor, PROM, PIH and abortions constitute the top referral diagnosis accounting for 21.8%, 16.5%, 10.4% &9.9% in that order.
Two thirds (68.6%) of the clients were transferred without prior notifications to the hospital. Most (96.5%) of those patients transferred with prolonged or obstructed labor were transferred without attachment of their Partograph. With regards to the intervention provided at referring health facility 170 (72.3%) of prolonged/obstructed labors were transferred without intravenous access line; 90 (75.4%) of patients with premature rupture of fetal membranes were not given antibiotics before referral, 89 (79.5%) of preeclampsia/eclampsia cases were not provided with magnesium sulphate as seizure prophylaxis and of those laboring mothers diagnosed to have fetal distress on referral, 45 (60.8%) were referred without securing intravenous line for resuscitation.

CONCLUSION AND RECOMMENDATIONS: We found that most clients were coming from non-catchment health facilities without prior notification. In the majority of cases essential pre-referral care were not initiated at the referring facilities for those women with obstetric complications. BEmONC facilities need to be strengthened to offer the required medical interventions to save lives at the site and during transfer of patients.

KEY WORDs: BEmONC, CEmONC, SPHMMC, Ethiopia.

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INTRODUCTION

A referral system is the judicious transfer of patients from one care provider to another provider or level of care. Referrals between health care facilities are important in low-resource settings, particularly in maternal and child health, to transfer pregnant patients to the appropriate level of obstetric care1-3.

Maternal mortality continues to be a problem largely for poor women in low- and middle-income countries (LMICs) 2. Given that most maternal deaths occur during labour, delivery and the first 24 hours post-partum, an effective intra partum care strategy including emergency obstetric and newborn care (EmONC) services has been identified as a priority to reduce maternal deaths3-4.

Effective referral services are central to a program which aims to provide emergency obstetric care to save lives. It is known that reductions in maternal mortality and morbidity are not possible without an effective referral system for obstetric complications5. The capacity of different tiers of public sector health facilities in Ethiopia to function as EmOC facilities is varied, with some being Comprehensive emergency obstetric and newborn care (CEmONC) facilities, while others function as Basic emergency obstetric and newborn care (BEmONC) levels.

Given this variation, it is important that an effective referral system is in place to facilitate essential first line management at the first facility a mother attends, and efficient transfer to higher level care facilities when complications may necessitate. A dysfunctional referral system can contribute to a poor program impact on maternal and neonatal mortality outcomes. Referral can only be justified if the referral facility provides a reasonable level quality of care5. This study was conducted to assess the pre referral care and referral appropriateness of mothers referred to SPHMMC which is one of the tertiary referral hospitals in Addis Ababa.

METHODS AND MATERIALS: A cross sectional study design that employs interview and abstraction-based data collection was used. The study was done from August 2016 to March 30, 2017. Data collection was done from January 25 to March 5, 2017. Consecutive emergency obstetric cases referred to SPHMMC were taken for the whole one month. A total of 1080 patients presented to SPHMMC emergency obstetric unit in the specified time period and consenting to participate were interviewed. They were interviewed and their charts were reviewed and followed until discharge from the hospital for maternal and neonatal outcomes to be included in the second part of the study to be analyzed. Patients with lost charts, missed referrals and having prenatal care at SPHMMC and admitted to the ward electively were excluded from the study. Mid wife Nurses were trained, and data was collected using structured questionnaire. Data were collected on socio demographic characteristics, address of the participants, referring health facility, reason for referral, prior notification to the hospital, means of transportation on referral to SPHMMC, referral diagnosis, investigations done, treatments given before and during transfer, condition of the patient on arrival, arrival diagnosis and treatments given at SPHMMC. Data entry was also done side by side. The investigators were supervising the data collection process on daily basis.

The data were analyzed using the statistical package for social sciences (SPSS) version 22 computer software. Frequencies and cross tabulations were used to summarize descriptive statistics and, tables and graphs were used for data presentation. Ethical clearance was obtained from the institutional review board of SPHMMC.

RESULTS:

During the study period a total of 1080 obstetric patients were referred to the obstetric emergency unit. Among these 827(77.6%) were managed at SPHMMC hospital and 253(23.4%) patients were referred out due to reasons mostly lack of space. The mean age of the participants was 25.5±4.4; the youngest was 16 and the oldest 40 yrs.

Of the total referrals; 65.5% were from outside Addis Ababa mostly from surrounding Oromia region and 33.5% of clients were from Addis Ababa mostly from catchment health centers. Burayu and Sebeta are the two leading referring centers accounting for 16.2% and 15.5% of the total referrals respectively.

Basic investigations (blood group, HGB &HIV) were documented in the referral paper for 60% of clients. With this regard non-catchment BEmONC centers performed significantly better than the catchment centers (p-value<0.001).

Some sort of treatment given were mentioned on the referral paper for 75.6% clients. 75.6% of clients were transferred to SPHMMC in less than 1hr. The average time taken to transfer the patients was 1.98±.71hrs.

97.8% of laboring mothers in active phase of first stage were transferred without attachment of partograph. It is attached for 9.4% &1.1% of those from catchments and non-catchment centers respectively.
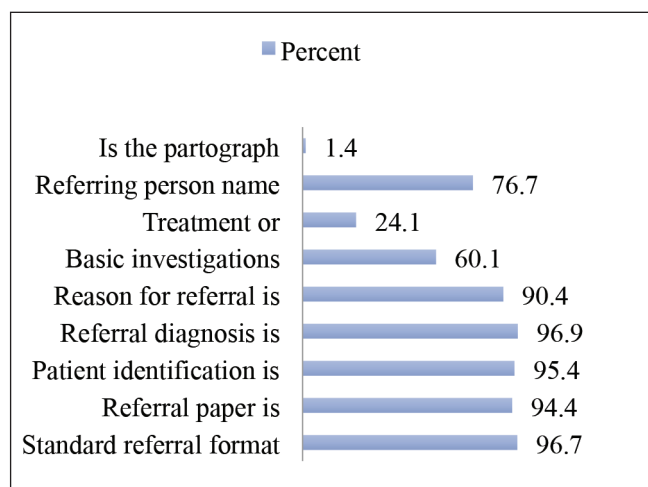
Figure 1. Referral form completeness of women referred to SPHMMC, Ethiopia

As shown in table 1, majority of the clients were referred due to lack of CEmONC and limited capacity of the health facility.

Table 1: Facility reason for referral of the patient

Reasons for referral	Frequency	Percent
Lack of blood	15	1.4
Lack of drugs and supplies	60	5.6
Lack of health personnel	22	2.0
No OR	19	1.8
Non-functioning OR	3	0.3
Beyond the capacity of health facility (no CEmONC)	944	87.4
Neonatal care is not available	10	0.9
Other	7	0.6

Only 339 (31.4%) of referrals were sent to SPHMMC with prior notification. 71.3% & 1.1% of the referred cases were sent with prior notification to the hospital from catchment and non-catchment health facilities respectively. 821(76%) of the patients were transferred to SPHMMC by public ambulances from the health facilities. However, 677(63%) of the ambulances had no resuscitation facilities.

Table 2: Mode of transportation of patients referred to SPHMMC

Modes of transportation	Frequency	Percent
Ambulance with resuscitation facilities	144	13.3
Ambulance without resuscitation facilities	677	62.7
Private vehicle	223	20.6
Own vehicle	36	3.3
Total	1080	100.0

The top 4 referral diagnosis were; prolonged /obstructed labor, premature rupture of the fetal membrane, PIH and abortion in that order. This is shown in table 3.

Table 3: Referral Diagnosis of patients coming referred to SPHMMC

Referral diagnosis	Frequency	Percent
Prolonged or Obstructed labor	235	21.8
Fetal distress	74	6.9
Severe Anemia	2	0.2
PIH/ Eclampsia	112	10.4
Abortion & related complications	107	9.9
Retained placenta	6	0.6
Fetal Malposition	56	5.2
APH	23	2.1
PPH	21	1.9
Septic patient	2	0.2
IUFD	15	1.4
Preterm labor	32	3.0
PROM	178	16.5
Ectopic pregnancy	7	0.6
Post term	83	7.7
Active first stage of labor	16	1.5
Previous Scar	14	1.3
Oligohydramnios	17	1.6
Twins Pregnancy	14	1.3
Other Diagnosis	66	6.1

Matching the referral diagnosis and intervention provided at referring health facility; 170 (72.3%) of prolonged/obstructed labors were transferred without intravenous access line; 90 (75.4%) of patients with premature rupture of fetal membranes were not given antibiotics before referral, 89 (79.5%) of preeclampsia/eclampsia cases were not provided with magnesium sulphate as seizure prophylaxis, those laboring mothers diagnosed to have fetal distress on referral 45 (60.8%) were referred without securing intravenous line for resuscitation & 4 (57%) of ectopic pregnancies were referred without intravenous line access. This is shown in figure 2 below.
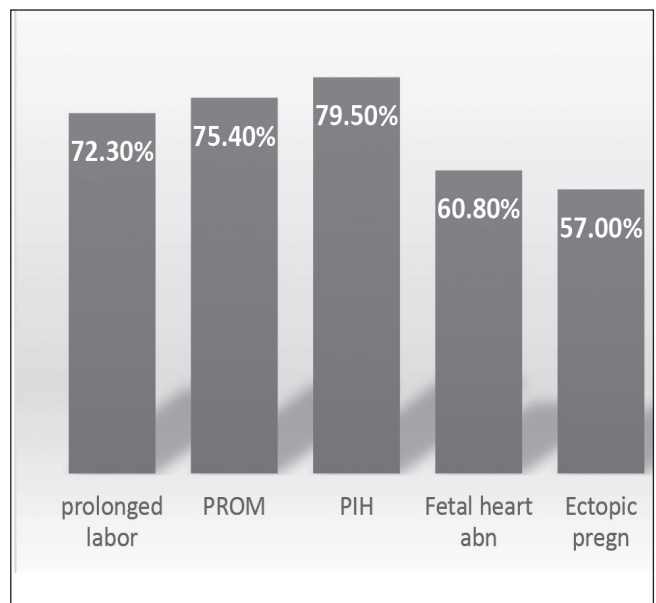
Figure 2: Proportions of referred patients not provided with the required intervention from referring BEmONC facility.

Table 4: Diagnosis on arrival to SPHMMC of clients (n=1080)

Arrival diagnosis	Frequency	Percent
Prolonged or Obstructed labor	426	39.4
Fetal distress	29	2.7
Severe Anemia	3	.3
PIH/ Eclampsia	130	12.0
Abortion & related complications	111	10.3
Retained placenta	11	1.0
PROM	143	13.2
Preterm labor	26	2.4
APH	28	2.6
PPH	15	1.4
Septic patient	1	.1
IUFD	17	1.6
Ectopic pregnancy	10	.9
Post term	44	4.1
Normal 3rd TM pregnancy	15	1.4
Oligohydramnios	10	.9
Hyperemesis	7	.6
False labor	7	.6
Others	47	4.4

The referral and arrival diagnosis correlates well (r=0.39, p=0.01). The majority of referrals were for delivery services 608 (80%). And of those gave birth at SPHMMC 77.3 % of them delivered by SVD; of which 71% were conducted at emergency obstetric unit.

Table 5: Mode of delivery of clients delivered at SPHMMC (n=608)

Modes of delivery	Frequency	Percent
SVD	470	77.3
Assisted breech delivery	5	0.8
Vacuum delivery	27	4.4
Forceps delivery	21	3.5
Cesarean section	85	14.0

DISCUSSION

This study shows that high numbers of referrals are made to the hospital beyond the managing its capacity which is shown by the high rate of referral out from the hospital due to lack of space to accommodate those referred in patients. This study also showed high numbers of delivery conducted at emergency obstetric unit.

In this study most referrals were from non-catchment BEmONC facility mostly from Burayu and Sebeta areas. These two centers are 15 and 20kms away from Addis Ababa. This delays the transfer and management of critical patients especially during the working hours due to high traffic jams in the streets of the capital. The high number of referrals from these two sites indicate that there is high demand for obstetric services and urges the concerned health bureau should avail CEmONC facilities in these areas so that cases benefit from better access and relieved from financial stresses[1,5].

Most referred mothers were for delivery services. The fact that most births were attended vaginally and most of them conducted at emergency outpatient unit indicating eminent delivery on referral of cases, may show lack of confidence to triage patients for referral by providers at BEmONC centers. All abortions were managed by MVA uterine evacuation. Attending normal delivery and uterine evacuation are the core BEmONC signal functions of the health centers which was found deficient in this study. Unavailability of CEmONC facility in the vicinity creates lack of confidence to the providers to keep laboring mothers at the centers. This is also shown in the study done by Austin et al in southern region of the country[6]. The above findings direct for the need of continuous support in the form of training, mentoring and supervision to providers at these specific sites and strengthening BEmONC facilities. In long run this study also directs for the need of CEmONC facility around these areas according to WHO and FMOH of Ethiopia standards[1,2,5,7,8].

The good thing shown by this study is that the referral recordings were well documented on the transfer of the patients and most referred mothers were transferred by ambulances and accompanying health professionals and this should be encouraged and continued[9,10].

The other gap identified in this study was the non-attachment of labor follow up chart partograph with the referral paper especially for those laboring mothers in active stage of labor. This may indicate some reluctance to use partograph for labor follow. WHO and FMOHE stressed on the utilization of partograph is one quality indicator of BEmONC services. It gives a summary of

progress of labor which is helpful for receiving facility for the next plan of management[1-4].

This study showed reason for referral of majority of the cases is due to limited capacity of the referring facility mainly unavailability of the CEmONC services in the centers and lack of drugs and supplies. This also directs to the need for well-equipped CEmONC facility in these specific areas.

Pre referral communication to the hospital was low as it is also a common problem seen in other studies[6, 7]. Most patients were referred to SPHMMC without notification and resulted in high referrals out from SPHHMMC posing tremendous stress on the staffs, the hospital and the patients in looking for space in other CEmONC facilities to accept those patients. Good numbers of BEmONC centers are sending patients without communication which needs more efforts to bring all centers refer patients with prior notification so that patient care is facilitated. Communication is also crucial for the referring health facility to get feedback and buffer the knowledge and skill with the hospital skilled providers[7].

In this study the top referral diagnosis were labor abnormalities, premature ruptures of the fetal membrane, hypertensive disorders of pregnancy and abortion in that order. These are the major reasons of referral for facilities lacking CEmONC services which is also a finding in other studies[8-10]. Obstetric complications like obstructed labor and PIH were missed more often by the health center providers while fetal distress & post term pregnancy diagnosis were over inflated when matched with the arrival diagnosis at SPHMMC. This study also showed there is low level of performing the seven BEmONC signal function by the providers in the referring health facilities which is shown by low levels of the needed interventions made to those referrals who need some medications according to FMoH guideline and WHO set standard for transfer of patients from one facility to another facility[1-3]. Pre referral interventions were quite below the minimum expectations. IV access was opened in less than one third of patients with prolonged/obstructed labour and antibiotics started in about 3% of the cases. In about 2/3rd of patients with

PIH, there was no intervention. Those with APH were also managed sub optimally. All these show a significant deficiency in delivering BEmONC signal functions before referral. The possible reasons may be diverse, but the problem needs to be addressed seriously to reduce maternal and neonatal morbidity and mortality. Gap of knowledge in providing care were also reported in other studies. Need for supportive supervision may improve these services[6,7,11]. The relatively good practice observed in this study is the access to the central circulation in patients with PPH (88%). But this is expected to be 100%, it should be improved.

CONCLUSIONS AND RECOMMENDATIONS

There was high referral of obstetric emergencies beyond the managing capacity of the hospital. Most referrals to SPHMMC were from non-catchment health centers where continuous coaching and support is not available. Referral paper contents were deficient in having ANC follow up investigations, partograph when necessary Abnormalities of labor, premature rupture of the fetal membrane, hypertensive disorders of pregnancy and abortion are the main reason for referrals of patients which shows more demand of CEmONC facilities particularly at surrounding health facility especially for Burayu and Sebeta area. As there was suboptimal performance of the BEmONC signal functions, linkage should be created between the referring BEmONC and SPHMMC for mentoring and giving continuous support and feedback for the centers.

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CONFLICT OF INTEREST

The authors declare no conflict of interest for this study

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MATERNAL NEAR MISSES AND DEATH IN SOUTHERN ETHIOPIA: A RETROSPECTIVE STUDY

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ABSTRACT

BACKGROUND: Globally, maternal deaths declined by 44 percent between 1990 and 2015, however it remains unacceptably high in sub-Saharan Africa. In Ethiopia, around 13, 000 of women and 84,437 neonates died annually in 2013. Hence, this study assessed the magnitude of maternal near misses and death in southern Ethiopia.

METHODS: An institution based retrospective cross-sectional study design was conducted from October, 1 to 30, 2016. All mothers registered with pregnancy related complication during August 2014 to September 2016 were included in the study. World health organization maternal near misses' tool were used to collect the data. SPSS version 20.0 was used to calculate various indicators.

RESULT: In this study, 15,059 cases attended obstetric care service during the study period. Among total admission 591 were identified with severe maternal outcomes. The main causes for admission were severe preeclampsia (51.8%) followed by postpartum hemorrhage (24.9%). Out of the total severe maternal outcomes 90 (15.2%) end up with maternal death while the rest (84.8%) were near-misses. One hundred seventy (28.8%) of newborn died during delivery. In the current study, the total maternal near misses and maternal mortality ratio was 33.3 per 1000 live birth and 59.7 per 100,000 live births respectively. In addition, sever maternal outcome and total near-misses ratio to maternal death were 39.2 per 1000 live birth and 5.57:1 respectively.

CONCLUSION AND RECOMMENDATIONS: A significant percentage of women were near misses and suffered from life threatening conditions. It is highly advisable to use an assessment guide protocol and documentation.

KEYWORDS: Ethiopia, Maternal Near Misses

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BACKGROUND

Globally, maternal mortality ratio declined by 44 percent from 385 to 216 deaths per 100,000 live births between 1990 and 20151, however it remains unacceptably high in sub-Saharan Africa2,3,4. Access to quality care during pregnancy, child birth and postnatal seems to be the crucial factor in explaining the disparity in maternal mortality and morbidity between the developing and the industrialized world5,6,7.

Sub-Saharan Africa is the most vulnerable region in the world and 99% of all pregnancy related deaths occur in developing countries1,2. Out of 302, 000 global maternal deaths in 2015, sub-Saharan Africa alone account for 66% (201, 000), followed by southern Asia (66, 000)8.

In Ethiopia, around 13, 000 of women died annually and maternal mortality ratio declined from 1400 in 1990 to 420 per 100,000 live births in 20137. While, the country has been making progress over the past two decades on maternal health; still significant obstacles in terms of access to and provision of obstetric care services, particularly in rural areas9,10.

A maternal near misses and death audit delineates their underlying health, social and economic contributory factors7,8. In the countries with significant number of maternal deaths, health facility records are usually deficient and the causes of some maternal deaths in obstetric registers are ill defined5,6,7,11. The review of maternal death cause provide evidence of where the problem in overcoming maternal deaths may lie, produce analysis of what can be done, and highlight key areas requiring recommendation1,5,11. Now days, near misses audits have been increasingly used to improve the quality of obstetric care in resource limited countries10,12,16. Hence, this study assessed the magnitude of near misses and maternal deaths in Hawassa University comprehensive specialized and Yirgalem hospital.

METHODS

An institution based retrospective cross-sectional study design was conducted from October, 1 to 30, 2016. The study was conducted in Hawassa University Comprehensive Specialized and Yirgalem hospitals, located in the Sidama zone, Southern Nation Nationalities and People Regional State.

The medical record of two fiscal years (August 2014 to September 2016) was reviewed and those who fulfill the criteria were evaluated independently. All mothers registered with pregnancy related complications who had charts with complete information during the study period were included. A total of 15,059 cases were admitted to the hospitals during the study period and more than half 8, 457 of them were from Hawassa University Comprehensive Specialized hospital. Among the total cases 591 near misses cases were reviewed in detail by using world health organization maternal near misses tool17.

All maternal near misses criteria and indicators were evaluated. Near-miss events, maternal deaths, severe maternal outcome, admission to intensive care unit, critical interventions taken and all other world health organization inclusion criteria for baseline assessment of quality of care were incorporated17.Cases was defined according to potentially life-threatening conditions including severe postpartum hemorrhage, severe preeclampsia, eclampsia, sepsis and ruptured uterus; whereas organ or system failure was discussed depending on certain clinical criteria [21]. The ratio of maternal near misses to maternal deaths and indicators were calculated using SPSS version 20.0.

RESULTS

Totally fifteen thousand fifty-nine cases (15,059) attended obstetric care service in both hospitals. Among these cases, 591 (3.92%) of them encountered severe life-threatening conditions. Most of the women 458 (77.5%) with severe life threaten conditions were from Yirgalem Hospital. About half of the respondents 284(48.1%) were aged between 25-34 years and are residing in rural community. The mean age of the respondents was 24.89 (SD +4.99) years old. Nearly half (46.5%) of participants were protestant; majority (65%) were Sidama ethnicity; and almost all (98.8%) were married. More than two thirds of the participants and their partners were able to read and write. Most of the respondents 531(89.6%) had antenatal care follow up (Table 1).

Table 1: Socio-demographic characteristics, southern Ethiopia, 2014-2016

Variables [n=591]	Frequency	Percent
Age in years		
15-24	255	43.1
25-34	284	48.1
35 and above	36	6.1
Not registered	16	2.7
Religion		
Protestant	275	46.5
Orthodox	135	22.8
Muslim	92	15.6
Catholic	53	9.0
Not registered	36	6.1
Ethnic group		
Sidama	384	65.0
Oromo	108	18.3
Amhara	61	10.3
Wolaita	28	4.7
Others1	10	1.7
Health Facility		
Yirgalem hospital	458	77.5
Hawassa university comprehensive specialized Hospital	133	22.5
Marital Status		
Married	584	98.8
Cohabitation	3	0.5
Single	2	0.3
Not registered	2	0.3
Mothers educational level		
Able to read and write	225	38.1
Cannot read and write	197	33.3
Primary (1-8)	108	18.3
Secondary (9-12)	34	5.8
Diploma and above	1	0.2
Not registered	26	4.4
Partner's educational level		
Able to read and write	217	36.7
Cannot read and write	129	21.8
Primary (1-8)	112	19.0
Secondary (9-12)	88	14.9
Diploma and above	19	3.2
Not registered	26	4.4
Parity		
Primipara	191	32.3
Multipara	399	67.5
Not registered	1	0.2
Residence		
Rural	308	52.1
Urban	140	23.7
Suburban	142	24.0
Not registered	1	0.2
Antenatal follow up		
Yes	531	89.8
No	58	9.8

1=Guraghe, Kambata, Hadiya, Siltie and Konso

Maternal severe complications

In this study the main causes for admission were severe preeclampsia (51.8%) followed by postpartum hemorrhage (24.9%). However, eclampsia (70%) and sepsis or sever systemic infection (41.6%) stand the leading complications that occurred after 12 hours of admission (Table 2).

Table 2: Maternal complications lead to near-misses in two hospitals, 2014-2016

Variables [n=591]	Frequency	Percent
Sever postpartum hemorrhage		
Not yet occurred at all	444	75.1
Was present at arrival or within 12 hours of arrival	147	24.9
Sever preeclampsia		
Not yet occurred at all	272	46.0
Was present at arrival or within 12 hours of arrival	306	51.8
Occurred after 12 hours of arrival	13	2.2
Eclampsia		
Not yet occurred at all	504	85.3
Was present at arrival or within 12 hours of arrival	26	4.4
Occurred after 12hours of arrival	61	10.3
Sepsis and sever systemic infection		
Not yet occurred at all	555	93.9
Was present at arrival or within 12 hours of arrival	21	3.6
Occurred after 12 hours of arrival	15	2.5
Ruptured uterus		
Not yet occurred at all	548	92.7
Was present at arrival or within 12 hours of arrival	39	6.6
Occurred after 12hours of arrival	4	0.7

Over all outcome of mothers and newborns

Among total admission (15,059 cases) 591 were identified as severe maternal outcomes. Out of total severe maternal outcomes 90 (15.2%) end up with maternal death while the rest (84.8%) were near-miss cases. Similarly, 400 (67.7%) of newborns were alive at birth and 170 (28.8%) died during labor and information about newborns were not recorded in about 3.5% cases. In the current study, the total maternal near misses and maternal mortality ratio was 501/15,059 (33.3/1000 live birth) and 90/15059 (59.7/10000 live birth) respectively. In addition, severe maternal outcome ratio

was 591/15059 (39.2/1000 live birth). Total near-misses to maternal death ratio were (5.57:1). The maternal mortality index (maternal death to mothers with life threatening conditions) was 90/591 (15.2%).

Critical interventions undergone during management of near-miss cases

Out of the total near-misses case only 102 (17.3 %) undertaken critical intervention to manage the problem. Among these interventions; blood transfusion (57.8%) and admission to intensive care unit (20.6%) were some of them. Majority of the critical interventions were carried out within the first 12 hours of admission. More than half (52.5%) of blood transfusion occurred after 12 hours of arrival to health facilities (Table 3).

Organ dysfunction and maternal death

Among the total maternal near-misses, 261 (44.2%) developed different organ failure that is considered as highly life-threatening conditions. Of these conditions, 147 (56.3%) occurred before or within 12 hours of admission. The most common organ dysfunctions were respiratory (32.2%), cardiovascular (29.9%) and renal dysfunction (20.7%) (Table 4). About 15.2% of total cases died while on the way to health institution to seek care. Among the total death 54 (60%) happened at arrival or within 12 hours of hospital stay, while 36 (40%) of them died after 12 hours of hospital arrival. In the current study the leading causes of maternal death were: obstetric haemorrhage (39%), anaemia (28%), hypertensive disorders (16%), medical or surgical complications (7%), abortion (5%) and pregnancy related infections (5%).

Table 3: Critical intervention used to manage near-misses case in two hospitals, 2014-2016

Variables [n=591]	Frequency	Percent
Use of blood product		
Not yet occurred at all	518	87.6
Was present at arrival or within 12 hours of arrival	28	4.7
Occurred after 12hours of arrival	31	5.2
Information was not available	14	2.4
Laparatomy		
Not yet occurred at all	562	95.1
Was present at arrival or within 12 hours of arrival	5	0.8
Occurred after 12hours of arrival	3	0.5
Information was not available	21	3.6
Admission to intensive care unit		
Not yet occurred at all	549	92.9
Was present at arrival or within 12 hours of arrival	18	3
Occurred after 12hours of arrival	3	0.5
Information was not available	21	3.6

Table 4: Organ dysfunction occurrence among maternal near-misses in two hospitals, 2014- 2016

Variables [n=261]	Frequency	Percent
Cardiovascular dysfunction		
Was present at arrival or within 12 hours of arrival	38	14.6
Occurred after 12 hours of arrival	40	15.3
Total	**78**	**29.9**
Respiratory dysfunction		
Was present at arrival or within 12 hours of arrival	49	18.8
Occurred after 12 hours of arrival	35	13.4
Total	**84**	**32.2**
Renal dysfunction		
Was present at arrival or within 12 hours of arrival	37	14.2
Occurred after 12 hours of arrival	17	6.5
Total	**54**	**20.7**
Hepatic dysfunction		
occurred at arrival or within 12 hours of arrival	5	1.9
Occurred after 12hours of arrival	-	-
Total	**5**	**1.9**
Neurologic dysfunction		
Occurred at arrival or within 12 hours of arrival	8	3.1
Occurred after 12hours of arrival	-	-
Total	**8**	**3.1**
Uterine dysfunction		
Occurred at arrival or within 12 hours of arrival	10	3.8
Occurred after 12hours of arrival	22	8.4
Total	**32**	**12.2**

Condition of women at arrival

Most of the women 489 (82.7%) gave birth after the hospital's arrival. More than two thirds 363 (74.2%) of them stayed more than 3 hours until they gave birth. Of the total cases 163 (27.6%) were n referred from other health institutions (Table 5).

Table 5: Conditions of women at hospitals arrival, 2014- 2016

Variables [n=591]	Frequency	Percent
Delivery occurred before arrival at hospital		
Yes	95	16.1
No	489	82.7
Not registered	7	1.2
Delivery within 3 hours of hospital arrival		
Yes	221	37.4
No	363	61.4
Not registered	7	1.2
Laparatomy done within 3 hours of hospital arrival		
Yes	8	1.3
No	576	97.5
Not registered	7	1.2
Woman referred from other health facility		
Yes	163	27.6
No	415	70.2
Not registered	13	2.2
Woman referred to other hospitals		
Yes	69	11.7
No	515	87.1
Not registered	7	1.2

Interventions provided for the specific conditions of women

Among the total of 147 postpartum hemorrhage cases, 74.8% and 73.4% of them received prophylactic and therapeutic oxytocin respectively. Besides, 35.4%, 23.1%, and 21.9% were managed with ergometrine, misoprostol and manual removal of placenta respectively. Among 43 cases with uterine rupture, 83.7% had undergone hysterectomy (Table 6).

Table 6: Interventions provided for specific conditions of women in two hospitals, 2014-2016

Variables	Frequency	Percent
Oxytocin used to prevent postpartum hemorrhage (n=147)		
Yes	110	74.8
No	36	24.5
Not registered	1	0.7
Other uterotonic drugs used to prevent postpartum hemorrhage		
Yes	83	56.4
No	63	42.9
Not registered	1	0.7
Oxytocin used to manage postpartum hemorrhage (n=147)		
Yes	108	73.4
No	38	25.9
Not registered	1	0.7
Ergometrine used to treat postpartum hemorrhage (n=147)		
Yes	52	35.4
No	94	63.9
Not registered	1	0.7
Misoprostol used to treat postpartum hemorrhage (n=147)		
Yes	34	23.1
No	112	76.2
Not registered	1	0.7
Removal of retained products to treat postpartum hemorrhage		
Yes	32	21.9
No	114	77.6
Not registered	1	0.7
Artery ligation was done to prevent postpartum hemorrhage (n=147)		
Yes	1	0.7
No	145	98.6
Not registered	1	0.7
Hysterectomy to treat postpartum hemorrhage (n=43)		
Yes	36	83.7
No	7	16.3
Not registered	0	0
Abdominal packing to treat postpartum hemorrhage (n=147)		
Yes	10	6.8
No	136	92.5
Not registered	1	0.7
Prophylactic antibiotics used for cesarean section (n=127)		
Yes	98	77.2
No	23	18.1
Not registered	6	4.3
Therapeutic parenteral antibiotic used for treatment (n=141)		
Yes	114	80.9
No	21	14.9
Not registered	6	4.3
Corticosteroids used for fetal lung maturity (n=112)		
Yes	12	10.7
No	100	89.3
Magnesium sulphate used to manage convulsion (n=356)		
Yes	339	95.2
No	10	2.8
Not registered	7	2
Other anticonvulsants used to treat convulsion (n=356)		
Yes	124	34.8
No	225	63.2
Not registered	7	2

DISCUSSION

Material of this study was adapted from "evaluating the quality of care for severe pregnancy complications: the world health organization near-miss approach for maternal health, 2011". As per this document, conducting maternal death and near-miss reviews is very essential step to improve quality of maternal care. Within two fiscal year (2014 to 2016), 15, 059 women attended obstetric care unit in both selected hospitals. Among all women who attended the obstetric units, 3.9% suffered from life threatening conditions. Of which 90 (15.2%) ended up with maternal death. This implies that maternal near-misses and maternal mortality ratio were 33.3/1000 live birth and 597/100,000 live birth respectively with a maternal near misses to maternal mortality ratio of 5.57:1. This finding is consistent with the studies conducted in Syria[18] and Tanzania[19] in which maternal near misses and maternal mortality ratio was 32.9/1000 and 587 /100,000 live births respectively. The finding of the current study is higher than the finding of studies conducted in rural hospital of Sudan[20], Mozambique[21], Iraq[12] Pakistan[22] and Brazil[23]. However, it is lower than other studies conducted in Ethiopia[11,24]. The possible reason for

this disparity could be difference in the background of the study population, difference in the time, duration and sample size of the study. For instance, the sample size of the studies done in Sudan and Pakistan is much higher than our sample size and involvement of many health facilities in the study of Mozambique is also another possible explanation. The ratio of maternal near misses to maternal death of the recent study is in line with the study done in Sudan (5.8:1)25.

In the current study the main causes for maternal near-misses were severe preeclampsia, eclampsia, sepsis, postpartum hemorrhage and uterine rupture. This is in line with the studies conducted in Ile-Ife Nigeria26, Sudan25, Pakistan22, Nigeria27 and Debremarkos27. Similarly, this study identified some direct and indirect causes of maternal death including obstetric hemorrhage, anemia, hypertensive diseases, abortion and/ectopic pregnancy and pregnancy related infection. This finding is consistent with the studies done in Nigeria27 and Sudan25. Appropriate and standardized health care is the best way to avert maternal death which could occur due to third delay. Thus, critical intervention was defined as appropriate and standardized care for women who are suffering from life threatening complications. However, many literatures did not assess the way of intervention to track life threatening complications of obstetrics. In our study only 17.3% of total cases undertaken critical care and only 20.6% were admitted to intensive care unit. For instance, among cases that needed blood transfusion 52.5% were provided after 12 hours of hospital stay. The management delays found in this study went in line with study of Mozambique in which more than one fourth of near miss cases treatment was not started immediately21. In this study comparisons of cases were not undertaken and only focused on descriptive findings rather than analytical.

CONCLUSIONS

In the present study significant percentage of women were near misses and suffered from life threatening conditions. Severe preeclampsia, eclampsia, sepsis, and postpartum hemorrhage were identified as the main causes for maternal near-misses. Furthermore, obstetric hemorrhage, anemia, hypertensive diseases, abortion and ectopic pregnancy were identified as the main contributing factors for maternal death in the current study. It is highly advisable to use an assessment guide protocol and improve documentation. Further study needs to be conducted to identify determinant factors of maternal near misses and death

DATA AVAILABILITY

All data and materials in this manuscript could be deposited in publicly available repositories

CONFLICTS OF INTEREST

The authors declare that they have no competing interests

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LEVEL AND FACTORS ASSOCIATED WITH THE USE OF LONG ACTING REVERSIBLE CONTRACEPTIVE METHODS AMONG MARRIED WOMEN IN SHONE TOWN ADMINISTRATION, HADIYA ZONE, SOUTHERN ETHIOPIA.

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ABSTRACT

BACKGROUND: There was low utilization of long acting reversible contraceptive method in developing countries. There are diversity factors associated with use of long acting reversible contraceptive method. Currently many married women prefer to use short acting rather than long acting contraceptive method.

OBJECTIVES: To assess level and factors associated with use of long acting reversible contraceptive method among married women in Shone Town, Hadiya Zone, Southern Ethiopia, from Jan 26 – Feb 05 /2018.

METHODS: Community based cross-sectional study was employed on randomly selected 576 reproductive age married women. All married women who lived in Shone Town for more than 6 months and those fulfill the inclusion criteria were included. Data were collected by using pretested questionnaire and entered to Epidata version 3.0 and exported to SPSS version 20 for further analysis. Frequencies, proportion, and summary statistics were used to describe the study population in relation to relevant variables and presented in tables. Binary Logistic regression analysis was carried out to identify factors associated with long acting reversible contraceptive method.

RESULT: The overall long acting reversible contraceptive method use in Shone Town was 164(29.2%). History of LARC use [AOR = 3.58; 95%: CI=2.27-5.64)], discussion with health care provider on LARC in last 6 month [AOR=2.85; 95%CI (1.65-4.90)], high knowledge of LARC method [AOR= 2.86; 95: CI (1.69-4.84)], moderate knowledge of LARC method [AOR=2.68; 95: CI (1.60-4.51)] and positive attitude towards LARC [AOR=2.63; 95%: CI (1.71-4.04)], to be associated with the LARC use.

CONCLUSION: The level of long acting reversible contraceptive methods in Shone Town was low. History of LARC use, discussion with health care provider on LARC in last 6-month, knowledge of LARC method and Attitude towards LARC were found to be statistically significant predictors of the outcome variable this study.

KEYWORDS: Long acting reversible contraceptive method, level, factors, Shone, Ethiopia.

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INTRODUCTION

Contraceptives are used by the majority of married women in almost all regions of the world. In 2015, 64% of married women of reproductive age worldwide were using some form of contraception. IUD and Female sterilization are the two most common methods used by married women worldwide: in 2015, 19% of married women depend on female sterilization and 14% used IUD. Short-term and reversible methods, such as the pill, injectable and male condom, are more common than other methods in Africa and Europe whereas LAPMs, such as sterilization, implants and the IUD, are more common in Asia and Northern America.

The total fertility rate of Ethiopia is 4.6 children per women, population growth rate is estimated at 2.7% per year, and contraceptive prevalence rate is 36%, with 35% using modern methods and 1% using traditional methods. Implants, IUD and female sterilization are the least used methods of modern contraceptive each accounting 8, 1.5 and less than 1 % respectively. Current use of modern contraception SNNPR for married women is 40% and prevalence of LARC use in region is 9.3%, implants 8% and IUCD 1.3%. The overall the percentage of women who are currently using any method of contraceptive for SNNPR region is 39.9%1.

Factors found to be associated with use of contraceptives vary. These include educational level, living area, male involvement, women partner involvement2,3 age, level of knowledge4,attitude, misconception and myths, education5 fear of side effects, fear of fertility affect, attitude6, information, desire more child, previous exposure, husband discussion7,8, convenience, socio-demographic, abortion, decider of using mother, lack of counseling, accessibility, discussion with health provider on LARC3,9,10. These factors go a long way to influence the type of contraceptive one decides to use and actually use. There are various factors related to factors affecting use of LARC.

However, limited study was done in use of long acting reversible contraceptive method among reproductive age currently married women rather studied in long acting and permanent contraceptive method among reproductive age married women.

This study assessed the use of LARC and factors such as socio-demographic, reproductive, awareness, knowledge and attitude related factors toward LARC factors that influence the use of contraceptives in Shone town administration, SNNPR. In addition, this study was focused on those not addressed in the other study that of wealth index and the same sex composition of child. Also, this study tried to clarify various factors related to factors associated with the use of LARC.

METHOD

Study Area and Period

A community based cross-sectional study design was conducted to collect data from 576 women's January 26/2018 – February 26 /2018 in Shone town, Hadiya Zone southern Ethiopia. Shone town is one of the city administrations in Hadiya Zone Southern Ethiopia which is 76km form Hossana capital of the zone, 114km from Hawassa, and 334km from Addis Ababa. The town has one primary hospital, one health center, 6 health posts, 22 health extension workers and 146 health professionals. All of the health facilities were providing modern contraceptive methods.

Sample size and sampling procedure

Sample size was determined by using both single and double population proportion formula both objectives. The following assumptions were used to calculate sample size for the first objective: 95% confidence level (1.96), 5% margin of error, and proportion (P) of the long acting contraceptive utilization 13.1% from similar study8. Accordingly the sample size was calculated by using the formula: n= (z (⎰/2))2p(1-p)/d2 and the sample size with become, n = 192.

Sample size for the second objective was determined using double population proportion formula using Epi-info software version 7(table 1).

Accordingly, the final sample size required to address the objectives of the study was 576.

There are six kebeles in Shone Town; of them three namely; Arencha, Lalogeribe, and Lenicera kebele were randomly selected from Shone Town. Households were taken from the log book of urban health extension workers of respective Kebeles, and a total of 9720

households were listed. Systematic random sampling was implemented to select the households involved in the study. Every 17th households in the Kebele were included in the study using the first selected household as a reference. In cases of selected household with more than one eligible respondent, only one respondent was chosen by lottery method. In cases where no eligible participant identified in the selected household, the data collectors have gone to the next household to the right direction until they got eligible women for face to face interview.

The data was collected by using through face to face interview by using interviewer- administered structured questionnaire and contains socio-demographic and economic (25 items), reproductive characteristics (8 items), history of LARC use, awareness and misconception of LARC (7 items), knowledge and attitude about LARC (12 items) and use of LARC (2 items). The instrument was pretested in Jariso kebeke East Badawacho Disrict among 29 women before actual data collection and few modifications were made.

Operational Definition

Knowledge: - Married women's knowledge was measured by the total number of correct answers to 8 items on knowledge with a minimum score of 0 and maximum of 8. It was categorized based on the percentage of knowledge score of respondents. It was categorized as "high knowledge"; those who knew 70% and above, "moderate knowledge"; those who knew 50 - 70% and "low knowledge" those who knew less than 50% of the knowledge questions12.

Attitude: - Measured as Positive attitude: Those who scored above mean to the correct answers from attitude measuring LARC questions. Whereas Negative attitude: Those who scored mean and below to the correct answers11,12.

Data management and analysis

The data was checked for completeness and consistency, and entered to Epidata software version 3.0 then exported to SPSS version 20 for further analysis. Descriptive statistics was used to present the frequencies, proportion and summary statistics. Multivariable logistic regression analysis was carried out to control

possible confounders and identify factors independently associated with LARC use. Bivariate analysis was carried out to see association of each independent variable with the LARC use. Those variables with p-value less than 0.25 included in multivariable logistic regression analysis. Finally, variables with p-value less than 0.05 in multivariable logistic regression analysis considered as independently significant association with LARC use. Odds ratio was used to determine the strength of association with LARC use.

Ethical consideration

The study was approved by the Haramaya University, College of Health and Medical Sciences Institutional Health Research Ethics Review Committee (IHRERC). The permission and consent were obtained from Southern Nations Nationalities and Peoples Regional Health Bureau, Hadiya Zone, Shone town administration Health office. An informed written and signed consent was obtained from all subjects. Privacy and confidentiality of responses was maintained.

RESULT

Socio-demographic and economic characteristics
 A total of 561 were included giving a response rate of 97%. The median age of participants was 30 (SD ±6.56, and ranges from 19-48 years old). The majorities of respondents 477(85%) were Hadiya in Ethnicity. Most 448(79.9%) of respondents were protestant in their Religion. In regard to their education 126 (22.5%) of married women were never attend formal education. 301(53.7%) attended primary education, and (23.8%) attended secondary and above educational level. Nearly half 275(49%) of respondents who were house wife. Near to half 268 (47.8%) of participants who had a wealth index of lowest quintile (Table 2).

Majority of married women 479 (85.4%) were with family size ≥4 children. From total respondents of married women 352(62.7%) had number of living children <4 children. Overall, 529(94.3%) of participants were desire to having less than four children in the future. Around three-fourth 415(74%) of the study participants were decide on the number of children together husband and wife. Overall, more-than two-third 69.5% of currently Married women discussed about family planning with

their husband. Four hundred sixty-six (83.1%) had no history of abortion.

Majority 489 (87.2%) of respondents had heard information about LARC. Two hundred thirty (39.5%) got the information from health worker, 9.3% from Radio, 11.8% from television, 20.5% from friends and 7.5% from husbands. Three hundred forty seven (61.9%) of married women discussed with health care provider on LARC in last 6months.

Among study participants 220 (39.2%) 24(4.3%), and 196(34.9%) had history of LARC, IUCD, and implants utilization respectively. Moreover, currently married women who did not use LARC were because 113(20.1%) fear of side effect, 85 (15.2%) rumors of they are not good, 49(8.7%) other important person influence, 49(8.7%) not my preferred method, 59(10.5%) to have more child, 66(11.8%) husband disapproval and 35(6.2%) fear of infertility.

Knowledge and Attitude Related Characteristics of Respondents

Half 297(52.9%) of married women were aware of that IUCD can prevent pregnancies for 10 years. Near to three fourth 413(73.6%) of respondents were not agree IUCD is good for female at risk of acquiring Sexual Transmitted Infection. In this study, 400(71.3%) and 272(48.5%) of participants were aware of that IUCD has no influence on sexual intercourse and it results in immediate pregnancies after removal respectively. More than one fourth 154(27.5%) of the currently married women were aware of that IUCD cannot result cancer. In this study, 359(64%) and 351(62.6%) knew that implant can prevent pregnancy for 3-5 years and it require minor surgical procedure for insertion and removal respectively. Majority 299(53.3%) of the married women knew that implants result in immediate pregnancy after removal (Table 3).

A large number of married women beliefs that implant can cause irregular bleeding and its insertion and removal is very painful. A major number of married women beliefs that IUCD insertion can result was shame and prevent from doing normal activities (Table 4).

Long Acting Reversible Contraceptive Method Utilization Characteristics

The overall prevalence of long acting reversible contraceptive methods was 164(29.2%) (95% CI 25.7%-33%). Majority of married women were using 120(21.4%) implants and 44(7.8%) IUCD. Moreover, 104 (18.5%) of currently married women not using LARC (Figure 1).

Factors Associated with Use of LARC

The odds of married women who had history of LARC use were 4 times [AOR= 3.58; 95% CI (2.27-5.64)] more likely to use LARC when compared with those who had not history of LARC use. Those currently married women who had discussed with health care provider about LARC in last 6months were 3 times [AOR=2.85; 95%CI (1.65-4.90)] more likely to use LARC than married women who had not discussion with health care provider about LARC in last 6months. Those having high knowledge and moderate knowledge on LARC were 3 times [AOR= 2.86; 95%CI (1.69-4.84)] and 3 times [AOR= 2.68; 95% CI (1.60-4.51)] more likely use LARC than those with low knowledge on LARC respectively. Those married women who had a positive attitude towards LARC were 3 times [AOR=2.63; 95%: CI (1.71-4.04)] more likely to use LARC than married women who had a negative attitude (Table 5).

DISCUSSION

In this study level of reproductive age married women who were used long acting reversible contraceptive methods were 164 (29.2%) (95% CI 25.7%-33%). This finding was in line with the study conducted in Amhara Region (29%)13. But, it was higher than studies done in Mekelle (12.3%), Arba Minch, Debre Markos (19.5%) and reports of EDHS,2016 (9.5%)1,7,8,11,4. These differences might be awareness creation being given for the community about long acting reversible contraceptive methods and discussion with health care provider towards LARC. This finding was lower when compared to other findings done in Egypt and China which was 36% and 41% respectively15,16. It might be as result of social, economic, and cultural differences. This difference could be explained by the fact that mothers in these countries had better educational status and better access to family planning information.

Married women who had history of LARC were 4 times more likely use LARC compared with married Women who had no history of LARC use. This finding

was consistent with the studies done in Durame Town, Southern Ethiopia and Goba, Bale Zone, South East Ethiopia9,17. It might increase the use of LARC. It might be occurred those women had better knowledge on LARC method because they had experienced on it. Married Women who had discussed with health care provider on LARC in last 6 months were 3 times more likely use LARC than their counterparts. This finding was similar with the studies done in Durame Town, Southern Ethiopia and Nekemte Town, Oromia Region, West Ethiopia10,17. According to EDHS 2016 among 22% of women age group of 15-49 who were not using contraception; 12% of women visited health facility in the 12 months and discussed family planning, while 25% of women visited a health facility but did not discuss family planning1. It could be that discussion with health care provider can decrease rumor, myth and misconception about LARC and increase awareness about LARC.

The odds of LARC use was 3 times more for married women who had high knowledge on LARC when compared with currently married women who had low knowledge. Which was concurrent with the studies Conducted in Machakel District, Northwest Ethiopia and Arba Minch8,18. According to EDHS 2014 Knowledge about IUCD and implants has increased by 43 percent and 11 percent, respectively. Women who had high knowledge were increase contraception utilization. On other hand, knowledge is main determinant to use LARC in a timely and effective mode. Low educational achievement is negatively associated with LARC use19. The possible explanation might be due to less educated currently married women have no better access to health care information and have no greater independence to make decisions. Education has strong effect on attitude, and awareness towards LARC use. Moreover, higher education allows women to better understanding the benefits and side effects of LARC.

Married women who had Positive attitude towards LARC had odds of 3 times more likely use LARC compared with currently married women who had negative attitude. This finding was in line with studies done in Adigrat, Arba Minch, and Wolayita, Southern

Ethiopia (5, 8, 12). It could be due to raise of awareness of married women on LARC were reduce myths and misconceptions about LARC and also positive attitude increases use of LARC.
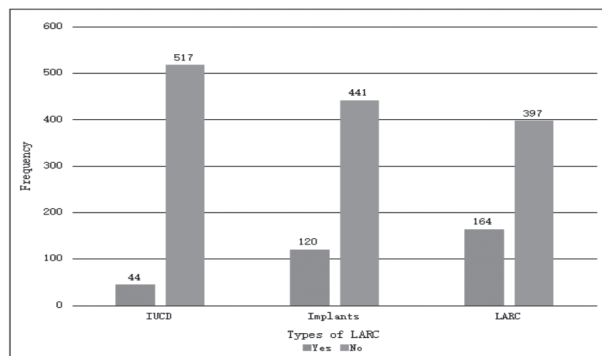
Figure 1: Long acting reversible contraceptive method use among married women of reproductive age in Shone Town, South Ethiopia, 2018.

Table 1, Sample size determination for factors associated with use of LARC.

Factors	% of Exposed	% of non-exposed	Total sample size	References
Age 20-24years	41	59	262	(7)
Age 35-39years	59.5	40.5	236	(7)
Joint decision	44	56	576	(5)
Secondary education	42	58	330	(17)

Table 2: Socio demographic characteristics of married women in Shone Town, Hadiya Zone, Southern Ethiopia, 2018 (n=561)

Variables	Frequency	Percentage
Age		
15-24	76	13.5
25-34	278	49.6
35-49	207	36.9
Religion		
Protestant	448	79.9
Catholic	75	13.4
Other (Orthodox and Muslim)	38	6.7
Ethnicity		
Hadiya	477	85
Amhara	29	5.2
Other(Wolayita and kemibata)	55	9.8
Education		
No formal education	126	22.5
Primary education	301	53.7
Secondary and above	134	23.8
Occupation		
Student	43	7.7
Merchant	159	28.3
Government employee	42	7.5
Non-government employee	42	7.5
House wife	275	49
Wealth index		
Lowest	459	81.8
Middle	77	13.7
Highest	25	4.5

Table 3: Knowledge related characteristic of respondents in Shone Town, Hadiya Zone, Southern Ethiopia, 2018 (n=561).

Knowledge statements of currently married women on LARC	Yes N/o	Yes %	No N/o	No %	Not sure N/o	Not sure %
IUCD can prevent pregnancies for more than 10 years	297	52.9	44	7.8	220	39.2
IUCD is not appropriate for female at high risk of getting STIs	148	26.4	132	23.5	281	50.1
IUCD has no interference with sexual intercourse or desire	161	28.7	152	27.1	248	44.2
UCD is immediately reversible(become pregnant quickly when removed)	272	48.5	97	17.3	192	34.2
IUCD cannot cause cancer	154	27.5	110	19.6	297	52.9
Implant can prevent pregnancies for 3-5 years	359	64	34	6.1	168	29.9
Implants require minor surgical procedure during insertion and removal	351	62.6	71	12.6	139	24.7
Implants is immediately reversible(become pregnant quickly when removed)	299	53.3	100	17.8	162	28.9

Table 4: Attitude related characteristic of in Shone Town, Hadiya Zone, Southern Ethiopia, 2018 (n=561).

Attitude statements of married women towards LARC	Agree		Disagree		Not sure	
	No	%	No	%	No	%
Irregular bleeding due to using implant is severe	229	(40.8)	165	(29.4)	167	(29.8)
Insertion and removal of implant is highly pain full	212	(37.8)	192	(34.2)	157	(28)
Loosing privacy during Intra uterine contraceptive device insertion is shame full	204	(36.4)	199	(35.5)	158	(28.2)
Using Intra uterine contraceptive device restricted from different work activity highly un acceptable	182	(32.4)	177	(31.6)	202	(36)

Table 5: Result of multivariate logistic regression analysis on factors associated with use of LARC among reproductive age married women in Shone Town, Hadiya Zone, Southern Ethiopia,2018 (n=561).

Variables	LARC Yes	No	COR,95%(CI)	AOR,95%(CI)
Number of living children				
<4	95(33.3%)	190(66.7)	1	1
≥ 4	69(25%)	207(75%)	0.68(0.46-1.00)	0.67(0.44-1.02)
Number of female living children				
<4	158(29.9%)	370(70.1%)	1	1
≥ 4	6(18.2%)	27(81.8%)	0.52(0.21-1.28)	0.41(0.15-1.08)
Ever history of LARC use				
Yes	99(45%)	121(55%)	3.47(2.37-5.07)	3.58(2.27-5.64)**
No	65(19.1%)	276(80.9%)	1	1
Ever heard information about LARC				
Yes	159(32.6%)	328(67.4%)	6.69(2.64-16.90)	2.38(0.84-6.60)
No	5(6.8%)	69(93.2%)	1	1
Ever discussed on LARC with health care provider in last 6months				
Yes	126(36.3%)	221(75.7)	2.64(1.74-3.99)	2.85(1.65-4.90)**
No	38(17.8%)	176(82.2%)	1	1
Knowledge of LARC method				
High	57(34.8%)	107(65.2%)	2.19(1.40-3.41)	2.86(1.69-4.84)**
Moderate	56(41.2%)	80(58.8%)	2.88(1.82-4.55)	2.68(1.60-4.51)**
Low	51(19.9%)	210(80.1%)	1	1
Attitude towards LARC				
Negative attitude	59(19.9%)	238(80.1%)	1	1
Positive attitude	105(39.8%)	159(60.2%)	2.60(1.82-3.88)	2.63(1.71-4.04)**

CONCLUSIONS

The LARC utilization was found to be low. Married women were history of LARC use, discussion with health care provider, and those possessing better knowledge and attitude were factors that improved the utilization of the LARC.

Data Availability

All data and materials in this manuscript could be deposited in any publicly available repositories.

CONFLICT OF INTEREST

The authors declare that they don't have any conflict of interest in any aspect of the article.

AUTHOR'S CONTRIBUTIONS

DB The principal investigator (PI) designed the study, collected, analyzed and interpreted the data, and also drafted the manuscript. NA - Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript. YD - Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript. TL- Participated in conceptualization of the study, design, analyses and interpretation of results as well as drafting and review of the manuscript.

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PREVALENCE AND ASSOCIATED FACTORS OF GENDER-BASED VIOLENCE AMONG HIGH SCHOOL FEMALE STUDENTS IN ALETA WONDO TOWN, SOUTH EAST ETHIOPIA

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ABSTRACT

BACKGROUND: Gender Based violence is a worldwide problem and it is frequently occurred in low resource countries like Ethiopia. The psychosocial and health impacts of violence include depression, anxiety, stress, undesirable pregnancy, unsafe abortions, sexually transmitted infections and leads to maternal morbidity and mortality.

METHODS: Institution based cross-sectional study design was conducted. A structured and pre-tested interviewer administered questionnaire was used to collect the data from 370 study participants. The data were entered with Epi info version 3.5.3 software and exported to Statistical Package for Social Sciences version 22.0 for further analysis. Both bivariate and multivariable logistic regression analysis were performed to identify associated factors. P values <0.05 with 95% confidence level were used to declare statistical significance.

RESULT: A total of 370 respondents participated in the study with a response rate of 96.7%. The overall prevalence of gender-based violence among the students during the life time was 68.2% with 95% CI [63.3 - 73.0]. The prevalence of physical, psychological and sexual violence was 56.14% [95% CI: 51.0-61.3], 34.8% [95% CI: 30.0-40.0] and 26.3% [95% CI: 21.7-30.8] respectively. The analysis indicated that respondents having boyfriends [AOR=2.16(95%CI; 1.09, 4.25)], and having habit of drinking alcohol (AOR = 3.69(95% CI, 1.42, 9.58) were more likely exposed to gender-based violence than others.

CONCLUSION AND RECOMMENDATIONS: This study has found that the prevalence of gender-based violence was over two- third among female students in the study area. The prevalence of physical, sexual and psychological violence in their lifetime and current among female students was high. Therefore, it is recommended that gender-based valance needs due attention and remedial action from policy makers, district officials, high school and other concerned bodies. Gender based violence is associated with certain variables such as having a close boyfriend and drinking alcohol.

KEYWORDS: Gender, violence, high school, Ethiopia

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BACKGROUND

Gender-based violence is defined as violence that is directed against an individual on the basis of their sex or gender. It includes physical, sexual and emotional violence committed or unnoticed within the family, the overall society or by the state and its organizations1. According to the Second World Conference on Human Rights in Vienna in 1993 gave main concern to this issue, which endanger women's lives, bodies, psychological integrity and liberty2. Gender-based violence (GBV) is worldwide phenomenon and knows no borders3. But it is most commonly occurred in low resource country like Ethiopia4.

Studies also showed that the health impacts of sexual violence are more brutal because it is related to a number of the most intractable reproductive health concerns of our time such as undesirable pregnancy, unsafe abortions, sexually transmitted infections including HIV/AIDS5. Worldwide more than 1.3 million people die every year as a result of violence which contributing 2.5% of global death. Globally, it is the fourth leading cause of death for people aged between 15–44 years. In addition to that 10,000 of people around the world are sufferers of non-fatal violence every day6. Multi-country study conducted on women's' in Sub-Saharan Africa (SSA) countries showed that various alarming results about the problem of gender-based violence; which ranging from 20% to as high as 71%7.

Ethiopia is one of the countries with the highest prevalence of both sexual and physical violence's by an intimate partner or others8. Worldwide an expected 33 % of women are physically or sexually abused and twenty percent of them had experienced rape or attempted rape in their lifetime9. There are significant results to school related gender-based violence in learning settings, which relating to physical and mental health, and educational achievement. The physical health related consequences of violence of female students result in forced sex which includes gynecologic problems such as exposure to STIs (HIV/AIDS) as well as unwanted conception, high-risk youth pregnancy and childbirth, and unsafe abortions. The psychological consequences which resulting from the experience of sexual violence leads to intake disorders, hopelessness, and in feelings of guilt, anxiety,

undermine self-esteem, post-traumatic stress disorder and suicidal tendencies10.

Several studies indicated that the consequences of school related gender-based violence (SRGBV) negatively affect girls' educational achievement and students were losing their attention in class, bad feeling for themselves, absent from school, and even dropping out4. In Ethiopia youth accounts more than 65% of total population and have faced various sexual and reproductive health problems due to gender inequality11. One of known causes of poor school achievement and school dropouts of in Ethiopia among school girls is violence that targets them on the basis of their gender12. Different study which was conducted in Ethiopia showed that the prevalence of gender-based violence range from 34-65% and it is one of the public health problems of the country13-15. But the factors associated with high prevalence of gender-based violence was not studied so this study is used to assess and identify prevalence which related with gender-based violence and associated factors among female students in high school, Aleta Wondo town, South Ethiopia.

METHODS

Study Area

This study was conducted in Sidama Zone, Aleta Wondo town high school students from March 15 to April 15, 2018. Aleta wondo town was located in 64 km away from regional capital of Hawassa and 339 Km South East of Addis Ababa, the capital city of Ethiopia. It has three kebeles. The total population of town is 52, 604 of whom 26,407 are females in 2010 E.C. It has one District hospital, four private clinics and six private pharmacies and there are one TVET college and one governmental high school have grade 9 to 12 found in Aleta wondo. The total numbers of grade 9 to 12 students are 4,354, of those female students' accounts 1,751(40.22%) and regarding service of adolescent no gender club in school compound and not well functional youth friendly service in the town.

Study Design and Period

Institution based cross-sectional study was conducted from March 15 to April 15, 2018

SOURCE POPULATION

All regular female students who enrolled in Aleta Wondo high school for academic year in 2017/18.

STUDY POPULATION

Regular female students who were in grade 9 to 12 and stayed at least one semester in Aleta Wondo high school, 2017/18

Sample Size determination

A single proportion formula was used to estimate the sample size required for the study. The sample size calculation assumed the proportion (p) estimated prevalence of gender based violence 67.7% (15). Adding non-response rate of 10% and considering the assumption of 95% confidence level, 5% margin of error the final sample size was 370 respondents.

Sampling Procedure

First the students list and identification number were obtained from registration office of high school. The total sample size was allocated into each section in grade 9-12 based on proportion to population (female students) in school preceding the data collection period. Grade nine 104: grade ten 184: grade eleven 23, and grade twelve 59. Then, Individual participants in each grade were selected by using simple random sampling during the data collection period until the required sample size at each grade was obtained.

Operational definitions

Sexual violence: For the purpose of this study we defined "sexual violence" as unwanted or non-consensual sexual act through force, threat or intimidation.

Gender Based Violence: For the purpose of this study we defined Gender based violence as physical or sexual and/or psychological violence that targets individuals on the basis of their gender

Physical Violence: In this study physical violence includes if a student is saying "yes" at list one of them a mild form (slapping, and punching) or sever form (kicking/drugging, beating/hitting with any object, cutting/ biting, shaking, shoving, pushing, throwing, and burning/chocking) against women or girl

Data collection tool

The data collection method that was used in this study was semi-structured self-administered questioner. The English version questionnaire was translated into local language Amharic to obtain data from the study participants and to ensure clarity of its content. Then the Amharic version was transcribed back to English version to check for uniformity. It was prepared by the principal investigator based on literature reviews; the questionnaire was designed to obtain information on socio demographic-characteristics and factors associated with gender-based violence. The tool was pretested for its reliability. The content validity of the questionnaire was revised by qualified public health experts.

Data collection procedure and quality control

Before actual data collection occurred one day training was provided for data collectors and the supervisor about techniques of data collection and briefed on each question included in the data collection tool. Pretest was done on 5% (19) of the sample in Garbicho lella high school a week before beginning of the actual data collection and modification were done based on feedback from the pre-test. After pre-testing the questionnaire, Cronbatch's Alpha was calculated by using SPSS window version 23.0 to test internal consistency (reliability) of the item and Cronbatch's Alpha greater than 0.7 was considered as reliable. Data were collected by trained data collectors.

Data Processing and Analysis

Data was entered in to Epi info version 3.5.3 software and then exported to SPSS version 23 for analysis. Then explanatory data was checked outliers, missing value and multicolineartity for variables. Descriptive statistics were done and summarized by tables, frequencies, graphs, mean, and proportion. The association between gender-based violence and its independent variables were examined by binary logistic regression. Variables which show significant association in the previous studies and independent variables having value ≤ 0.25 in binary logistic regression were a potential candidate for multivariable logistic regression analysis to control confounders in regression models. Hosmer and Lemeshow goodness of test was done for the model fitness and backward stepwise regression methods were applied to assess the independent variables in multivariable logistic regression. Association between outcome variable and independent variables were reported by odds ratio at 95% CI and variables having

p-value less than 0.05 in multivariable logistic regression model were determined as significant.

Ethical Consideration

Ethical clearance was obtained from Ethical Review Committee of Arbaminch University, College of Health Science, and Department of Public Health. Respondents were informed about the purpose and procedure of the study, the importance of their participation, and the right to withdrawal at any time if they want. The privacy and confidentiality of the information was given by each respondent's kept properly and name was not recorded.

RESULTS

Socio-Demographic Characteristics of respondent

From a total of 370 respondents who were invited for interview 358 consented to participate in the study giving a response rate of 96.7%. The mean age and standard deviation of the respondent's was 16.92 years ± 2.36 SD. Among the total respondents 279 (77.9 %) were between the age of 15 -19 years. Most, 280 (78.2%) of respondent was Sidama ethnicity and 222 (62.0%) of the respondents were protestant religion followers. majority 176 (49.2%) of the respondents were educational level of Grade 10. Above the half of respondents were urban residence 200 (55.9%) and about 60% of respondents were currently live with their family (Table 1).

Table 2: Substance-use among high school female students in Aleta Wondo town, Sidama, Southern Ethiopia, April, 2018 (n=358).

Variables	Parameter	Frequency	Percentages
Age	Less than15	6	1.7
	15-19	279	77.9
	20-24	58	16.2
	Above 24	15	4.2
Ethnicity	Sidama	280	78.2
	Guraghe	35	9.8
	Amhara	29	8.1
	Others*	14	3.9
Religion	Protestant	222	62.0
	Orthodox	76	21.2
	Catholic	34	9.5
	Muslim	26	7.3
Education level	Grade 9	100	27.9
	Grade 10	176	49.2
	Grade11	23	6.4
	Grade 12	59	16.5
Last semester average result	Greater than 80	42	11.7
	60-80	143	39.9
	Less than 60	173	48.3
Place of residence	Urban	200	55.9
	Rural	158	44.1
With whom currently live	Alone	43	12.0
	Family	213	59.5
	Husband/boyfriend	42	11.7
	Female friend	60	16.8
Current marital status	Married	26	7.3
	On relationship	124	34.6
	No partner at all	208	58.1
Pocket money from family	Yes	117	32.7
	No	241	67.3

Not key - * other indicates Silte and Oromo in their ethnicity.

History of student's substance use and Sexual experiences Among study participants experiences of ever chewing chat, smocking tobacco and consuming alcohol were reported by 26 (7.3%), 14(3.9%) and 50(14%) of the respondents, respectively. 66 (18.4%) of the respondents have either male or female friends who drank alcohol. Out of total participants 115(32.5%) of them had

sexual partner currently. Similarly, 136(38.0%) of the participant ever had started sexual intercourse and 98(72%) of who started sexual intercourse was below age 19 years (Table 2).

The majority of the students 262 (73.2%) respond that their families did not freely discuses about physical, psychological and sexual violence with them (Table 3).

Table 2: Substance-use among high school female students in Aleta Wondo town, Sidama, Southern Ethiopia, April, 2018 (n=358).

Variables	Parameter	Frequency	Percentages
Ever chew chat			
	Yes	26	7.3
	No	332	92.7
Ever smoked cigarette	Yes	14	3.9
	No	344	96.1
Ever consume alcohol	Yes	50	14.0
	No	308	86.0
Have peer who drunk	Yes	66	18.4
	No	292	81.6
have sexual partner currently	Yes	115	32.1
	No	243	67.9
Ever had sexual intercourse	Yes	136	38.0
	No	222	62.0
Age first sexual intercourse	Less than 15	19	13.9
	15-19 years	79	58.1
	above 19 year	2	1.5
	I don't know	36	26.5

Table 3: Family History among high school female students in Aleta Wondo town, Sidama, Southern Ethiopia, April, 2010/2018 (n=358).

Variables	Parameter	Frequency	Percentages
Parents	Live together	288	80.4
	Either alive	50	14.0
	Both of them not alive	20	5.6
Father education	No formal Education	45	12.6
	Grade 1 - 8	78	21.8
	Grade 9-12	107	29.9
	Above grade 12	128	35.8
Mother education	No formal Education	66	18.4
	Grade 1 -8	148	41.3
	Grade 9 – 12	87	24.3
	Above grade 12	57	15.9
Father occupation	Housewife	108	30.2
	Merchant	124	34.6
	Civil servant	84	23.5
	Private Business	42	11.7
Mother	Housewife	205	57.3
	Merchant	77	21.5
	Civil servant	55	15.4
	Private Business	21	5.9
Family monthly income	Less than 500	39	10.9
	501-1000	63	17.6
	1001-2000.	85	23.7
	2,001-6, 000	125	34.9
	Greater than 6,000	46	12.8
Family free discussion	Yes	96	26.8
	No	262	73.2
Family near by	1-Yes	230	64.5
	2- No	128	35.5

FAMILY HISTORY

From the total of study participant 288(80.7%) were living together with their family. Regarding parent's occupational status 108(30.2%) participants father and 205 (57.3%) participants mother were farmer and housewife respectively. 39 (10.9%) of their parents' monthly income were less than 500 Ethiopian Birr.
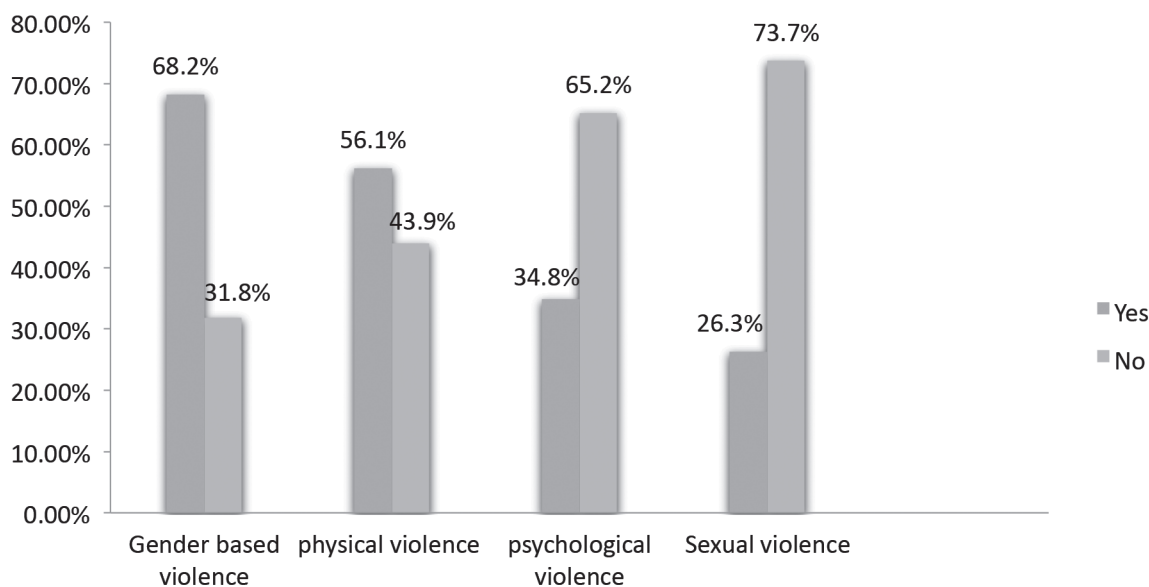
PREVALENCE OF GENDER BASED VIOLENCE (GBV)

The overall prevalence of GBV (physical, sexual or/and psychological violence) among the study participants in the study area was 244(68.2%) with 95% CI [63.3% - 73.0%] during their life time. Physically, sexually and psychologically violence was reported by 201 (56.14%) with 95% CI [51.0% 61.3%], 94 (26.3%) with 95% CI [21.7%-30.8%] and 125 (34.8%) with 95% CI [30.0%-40.0%] respectively (figure 1).

FACTORS ASSOCIATED WITH GENDER BASED VIOLENCE

The multivariable analysis was carried out to determine possible association between the independent variables with gender-based violence. The result showed that having boyfriends, family occupations, habit of drinking alcohol, having sexual partner were some of the factors associated with gender-based violence at P-value <0.05.

Students who had boyfriends were 2.16 times more likely experienced gender-based violence than students who did not have boyfriends at all (AOR=2.16, 95 % CI; 1.1- 4.25; p=0.026). The female students who had the father occupation being farmer were 2.37 times more likely exposed to gender-based violence than others (AOR=2.37,95 % CI; 1.05-5.38; p=0.039). Female students who live within the female friends were 2.62 times more likely to encountered violence than students live with their families (AOR=2.62; 95 % CI; 1.13- 6.04, p=0.025). The likelihood of experiencing gender-based violence in their life time was 3.69 times higher among those students who had a habit of taking alcohol than those who didn't have a habit of alcohol intake (AOR = 3.69; 95% CI, 1.42- 9.58, p=0.007). Student who had sexual partner currently were 2.12 times more likely exposed to gender-based violence than others (OR=2.12; 95%CI; 1.01-4.43, p=0.047) (Table 4).

Gender based violence and its types

Figure 1. prevalence and types of gender-based violence among high school female students in Aleta Wondo town, Sidama, Southern Ethiopia, April, 2010/2018 (n=358)

Table 4: factors associated with genders-based violence among high school female students in Aleta Wondo town, Sidama, Southern Ethiopia, April, 2010/2018.

Variable	Gender based violence		Crude OR with 95% CI	Adjusted OR with 95% CI	P-Value
	Yes	No			
With whom currently live					
Family	134	76	1	1	
Alone	29	14	1.22(0.61-2.45)	0.76(0.34-1.69)	0.501
Husband/boyfriend	30	12	1.47(0.71-3.04)	0.91(0.39-2.09)	0.817
female friend	51	9	3.34 (1.56-7.15)	2.62(1.13-6.04)	0.025
Current marital status					
Married	20	6	2.35(0.91-6.09)	0.95(0.30-3.01)	0.932
Have boyfriend	102	22	3.27(1.91-5.59)	2.16(1.09-4.25)	0.026
No partner at all	122	86	1	1	
Father occupation					
Farmer	84	24	2.63(1.23-5.62)	2.37(1.05-5.38)	0.039
Merchant	77	47	1.23(0.60-2.5)	0.99(0.46-2.15)	0.991
Civil servant	59	25	1.77(0.82-3.82)	1.71(0.74-3.95)	0.207
Private Business	24	18	1	1	
Ever consume alcohol					
Yes	44	6	3.96(1.64-9.59)	3.69(1.42-9.58)	0.007
No	200	108	1	1	
Have partner sexual currently					
Yes	97	18	3.52(2.00-6.19)	2.12(1.01-4.43)	0.047
No	147	96	1	1	

DISCUSSION

This study showed that the overall prevalence of gender-based violence among high school female students in Aleta Wondo town was 68.2%. For each category the prevalence of physical, sexual and psychological violence in the study area was 56.14%, 26.3% and 34.8% respectively. The finding of this study is comparable with the same study conducted in Menkorer high school in Debre Markos town which revealed that the prevalence of gender-based violence was 67.7%[13]. However, this finding was relatively higher than the same study conducted in Northern Nigeria which showed that the prevalence of gender-based violence was 58.8%[16]. In addition to this a cross sectional study conducted in Iran designates that the prevalence of sexual violence against women was found to be around 63.8%. The discrepancy might be due to socio cultural and economic difference. This finding is also higher than the same study conducted in eastern parts of Ethiopia which showed that the prevalence of gender-based violence was 58.3 %[17]. The discrepancy might be due to study period difference and in our study area due presence of different socio-cultural group. In this finding the overall prevalence of physical violence was 56.1 which were higher than the same study conducted in the Hadiya Zone showed that the overall prevalence of physical violence was 33.46[18]. The discrepancy might be due to some sort of conflict was there in our study area before conducting our study so this may contribute to rise of Gender based violence in this finding. This finding is also lower than the same study which was conducted in the Jimma Zone[19]. The discrepancy might be due to study area and sample size difference. In this study the prevalence of physical violence experienced in student by husband or boyfriends 43.1%, family members in their home 76.7%, students 74.3%, other relatives 53.4%, teachers 40.0%, and stranger 37.6% respectively. This finding is also supported by the same

study conducted in Ethiopia13,16. Regarding to factors associated with sexual violence in this study. Students who had boyfriends currently were two times more likely experience gender-based violence than those who had no partner at all. The possible explanation for this might be those students who have boyfriends predispose the violence earlier and may consider violence as a normal part of their life. This finding supported with studies conducted in other parts of Ethiopia high school students13,18,20. Similarly, in this study female students who reside with their female friends were almost three times more likely faced higher risk than those who settled with their family, this might be due to students away from parents get liberty from their control and that may expose them to the gender based violence. But studies conducted in north Ethiopia, Mekelle town and Ambo showed that there is no association between current students live away from parents and gender-based violence 20,21. Students who had father's occupation farmer were two times more likely violated than fathers who had private business in their occupation, this finding supported with the study conducted in the high school student in Hadiya zone18. But studies conducted in Debre Markos and Mekele town show that there is no association between parent occupation and gender-based violence13,20. Students who had habit of alcohol drink were almost four times more likely experience gender-based violence than those who didn't use alcohol. This finding supported by studies conducted in Uganda, Ambo high school, Mekelle town, Debre Markos high school and Wolayita Soddo University13,20-23.

CONCLUSION

This study revealed that over two-third of respondents were violated by the either form of physical, sexual or/and psychological violence in their life time in the study area. The prevalence of physical, sexual, and psychological violence during their life time were 56.14%, 34.9% and 26.1% respectively. The factors significantly associated with gender-based violence were having boyfriends currently, student's current living condition, parent's occupation, experience of ever had sexual partner and having habit of alcohol drinking. We recommend that the Ethiopian government should focused on the factors that leads to Gender based violence in school because Gender-based violence (GBV) is a human rights violation, a public health challenge, and a barrier to civic, social, political, and economic participation. It undermines not only the safety, dignity, overall health status, and human rights of the millions of individuals who experience it, but also the public health, economic stability, and security of nations so it needs cooperation and participation of many player trained counselors, trained teachers, informed students and parents to reduces this unspoken cause of female students drop out of school and common cause of unwanted pregnancy and its related compactions and deaths.

DECLARATIONS

Ethical approval and consent to participant

Ethical clearance was obtained from Ethical Review Committee of Arbaminch University, College of Health Science, and Department of Public Health. Respondents were informed about the purpose and procedure of the study, the importance of their participation, and the right to withdrawal at any time if they want. Accordingly, after the objective of the study was explained, verbal informed consent was obtained from all participants. Moreover, the confidentiality of information was guaranteed by using code numbers rather than personal identifiers and by keeping the data locked.

LIST OF ABBREVIATIONS

GBV: Gender based violence; AOR: Adjusted odds ratio; CI: confidence interval

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AVAILABILITY OF DATA AND MATERIAL

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

CONSENT FOR PUBLICATION

Not applicable

AUTHOR'S CONTRIBUTION

FUNDING

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KNOWLEDGE AND ATTITUDE TOWARDS LEGALIZATION OF ABORTION SERVICE AND ASSOCIATED FACTORS AMONG FEMALE YOUTH IN AXUM TOWN, ETHIOPIA

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ABSTRACT

INTRODUCTION: Unsafe abortion greatly contributes to maternal mortality and morbidity in the world particularly in developing countries. Poor knowledge and unfavorable attitude towards abortion among female youths is still significantly high in Ethiopia where abortion service is not fully legalized. So far, no studies related to abortion legalization have been conducted in Ethiopia, Axum town to identify the gap. Therefore, this study was aimed at assessing female youth level of knowledge and attitude towards legalization of abortion services in the town.

METHODS: Community based cross-sectional study was conducted on 400 subjects in November 2015. Respondents were selected through systematic random sampling. Structured questionnaire was used to collect the data. Data was coded and entered using Epi-info version 7 and exported to SPSS Version 20 for analysis. Descriptive and logistic regression were computed. Statistical tests were considered significant at p<0.05and 95% confidence interval.

RESULT: A Only 202(49.5%) and 190(47.5%) of respondents had good knowledge and favorable attitude respectively. Age, not knowing unsafe abortion complication, and lacking information on criteria of legal abortion service were significantly associated with knowledge. Lack of formal education and no access to information were also associated with attitude.

CONCLUSION AND RECOMMENDATIONS: Almost half of the respondents have good knowledge and favorable attitude towards legalization of abortion service. Age, knowledge of unsafe abortion complication, and availability of clear source of information about abortion had strong association with knowledge and attitude. Great efforts are needed to ensure that all female youth know that they have a legal right to abortion in some circumstances in our country.

KEYWORDS: abortion legalization, attitude, Axum town, Ethiopia, female youth, knowledge

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INTRODUCTION

Globally, 22 million unsafe abortions from which 47,000 are accompanied with maternal deaths and 5 million complications happens annually2. Nearly all unsafe abortions (98%) are occurred in low- and middle-income countries3. In Sub-Saharan Africa, over 60% of unsafe abortions are among young women less than 25 years4. In line with this about 47% of abortions occur outside of health facility in Ethiopia5.

Abortion laws have been liberalized since the beginning of 20th century, when the extent of unsafe abortion recognized as public health problems6. Almost all deaths and morbidity from unsafe abortion occur in countries where abortion is severely restricted by law7. In many countries, restricted abortion law has been reforming in to more liberal and legal form8-9 In Ethiopia, abortion law was restricted until 2004 whereas the new law allows abortion up to 28 weeks of pregnancy for predefined indications10.

Broadening abortion law is not the only solution to provide safe abortion service. Social, economic, policies and health-system barriers are still additional challenges to provide safe abortion care. Barrier includes stigma, negative attitudes, concerns over privacy and confidentiality that is why young women resort unsafe abortion even in environments where abortion is legal11. In fact, abortion service is more legalized on broaden conditions of abortion law than restricted law. As a result, realizing of legal abortion service is one of the several aspects in female youth that increases access to safe abortion services12. Making abortion legalized by law could not be fully protecting unsafe abortion practices unless knowledge of female youth on abortion legalization is improved significantly13-17.

In addition to improving knowledge of female youth on abortion legalization, changing unfavorable attitude is also very important to increase willingness of female youth to utilize safe abortion service than unsafe abortion18.19. Finding out factors affecting attitude and knowledge on circumstances under which abortion is permitted by law is important for effective intervention20.21. According to International Planned Parenthood Federation (IPPF) report, knowledge and attitude towards legal abortion services is associated with several factors like gender, religious and social taboos. For example, in many countries, engaging in intercourse before marriage is viewed as unacceptable22.

Although, the new 2005 Ethiopian Abortion Law is relatively legal, but limited knowledge and positive attitude on revised abortion law is one of the major obstacles that hinder women from obtaining Comprehensive Abortion Care (CAC)5. As a result, most women do not seek safe abortion services although they have the right to do so under the revised penal code23. Therefore, the main aim of this study was to assess knowledge, attitude and associated factors among female youth in relation to the 2005 revised legalization of abortion service.

METHODS

Community based cross-sectional study was conducted in Axum town which is 1,024 K.M far from Addis Ababa, the capital, in November 2015. Axum is the most important spiritual center of orthodox biblical art covenant with a total population of 56,576, of which, female proportion is 30,293 (37). 88.03% inhabitants of the town are Orthodox Christian. The town is organized in to four kebeles. There are two youth centers, one referral hospital, one general hospital and two health centers.

The study participants were female youths aged 15-24 years that were systematically selected from households. Female youth who were not residing in Axum town for at least six months and those who were critically ill as perceived by trained data collector were excluded from the study. Sample size was calculated using single population proportion formula with 95% confidence interval, 5% of marginal error, 50% P value (since no previous study) was used to obtain maximum sample size hence our sample was calculated at 384. Adding 10% none response rate the final sample size for this study was 422. four kebelle has been included in the study. The number of households to be included in each kebele were determined proportional with total number of households. Only one female respondent

from age group 15-24 was selected from each household. Respondents were identified by systematic random sampling method. In case of more than one eligible respondent in selected household, the interviewers used a lottery method to choose either of them. Revisit was conducted three times in closed households.

Knowledge and Attitude about legalization of abortion service were taken as dependent variable. Meanwhile, demographic factors, exposures associated with knowledge and attitude were independent variables. Variables were operationally defined thus; good knowledge was defined as knowledge score of respondents equal to or greater than knowledge mean score. Favorable attitude was defined as attitude score of respondents equal to or greater than attitude mean score.

Structured pretested questionnaire was used to collect data. The data was collected by trained four diploma holder female nurses and one bsc of public health professionals using face to face interview after informed consent has been obtained. Interview was made at respondents' consent and own house and each study participant was informed about the purpose of the study and importance of participation. Written consent was obtained from parents or guardian for under18 years respondents.

data was entered to epi-info version 7 then transported to spss v-20 for cleaning and analysis. any logical and consistency error identified during data entry was corrected after revision of completed questionnaire. Descriptive statistics was employed to calculate frequencies. Associations between dependent and Independent variables were assessed using logistic regression model with crude and adjusted odds ratio at 95% confidence interval (ci). Statistical association at p-value <0.05 was considered significant. Binary logistic regression at p-value <0.2 was entered into multivariable model of analysis. Cranach's alpha coefficient was used to assess internal consistency of measuring instrument. Values >0.7 were used for further analysis. Multi co-linearity test was made in order to check interaction of independent variables in the multivariate analyses using vif (variation inflation factor). Vive was <3 which shows no multi co-linearity problem.

Ethical approval was obtained from ethics and research committee of Axum University. For those younger than 18 years of age, written assent was obtained from their guardian/parents. To ensure confidentiality, respondents were interviewed alone without the presence of their guardian or parents. The aim and purpose of the study was explained to each study participants. Interview was only undertaken when a participant gives informed consent. Unique identification number was used to ensure confidentiality.

RESULTS

Four hundred female youths were interviewed giving 94.78% of response rate. More than half (52.2%) of them were in the age group 20-24 years. Mean age was 19.73(SD + 2.83) years. Eighty six percent were Orthodox by religion. By education, 55.2% attended grade 9-12; occupationally, 51.5% respondents were students. About three fourth (71.8%) of the respondents were unmarried. For 66.2% of the respondents, both of their parents were alive (Table 1).

Table 1: Characteristic of the Respondents in terms of socio-demographic factors, Axum town, Ethiopia, 2016 (n=400)

Characteristics of respondents		Frequency (n)	Percentage (%)
Age (mean=19.7 years; Sd=2.8 years)	15-19	191	47.8
	20-24	209	52.2
Religion	Orthodox	344	86.0
	Muslim	56	14
Religious service attending habit	always or almost always	145	36.2
	Sundays or holydays	139	34.8
	only occasionally	113	28.2
	Never	3	0.8
level of education	No formal education	27	6.8
	Elementary (1—8)	73	18.2
	High school (9—12)	221	55.2
	Certificate and above	79	19.8
Occupation	Student	206	51.5
	Farmer	6	1.5
	Government	29	7.2
	Business	39	9.8
	Non-employed	120	30.0
Marital status	Married	67	16.8
	Single	287	71.8
	Cohabiting	28	7.0
	Divorced	14	3.5
	Widowed	4	1.0
Mother's maximum level of education	No formal education	226	56.5
	Elementary (1—8)	113	28.2
	High school (9—12)	30	7.5
	Certificate and above	31	7.8
Father's maximum level of education	No formal education	158	39.5
	Elementary (1—8)	156	39.0
	High school (9—12)	41	10.2
	Certificate and above	45	11.2
Birth order	First	99	24.8
	Middle	225	56.2
	Last62	15.5	
	The only child	14	3.5
Life status of your family	Both alive	265	66.2
	Only father alive	55	13.8
	Only mother alive	64	16.0
	Both died	16	4.0

More than three fourth (76.2%) did not know anyone with history of abortion. One fourth of respondents had been ever pregnant. Among those who had pregnancy, only 23(22%) ever had unintended pregnancy. Of those who had ever been pregnant 24(6%) had history of induced abortion. One hundred eighty (45.5%) had sexual intercourse experience. Of ever had sex, 136 (75.5%) were using contraceptive. 67% had information about criteria for induced abortion; 203(74.6%), 12(4.4%), 18(6.6%), and 39(14.3%) used mass media, friends, family, and health extension workers as main source of information for abortion criteria respectively (Table 2).

Table 2: Characteristic of the Respondents reproductive history and their source of information related factors, Axum town, Ethiopia, 2016(n=400)

Characteristics of respondents		Frequency (n)	Percentage (%)
Know someone who had an abortion	Yes	95	23.8
	No	305	76.2
Family planning use	Yes	136	34.0
	No	264	66.0
have boy friend	Yes	142	35.5
	No	258	64.5
Ever been pregnant	Yes	101	25.2
	No	299	74.8
Ever been unintended pregnancy	Yes	22	22
	No	78	
know any complication of un safe abortion	Yes	264	66.0
	No	136	34.0
Ever been carried out induced abortion	Yes	24	6.0
	No	376	94.0
Reasons for carrying out induced abortion	Rape	5	20.8
	Attending school	7	29.2
	Incest	5	20.8
	Lack of money	7	29.2
Do you have information source about criteria of legal abortion service	Yes	271	67.8
	No	129	32.2
Your main source of information	mass media	203	74.6
	Friends	12	4.4
	Family	18	6.6
	Health extension workers	39	14.3
Mass media best (most) frequently used	New paper and magazine	20	9.9
	Radio	80	39.4
	Television	89	43.8
	Internet	14	6.9
Family member who is the best source of information	Mother	9	52.9
	Father	2	11.8
	elder sister	4	23.5
	Both parents	1	5.9
	both elder brothers and sisters	1	5.9
Ever had sexual intercourse	Yes	180	45.0
	No	220	55.0

Two third (66%) mention at least one complication of unsafe abortion. Of these who knew at least one complication, 76.3%, 32.10%, 9.5%, and 5% mentioned death, bleeding, infection and infertility as complication respectively. 198 (49.5%) had good knowledge towards abortion legalization. 185(46.2%) of the respondents knew existence of abortion law in the country; however, 142(35.5%) and 73(18.2%) replied as they did not know existence and it does not exist in the country respectively. Of these who replied there is abortion law in the country, 112 (65.5%) perfectly say as induced abortion is legalized under certain circumstances - Sixty-two (55%) said induced abortion is permitted in case of rape, 57.8% in case of incest, and 46% if the pregnancy endangers health or life of the mother. Considering multiple response, only 42.5%, 38.25%, 18.5%,10%, and 6.75% mention at least one, two, three, four and six criteria respectively.

Two hundred ten (52.5%) of respondents have unfavorable attitude towards abortion legalization service. Respondents who opposed legalization of abortion service also forwarded different reasons. Their reasons are absence of awareness [30.8%], being immoral to kill life [20.5%], causes disease [17.1%], not acceptable by religion [12.8%], encourages premarital sex [7.7%] and causes maternal death [6.8%].

DISCUSSION

Half (49.5%) of respondents have good knowledge towards legalization of abortion service; 47.5% have favorable attitude towards abortion legalization. Age, marital statuses, life status of family, knowledge on unsafe abortion complication and source of information have significant association with knowledge. Meanwhile, age, level of education, occupation, knowledge on unsafe abortion complication and source of information have significant association with attitude.

In this study 49.5% of female youths aged 15-24 have good knowledge towards legalization of safe abortion service. This is similar with studies conducted in Ethiopia (Yirga cheffe town 48.9%27, Mekele University 44.1%18 and 50% in Nigeria University30. However, it is higher than finding in educational institution of Harari Regional State in Ethiopia 35%,26 and Arba Minch in southern

Ethiopia 32.1%17. This high level of knowledge may indicate that findings from previous studies could serve health policy makers to design evidence-based delivery of information against this lack of knowledge towards legalization of abortion service at community level and facility level especially in colleges and universities.

Good knowledge towards legalization of abortion service on this study was lower than findings in South Africa 68%19, Colombo Srilanka 65.8%28, and in Nepal 66.5%29. This may attribute to participant back ground, personal beliefs, other sociocultural and religious factors. Concerning attitude 47.5% of all respondents had favorable attitude towards legalization of abortion and this was similar with studies in Bishoftu town 48.4%35. However, it was lower as compare to study in Yirga Chefe town 61.7%27. It was also higher than that of study done in colleges and university of Arba Minch 30.3%17. This could be due to chronological difference. Female youth who were in the age group of 20-24 had 2.102 times higher odds to have good knowledge compare to aged 15-19 years. This was consistent with findings in Bishoftu town35 and Harari Regional State26. This is because as age of female youth becoming older, their reproductive knowledge including on the issue of abortion is being increased32. Married female youths were 44.5% lower odds to have good knowledge about legalization of safe abortion service than single female youth which was dissimilar to study being conducted in Harari Region of higher educational institution26. Fear of premarital pregnancy and childbearing due to sociocultural and religious factors obligates single female youth to know more about their reproductive health including abortion law than married women1.

Those who had lost their mother were 86.9% lower odds to have good knowledge than whose both families were alive; this was not similar with study conducted in Harari Ethiopia26.This is because most unmarried female youths involved their mother in pregnancy resolution decision making33; however, when female youths who had lost their mother after they joined the university, they can improve their knowledge of reproductive health including the issues of abortion from their interactions with their peers.

Female youth having knowledge about complication of unsafe abortion had more than 3 times higher odds of good knowledge than those not having knowledge about complication of unsafe abortion which was similar to study conducted in Yirga Cheffe town27.

This study showed that attitude towards legalization of abortion service was higher in age 20-24 years than in age 15-19 years. Studies conducted in Bishoftu town35 and in the university of Debremarkos36 strengthened this finding. Supported from the female youth with no formal education had more than three times higher odds of unfavorable attitude compared to certificate and above educational level. This is supported by other studies conducted in Bishoftu35, Yirga Chefe town27, and Zambia21. This is because women with higher level of education have higher knowledge of abortion law and then higher favorable attitude towards legalization of abortion service34.

The result also revealed that those female youth who had involved in business work were 72.3% lower odds to have unfavorable attitude about legalization of safe abortion service compared with those female youths who were students. The possible explanation is perhaps these female youth involved in business have better social interaction with many people that had prior experience related with abortion and other sues may think as self dependent and have the right to decide what they want to do by themselves and also may have adequate finance to purchase reproductive health services including abortion services.

CONCLUSION & RECOMMENDATION

Generally, 50.5% of the respondents have poor knowledge; and 52.5% of female youths have unfavorable attitude towards legalization of abortion service. This indicates that the proportion of poor knowledge and unfavorable attitude is still significantly high. So, it needs further effort to reduce this problem. age, knowledge to complication of unsafe abortion, and source of information about criteria of legal abortion service, marital status, and life status of their families had significant association with knowledge. On the other hand, age, religion, educational level, and occupation, knowledge to complication of unsafe abortion, and source of information about criteria of legal abortion service were factors that had significant association with attitude towards legalization of abortion service.

Greater efforts need to be made to ensure that all female youth know that they have a legal right to abortion in some circumstances in our country. Mobilization of the community to minimize knowledge and attitude gap of female youth towards legalization of abortion is urgent. Improving dissemination of accurate information about criteria of legal abortion service and knowledge on complications of unsafe abortion so that female youth can access it easily through mass media such as radio, television, newspaper and internet is an important task. It would be important for other researchers to continue with this topic to find out detailed influence of culture, social, norm, religion and personal believes using qualitative study design.

COMPETING INTERESTS

All authors do not have competing interest in this manuscript.

AUTHORS' CONTRIBUTIONS

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Table 3: Logistic regression analysis of factors affecting knowledge to legalization of safe abortion service, Axum town Tigray Region, north Ethiopia, March 2016 (n=400)

Characteristics of respondents			Frequency (n)	Percentage (%)
Explanatory variable	Knowledge towards legalization of abortion service		COR (95% CI)	AOR (95%CI)
	Good knowledge	Poor knowledge		
Age				
15-19	119	72	1	1
20-24	79	130	2.72(1.814- 4.077) ***	2.102(1.124-3.930) *
Church/ Mosque /attending habit				
always or almost always	51	94		1 1
Sundays or holydays	85	54	0.345(0.218-0.558) ***	0.243(0.128- 0.459) ***
only occasionally	61	52	0.463(0.250- 0 .765) **	0.475(0.244-0.925) *
Never	1	2	1.085(.096-12.258)	0.445(0.017-11.665)
marital status				
Never married	133	154	1	1
Ever married	65	48	0.638(0.411-0.990) *	0.555(0.312-0.985) *
Life status of your family				
Both alive	125	140	1	1
Father only alive	41	14	0.355(.159-.586) ***	0.131(0.055-0.315) ***
Mother only alive	27	37	1.224(.705-2.124)	0.469(0.209-1.051)
Both died	5	11	1.964(0.664-5.809)	1.047(0.244-4.409)
know any complication of un safe abortion				
Yes	103	161	3.62(2.32-5.63)***	3.43(1.92-6.13)***
No	95	41	1	1
Do you have source of information about criteria of legal abortion service				
Yes	106	165	3.87(2.46-6.08)***	2.94(1.61-5.32)***
No	92	37	1	1

N.B *P< .05, ** P< .01 and *** P < .001

Table 4: Logistic regression analysis of factors affecting attitude to legalization of safe abortion service, Tigray Region, north Ethiopia, 2016(n=400)

Explanatory variable	Attitude towards legalization of abortion service		COR (95% CI)	AOR (95%CI)
	Un Favorable attitude	favorable attitude		
Age				
15-19	82	109	1	1
20-24	128	81	0.476(0.319-0.710) ***	0.585(0.348-0.979) *
Religion				
Orthodox	189	155	1	1
Muslim	21	35	2.032(1.136-3.634)*	2.364(1.224-4.565) *
Level of education				
No formal education	8	19	3.311(1.294-8.469)*	3.475(1.174-10.287) *
Elementary (1—8)	35	38	1.151(0.797-2.877)	
High school (9—12)	121	100	1.152(0.685-1.937)	
Certificate and above	46	33	1	1
Occupations				
Student	89	117	1	1
Farmer	3	3	0.761(0.150-3.859)	0.403(.058-2.819)
Government	19	10	0.400(0.177- 0.903)	0.435(0.164-1.155)
Business	30	9	0.228(0.103-0.505)***	0.277(0.114- 0.674)**
Non-employed	69	51	0.562(0.357- 0.886)*	0.654(0.368-1.16)
know any complication of un safe abortion				
Yes	164	100	1	1
No	46	90	3.209(2.080-4.951)***	2.467(1.532-3.973)***
Source of information about criteria of legal abortion service				
Yes	166	105	1	1
No	44	85	3.054(1.970-4.735) ***	2.435(1.491-3.976)***

N.B *P< .05, ** P< .01 and *** P < .001

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RUPTURED RUDIMENTARY HORN PREGNANCY OF UNICORNUATE UTERUS AT HIWOT FANA SPECIALIZED HOSPITAL, HARAR, ETHIOPIA: A CASE REPORT.

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ABSTRACT

Unicornuate uterus with rudimentary horn occurs due to failure of complete development of one of the mullerian ducts and incomplete fusion with the contra lateral side. Pregnancy in the non-communicating rudimentary horn is extremely rare and usually terminates in rupture during first or second trimester of pregnancy. Pregnancy occurs via trans peritoneal migration of sperm or zygote. Variable thicknesses of rudimentary horn musculature, poor dispensability of myometrium lead to rupture. This complication is usually seen in 2nd trimester resulting in shock and hemoperitoneum. Diagnosis of rudimentary horn pregnancy is difficult and can be missed in ultrasound. Diagnosis of rudimentary horn pregnancy is difficult and can be missed by ultrasound. We report a case of ruptured rudimentary horn pregnancy at 17 weeks of gestation.

KEYWORDS: Rudimentary horn, Unicornuate uterus, Hemoperitoneum, Rupture.

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INTRODUCTION

Unicornate uterus is type 2 mullerian anomaly according to classification by the American Society of Reproductive Medicine with unilateral hypoplasia or agenesis that can be further sub classified into communicating, non-communicating, no cavity, and no horn1. The incidence of uterine congenital anomalies because of mullerian defects in the normal fertile population is 3.2%. A unicornuate uterus accounts for 2.4%-13% of all mullerian anomalies2. Around 72-85% of the rudimentary horns are non-communicating with the cavity3. Unicornuate uterus with rudimentary horn may be associated with gynecological and obstetric complications like infertility, endometriosis, hematometra, urinary tract anomalies, abortions, and preterm deliveries. Rupture during pregnancy is the most dreaded complication which can be life threatening to the mother. We report a case of ruptured rudimentary horn pregnancy of 17 weeks' gestation which was misdiagnosed initial as missed intrauterine pregnancy by ultrasound and treated by misoprostol to evacuate.

CASE REPORT

A 20-year-old primigravida with amenorrhea of five months was referred from Health Center with complaint of abdominal pain for one day which gradually increased in intensity, was more in the lower abdomen and associated with vomiting. She was married for 1 year and her menstrual cycles were regular. At our hospital patient was first seen at emergency unit and on initial evaluation the patient has stable vital sign and pink conjunctiva. Abdomen is soft, moves with respiration and there is no organomegally. Per speculum examination showed no vaginal bleeding; on per vaginal examination cervix

is closed, uterus is 10 weeks sized and there was no cervical motion tenderness. After ultrasound report by radiologist as intrauterine pregnancy with negative cardiac activity patient was transferred to gynecology ward with diagnosis of missed abortion. At gynecology ward the patient was started on misoprostol for termination of pregnancy and took about ten 200 mg of misoprostol in two days after which she developed syncopal attack. On examination she is found to be hypotensive and her pulse is not palpable. On abdominal examination there is diffuse tenderness with guarding. Bilateral IV crystalloids infusion started and blood sent for cross match. Repeat ultrasound was done and shows significant hemoperitoneum and fetus in the peritoneal cavity, uterus seen separately measuring 8x7x5. So, laparotomy was planned anticipating intra-abdominal pregnancy with hemoperitoneum. On laparotomy there was hemoperitoneum. There was ruptured non-communicating horn of uterus on the right side of the uterus with dead fetus in the peritoneal cavity attached cord and placenta to ruptured horn (Figure 1). Right fallopian tube and ovary were attached to the non-communicating horn and left fallopian tube & ovary were healthy & attached to the uterus (Figure 2, 3). Then the non-communicating horn containing the fetus of approximately 18 weeks and placenta along with right tube were resected out using scissor (Figure 4, 5). Right ovary, left tube & ovary left in situ. The resected margin of uterus was repaired in two layers by vicryl 0 and hemostasis secured. She was transfused with four units of blood and here recovery was uneventful. She was discharged on 5th post-operative day. Histopathology of resected margin was reported as necrotic myometrium with attached membrane tissue.

Figure 1: Fetus and placenta attached to Ruptured uterus.

Figure 2: Ruptured unicornuate uterus with right tube.

Figure 3: Ruptured unicornuate uterus with right side tube and ovary

Figure 4: Resected unicornuate uterus with   right tube and attached placenta.

Figure 5:18 week's dead fetus.

DISCUSSION

The incidence of unicornate uterus with rudimentary horn is estimated at 1 per 100000 to 140000 pregnancies2. Cases of late and false diagnosis leading to uterine rupture have been reported.

The timing of rupture varies from 5 to 35 weeks depending on the horn musculature and its ability to hypertrophy and dilate. Around 70-90% ruptures before 20 weeks and can be catastrophic4. As the uterine wall is thicker and more vascular, bleeding is more severe in rudimentary horn pregnancy rupture5. Our case presented at 17 weeks in shock which was considered as septic shock initially.

Early diagnosis of the condition is essential and can be challenging. Ultrasound, hysterosalpingogram, hysteroscopy, laparoscopy, and MRI are diagnostic tools6. Fedele et al. have found ultrasonography to be useful in the diagnosis7. But the sensitivity of ultrasound is only 26% and sensitivity decreases as the pregnancy advances8. Tubal pregnancy, cornual pregnancy, intrauterine pregnancy, and abdominal pregnancy are common sonographic misdiagnosis. In our cases ultrasound was done twice; the first was reported as missed intrauterine pregnancy and second was reported as abdominal pregnancy with intra-abdominal bleeding. Tsafrir et al. reported 2 cases of rudimentary horn pregnancy found in the first trimester by sonography and confirmed by MRI. They outlined a set of criteria for diagnosing pregnancy in the rudimentary horn9 they are1 a pseudo pattern of asymmetrical bicornuate uterus;2 absent visual continuity tissue surrounding the gestation sac and the uterine cervix;3 presence of myometrium tissue surrounding the gestational sac. Nonetheless, most of the cases remain undiagnosed until it ruptures and present as emergency. Use of labor induction agents for termination of pregnancy in a rudimentary horn is unsuccessful and can lead to rupture of the horn as in our case. Non-responders to induced abortion should be investigated with a high index of suspicion. Buntungu et al. reported a rudimentary horn pregnancy in a 6th gravida with all previous normal deliveries with a diagnosis of intrauterine fetal demise in this pregnancy where induction with misoprostol failed leading to the suspicion of ectopic pregnancy10.

Primary strategy of management of rudimentary horn is surgical removal. Immediate surgery is recommended by most after the diagnosis even in unruptured cases. Removal of the horn prior to pregnancy in order to prevent complications is also advised. However, conservative management, until viability is achieved, has been advocated in few selected cases if emergency surgery can be performed anytime and if the patient is well informed. A case of pregnancy progressing to the third trimester and resulting in live birth after caesarean section has been documented11.

CONCLUSION

Prenatal diagnosis of rudimentary horn pregnancy remains elusive. The diagnosis can be missed with ultrasound. Precious time may be lost due to delay in diagnosis or misdiagnosis and the general condition of the patient may worsen. There is a need for high index of suspicion for detection before rupture or early in pregnancy especially in patients with failed labor induction. Timely resuscitation, surgery, and blood transfusion are needed to save the patient.

Ethical approval: Written informed consent was taken from patient to use pictures for publication.

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GORING TRAUMA IN A PREGNANCY RESULTING UTERINE RUPTURE: A CASE REPORT

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ABSTRACT

BACKGROUND: Trauma in pregnancy is the leading cause of non-obstetric maternal mortality, with 20% of maternal deaths directly attribute to the injuries. The most common cause of trauma in pregnancy is motor vehicle accident and domestic violence. Other causes of trauma in pregnant patients are penetrating injuries and falling down accidents. The incidence of maternal visceral injury with penetrating abdominal trauma is only 15% to 40% compared with 80% to 90% in non-pregnant women. Goring injury during the pregnancy is the least reported cause of trauma in pregnancy.

CASE PRESENTATION: 42-year-old Gravid V Para IV mother with gestational age of 30 weeks +2 days referred from primary hospital with a diagnosis of 2nd trimester pregnancy and blunt abdominal trauma. She complained goring injury to the lower abdomen of 15 hours duration. On physical examination, she was acutely sick looking with tender abdomen but superficial lacerations or bruises. Focused Abdominal Sonography for Trauma showed ruptured uterus with significant peritoneal collection. With the impression of uterine rupture she was operated at Axum Comprehensive specialized hospital with intraoperative finding of intact skin with bridged fascia. The uterus completely ruptured on the anterior lower uterine segment (10 cm) with freshly dead fetus in the peritoneal cavity. Following standard procedures uterus was repaired in two layers and patient's post operative course was unremarkable.
Conclusion: Trauma in pregnancy is a common phenomenon; however, it is unusual to find goring injury in pregnancy. It is one of the penetrating types of trauma with catastrophic complication to the mother and fetus. So, we need to have high index of suspicion of uterine rupture in case of such kind of circumstances.

KEYWORDS: trauma, pregnancy, goring injury, uterine rupture

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INTRODUCTION

Trauma during in pregnancy is the leading cause of non-obstetric maternal mortality, with 20% of maternal deaths directly attribute to the injuries. The most common cause of trauma in pregnancy is motor vehicle accident and domestic violence1,2Other causes of trauma in pregnant patients are penetrating injuries and falling down accidents3,4.

The incidence of maternal visceral injury with penetrating abdominal trauma is only 15% to 40% compared with 80% to 90% in non-pregnant women. A report by the National Trauma Data Bank (2001–2005) indicated that trauma-related mortality among pregnant women is lower than that among non-pregnant women. This difference has been attributed to protective hormonal and physiologic effects of pregnancy as well as a higher likelihood of hospital admission of pregnant versus nonpregnant trauma victims5,6.

Abruption of the placenta is a major complication of maternal trauma, occurring in 5-50% of cases, depending on the severity of injury7,8. Placental abruption may culminate in preterm labor in 20% of cases. Preterm premature rupture of membranes is also associated with preterm labor. Regardless of the mechanism, trauma (even with minor injuries) is associated with a 2-fold higher risk of preterm delivery9. Direct fetal injury is seen in less than 1% of blunt maternal trauma. The gravid, abdominal uterus provides protection to the abdominal viscera; it is susceptible, along with the fetus, to direct injury. According to Buchsbaum, the uterine musculature absorbs a great amount of the projectile's velocity and diminishes its ability to damage the viscera. Therefore, depending on the gestational age and the size of the uterus, the fetus is much more likely than the mother to sustain significant injury (and to die) after a penetrating abdominal trauma (10).In general, the fetus sustains injury in 60% to 70% of cases, while visceral maternal injuries are seen only in 20% of penetrating abdominal trauma. Post-trauma uterine rupture is rare (0.6% of all maternal injuries), but seen more frequently with a scarred uterus or with direct abdominal impact during the latter half of pregnancy11. Most (75%) uterine ruptures involve the fundal area. Maternal mortality has been described with traumatic uterine rupture and fetal mortality is almost universal. It is the cause of motor veihcle crash (MVC) elated perinatal death in 17.5% of the cases. Suspected uterine rupture with maternal and/or fetal comprise should prompt urgent laparotomy to control bleeding and facilitate resuscitation12.

Penetrating injuries in pregnant trauma patients are managed in essentially the same way as in non-pregnant patients. The standard of care is to prioritize the emergent treatment of the gravid patient above that of her fetus. The hemodynamically stable patient should be assessed by non-invasive diagnostic methods such as ultrasound.

In this article we report a rare case of goring abdominal trauma in a pregnant woman resulting in abdominal wall fascial tear with an intact skin, uterine rupture and fetal death.

CASE PRESENTATION

This is a 42 years old Gravida V para IV mother with gestational age of 30 weeks +2 days referred from primary hospital with a diagnosis of 2nd trimester pregnancy and blunt abdominal trauma. She sustained horn injury to the lower abdomen of 15 hours duration. After the goring injury she fall down on her back but had no vaginal bleeding, abdominal pain or loss of consciousness immediately after the injury. She started to complain crampy lower abdominal pain four hour after the trauma. She experienced minimal vaginal bleeding just one hour prior to arrival of the hospital. Otherwise she has no injury to other site of her body or other danger sign of pregnancy, leakage of fluid pre vagina or pushing down sensationn.

The physical examination revealed stable vital signs. The abdominal examination showed intact abdominal skin, palpable fetal parts, tenderabdomen and positive shifting dullness. Fetal heart beat was negative. Uterus with palpable separately and measures 28 weeks. The cervix was closed with blood on examining finger.

Hemoglobin was 11.2 mg/dL preoperatively. Focused Abdominal Sonography for Trauma showed significant peritoneal collection with empty uterus with fetus in the peritoneal cavity.

With the impression of uterine rupture patient was counsled for surgery and after infomred consent was

obtained patient was taken to the operation theature and exploratory laparatomy was done. The intraoperative findings were: intact abdominal skin; a 4 cm transverse fascia tear (where), 500 ml hemoperitoneum, a 1700gm freshly dead fetus and the placenta in the peritoneal cavity and 10 cm complete transverse lower uterine wall defect with minimal oozing from the edge. Uterus was repaired in two layers and abominal wall was closed layer by layer. Hemostatsis was secured and patient left operation room stable. **(figure 2)**

Figure 1: 3 cm transverse facial defects over the suprapubic area after an incision of intact skin was made
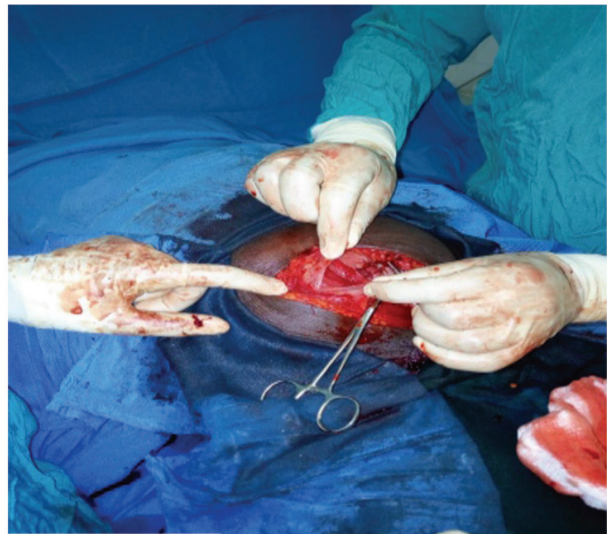

Figure 2: 6 cm transverse lower uterine segment full thickness defects without extension to uterine artery

DISCUSSION

This is a rare form of trauma in pregnancy presentation. We encountered this patient in Axum comprehensive specialized hospital, northern Ethiopia with dilemma of reaching a diagnosis.

Penetrating trauma during pregnancy occurs due to gunshot and stab wounds. Penetrating trauma due to gorring injury resulting in abdominal wall fascial tear and uterine rupture, however, is rare and this is the first published case report to the knowledge of the authors in the Ethiopian setting.

Fetal and maternal morbidity and mortality are significantly different in different types of penetrating abdominal injuries in pregnancy. As the pregnancy progress there is a change in the position of intraabdominal organs – the bowel is pushed up and enlarging uterus occupies most of the abdomen. During the third trimester, injuries to the lower quadrants of the abdomen almost exclusively involve the uterus. Because the uterus and the amniotic fluid absorb most of the energy of the penetrating object, organ destruction is less13.

Exploratory laparotomy in trauma is indicated in cases with positive findings on lavage, free air under the diaphragm (before lavage), progressive abdominal distention with a declining hematocrit, or abdominal wall disruption or perforation. Intraoperative management depends on the type of injury. Where such an injury is present and gestation is more than 25 weeks with evidence of fetal compromise, caesarian section is indicated. Penetrating uterine injury at less than 25 weeks gestation should be treated conservatively due to 100% neonatal mortality. Fetal fractures stab or bullet wounds may heal in utero. Maternal hemorrhage or fetal death in association with a uterine laceration that would preclude labor (eg. a large fundal laceration) may require hysterotomy14,15.

CONCLUSION

Trauma in pregnancy is a common phenomenon; however, it is unusual to find goring injury in pregnancy. It is one of the penetrating types of trauma with catastrophic complication to the mother and fetus. So, we need to have high index of suspicion of uterine rupture in case of such kind of circumstances.

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Title page: The title page should have title of the article; name of each author and institutional affiliation, and address of the corresponding author.

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