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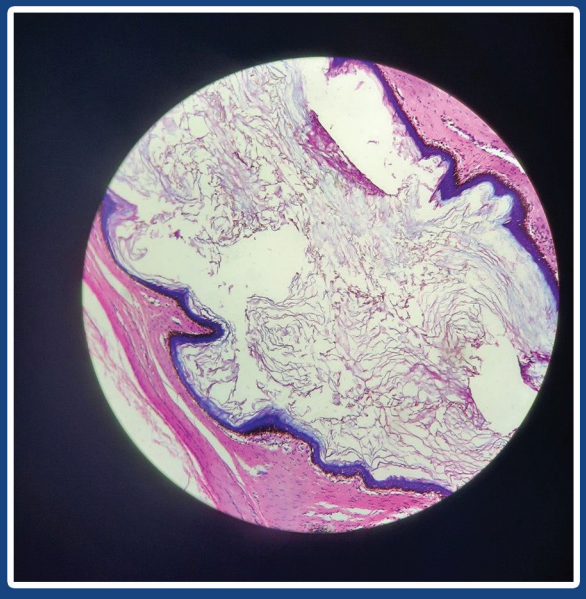

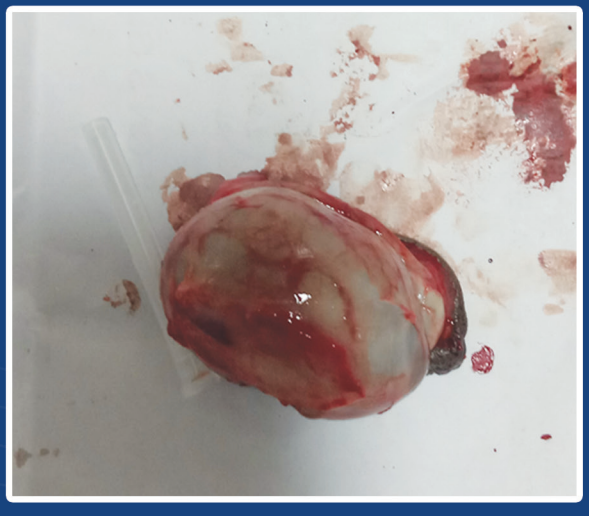

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TRADITIONAL ETHIOPIAN COFFEE CEREMONY IN A RURAL ETHIOPIAN HOSPITAL TO INCREASE HOSPITAL-BASED DELIVERY RATES: A RANDOMIZED CONTROLLED TRIAL

Tobias B. Limperg, MD[1,2], Maarten Verregghen, MD[1,3], Iris de Ridder, MD[1,4], Jenifer E. Allsworth, Ph.D.[5], Ted L. Anderson, MD[2]

ABSTRACT

BACKGROUND: Ethiopia has an estimated maternal mortality ratio of 353 per 100,000 live births. In an effort to improve acceptability of hospital-based deliveries, health facilities have adopted traditional practices in the labor ward. We hypothesized that offering postpartum coffee ceremonies would increase the hospital-based delivery rate.

TRIAL DESIGN: Non-blinded randomized controlled trial

METHODS: From April to June 2015, pregnant women presenting for their first antenatal care visit were block-randomized per day to receive a postpartum coffee ceremony, compared to not receiving a coffee ceremony postpartum. The primary outcome was presentation for delivery at Gambo General Rural Hospital.

RESULTS: 254 Women were randomized to the ceremony group and 185 to the no-ceremony group. There was no significant difference in hospital-based delivery rates between the randomized groups (32.1% versus 31.7%; relative risk 1.01; 95% CI, 0.76 to 1.35). 12.7% of women self-reported that the coffee ceremony served as motivation to deliver in the hospital. Hospital delivery was positively associated with shorter travel time, higher education grade, and previous delivery at a health-facility. It was negatively associated with previous home delivery and a higher number of antenatal care visits.

CONCLUSIONS & RECOMMENDATIONS: The likely flawed randomization process undercuts our ability to draw conclusions about the effect of this sociocultural intervention on the observed hospital-based delivery increase. This study exemplifies the difficulty of applying conventional research concepts to sociocultural interventions, especially in a setting of low educational levels, language barriers, and limited research capacity.

CLINICAL TRIAL REGISTRATION: ClinicalTrials.gov NCT04232137

KEY WORDS: Maternal health, hospital-based delivery, coffee ceremony

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INTRODUCTION

Maternal mortality remains at an alarmingly high level in Ethiopia, despite many efforts to combat this public health concern. The World Health Organization reports 353 deaths per 100,000 live births [1]. Maternal mortality can be significantly reduced by the presence of a skilled labor attendant in the peripartum period [2]. However, the uptake of antenatal care and delivery services has historically been very low in Ethiopia, with a strong preference for home deliveries [3, 4]. Many barriers to skilled delivery services in Ethiopia have been identified and addressed, including lack of transportation, low level of education, medical knowledge deficits, financial burden, and long distances to a health facility [5-13]. Sociocultural factors also play a major role in persistent sub-optimal health facility utilization. Ethiopian women lack decision-making power with regards to health and financial decisions, which usually lies with the husband or relatives [5, 11, 12, 14-16]. The concept of birth is regarded as a phenomenon not necessitating medical intervention, with the best outcomes at home in the presence of a traditional birth attendant, relatives, and/or a religious leader [5, 6, 10, 13, 15-17]. In the hospital environment, important customs and traditions are not recognized or accepted. Women have expressed the desire to be able to deliver in an upright position, bring their relatives into the delivery room, have their bellies massaged with butter, bring the placenta home for burial, or have female providers [5, 6, 15, 16]. Many of these birth-related preferences are regional in nature, but the most ubiquitous Ethiopian cultural phenomenon is the traditional coffee ceremony.

Ethiopia is considered the birthplace of coffee. Reportedly, coffee has strong female symbolism; it represents the woman, with the split coffee berry a metaphor for childbirth. Coffee ceremonies play a ritual, spiritual, and communal role, and are a vital part of life events including childbirth and burials [18, 19]. In a recent study exploring dissatisfaction with obstetric services, the lack of a postpartum coffee ceremony was ranked highest, superseding a lack of emergency transport [20]. In a healthcare setting, ceremonies have been used as a tool to engage local community and increase uptake of HIV counseling and cervical cancer screening [21-23]. In an effort to improve acceptability, health facilities have started to organize coffee ceremonies in the labor ward [24]. There is no data available regarding the effects of these efforts on health facility utilization.

At Gambo Hospital, a rural 170-bed hospital in the Oromia region, less than 20% of women attending antenatal care delivered in the hospital over a 2-year period (2012-2014). In this study we aimed to determine if implementation of postpartum coffee ceremonies would increase the hospital-based delivery rate for women attending antenatal care at Gambo Hospital.

METHOD AND MATERIALS

Trial design

This study was approved by the Gambo Hospital Ethics Review Committee (GH/LUC/909), conducted in agreement with CONSORT guidelines [25], and registered retrospectively with ClinicalTrials.gov (NCT04232137, 14 January 2020,https://clinicaltrials.gov/ct2/show/NCT04232137). A non-blinded, randomized controlled trial was conducted in which women attending antenatal care for the first time were assigned to receive a postpartum coffee ceremony (intervention group), compared to not receiving one (control group). Women were to receive, or not receive, the supplies for a postpartum coffee ceremony for up to 5 people.

Women were eligible if they were pregnant and presented for their first antenatal care visit at Gambo Hospital. The only exclusion criterion was the presence of a nonviable pregnancy. Verbal consent was obtained by antenatal care staff, as many of the study participants were illiterate. To prevent upsetting social norms, we randomized all women that presented on the same day for their first antenatal care visit to the same group. Randomization was determined by coin toss prior to the start of each clinic day, performed by assigned

medical record personnel, theoretically leading to a 1:1 allocation. An increase in hospital-based deliveries could be explained by either a decrease in home deliveries or a shift from deliveries at surrounding health facilities to the hospital. In an attempt to monitor location of delivery, women therefore received a multi-lingual research card at time of enrollment. They were instructed to hand this to their caregiver at time of delivery, to allow for collection from surrounding health posts and health centers at the conclusion of the trial. A postpartum survey was administered to those women who presented for hospital delivery to assess their motivation for a hospital delivery.

Outcomes

Socio-demographic data was collected at time of study enrollment. The primary outcome was defined as presentation for delivery at Gambo Hospital. Secondary outcome measurements were presentation for delivery at a surrounding health post or health center and reported motivations for hospital-based delivery. Pre-specified subgroup analyses were performed to assess which patient characteristics were significantly associated with hospital-based delivery.

Statistical analysis

We used a convenience sample over a 60-day time period. An a priori power analysis was not performed due to a lack of prior research that could serve to inform effect size. Analyses of the primary outcome were performed using chi-square and Fisher's exact tests. Relative risks were estimated using Poisson regression with robust error variance. P-values for associations between participant characteristics and hospital-based delivery were estimated using Student's t-test for continuous variables and Fisher's exact test for categorical variables. P-values were considered significant when <0.05. Analyses were performed using statistical software STATA (15th edition, Stata Corp 2017).

RESULTS

Over a 60-day period from April to June 2015 (Megabit to Ginbot 2007, Ethiopian calendar), 449 consecutive women were assessed for inclusion in the study. Ten women were excluded based on findings of a non-viable pregnancy on the day of enrollment. 254 women were randomized to receive a postpartum coffee ceremony, and 185 were randomized to receive no coffee ceremony (Fig 1). All data were missing for 35 women (8.0%; 17 women in the coffee and 18 in the no-coffee group), therefore 404 women were included for the final analysis.

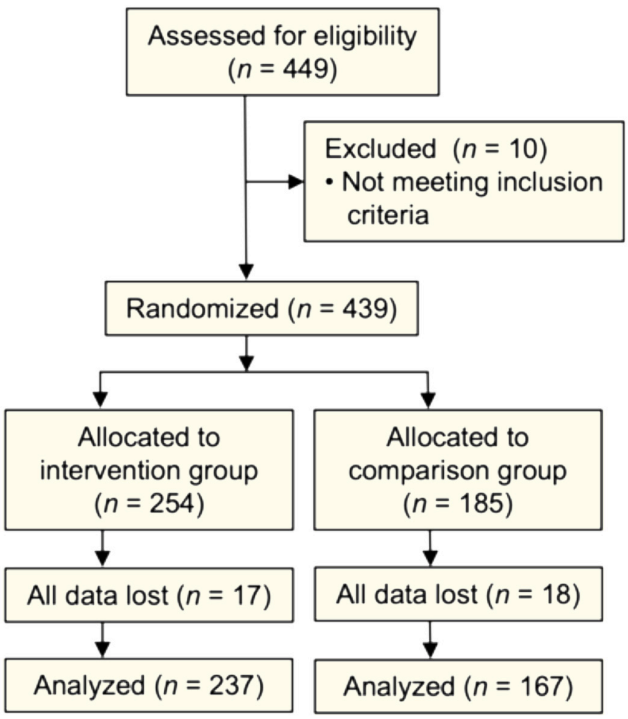

Fig 1. Randomization and Analysis

None of the demographic characteristics differed significantly between the randomization groups **(Table 1)**.

Table 1. Demographic Characteristics by Randomization Group.

Characteristics	All women (n = 404)	Coffee (n = 237)	No Coffee (n = 167)	P-value
Age, mean (SD)	25.0 (5.4)	24.7 (5.3)	25.5 (5.5)	0.114
Parity, mean (SD)	2.59 (2.5)	2.55 (2.3)	2.66 (2.7)	0.658
Education grade, mean (SD)	5.1 (3.9)	5.0 (3.9)	5.3 (3.9)	0.412
Ethnicity, n (%)				
Oromo	381 (86.8)	226 (89.0)	155 (83.8)	0.116
Other	53 (12.1)	27 (10.6)	26 (14.1)	
Missing	5 (1.1)	1 (0.4)	4 (2.2)	0.368
Religion, n (%)				
Muslim	335 (76.3)	198 (78.0)	137 (74.1)	
Other	98 (15.6)	54 (21.3)	44 (23.8)	
Missing	6 (1.4)	2 (0.8)	4 (2.2)	
Antenatal care visits, mean (SD)	1.74 (1.0)	1.75 (1.0)	1.73 (1.0)	0.872
Travel time to hospital (minutes), mean (SD)	101.9 (52.6)	100.7 (53.0)	103.5 (52.2)	0.625
Cost of transportation (birr), mean (SD)	6.5 (11.6)	6.2 (10.3)	6.9 (13.3)	0.569
Cost > 10 birr, n (%)	127 (28.9)	71 (28.0)	56 (30.3)	0.597
Travel on foot, n (%)	222 (50.6)	129 (50.8)	93 (50.3)	0.915
Previous home delivery, n (%)	234 (58.2)	140 (59.1)	94 (57.0)	0.674
# home deliveries, mean (SD)	2.1 (2.4)	2.0 (2.3)	2.1 (2.6)	0.782
Previous health facility delivery, n (%)	162 (36.9)	91 (35.8)	71 (38.4)	0.584
# health facility deliveries, mean (SD)	0.50 (0.9)	0.51 (1.0)	0.5 (0.9)	0.885

SD, standard deviation; birr, Ethiopian currency

Of 404 women, 129 delivered at Gambo Hospital, which corresponds to an over-all hospital-delivery rate of 31.9% (95% confidence interval [CI] 27.4 – 36.5%). In the coffee ceremony group 32.1% delivered in the hospital, compared to 31.7% in the non-coffee group, which was non-significant (between-group difference, 0.4 percentage points; relative risk 1.01; 95% CI, 0.76 to 1.35, P=0.944) (Table 2). There were no significant differences between the coffee ceremony and no-ceremony groups in c-section rate (6.6% versus 9.4%, P=0.551) and complication rates (18.4% versus 18.9%, P=0.949). No harms or unintended effects of the intervention were identified.

Table 2. Delivery Location by Randomization Group.

Randomization group	All women (n = 404)	Hospital delivery (n = 129)	Delivery elsewhere (n = 275)	Hospital-based delivery rate (%)	RR (95% CI)	P-value
Coffee ceremony, n (%)	237 (58.7)	76 (58.9)	161 (58.5)	32.1	1.01	P=0.944
No coffee ceremony, n (%)	167 (41.3)	53 (41.1)	114 (41.5)	31.7	(0.76-1.35)	

RR, relative risk; CI, confidence interval

Table 3 shows analyses of associations between participant characteristics and place of delivery. Hospital delivery was positively associated with shorter travel time to the hospital (P=0.015), higher education grade (P=0.008), previous deliveries at a health-facility (P=0.003), and a higher number of previous facility-based deliveries (P=0.009). Hospital delivery was negatively associated with having had any home deliveries (P=<0.001), a higher number of previous home deliveries (P=0.035), and, notably, a higher number of antenatal care visits (P=<0.001). There was no significant association between hospital-based deliveries and variables such as age, parity, ethnicity, religion, and cost of transportation.

Table 3. Participant Characteristics by Delivery Location.

Randomization group	All women (n = 404)	Hospital delivery (n = 129)	Delivery elsewhere (n = 275)	P-value
Age, mean (SD)	25.0 (5.4)	24.8 (4.7)	25.1 (5.7)	0.634
Parity, mean (SD)	2.6 (2.5)	2.5 (2.5)	2.7 (2.4)	0.42
Education grade, mean (SD)	5.1 (3.9)	5.9 (4.0)	4.8 (3.8)	0.008*
Ethnicity, n (%)				
Oromo	381 (94.3)	119 (92.3)	262 (95.3)	
Other	18 (4.5)	7 (5.4)	11 (4.0)	
Missing	5 (1.2)	3 (2.3)	2 (0.7)	
Religion, n (%)				0.853
Muslim	335 (82.9)	105 (81.4)	230 (83.6)	
Other	63 (15.6)	22 (17.1)	41 (14.9)	
Missing	6 (1.5)	2 (1.6)	4 (1.5)	
Antenatal care visits, mean (SD)	1.7 (1.0)	1.4 (0.8)	1.9 (1.1)	<0.001*
Travel time to hospital (minutes), mean (SD)	101.9 (52.6)	92.5 (48.3)	106.6 (54.2)	0.015*
Cost of transportation (birr), mean (SD)	6.5 (11.6)	5.8 (11.2)	6.9 (11.8)	0.407
Cost > 10 birr, n (%)	92 (22.8)	23 (17.8)	69 (25.1)	0.105
Travel by foot, n (%)	222 (55.0)	75 (58.1)	147 (53.5)	0.378
Previous home delivery, n (%)	234 (58.2)	55 (43.3)	179 (65.1)	<0.001*
# home deliveries, mean (SD)	2.1 (2.4)	1.7 (2.4)	2.2 (2.4)	0.035*
Previous health facility delivery, n (%)	127 (31.4)	52 (40.3)	75 (27.3)	0.009*
# health facility deliveries, mean (SD)	0.5 (0.9)	0.7 (1.2)	0.3 (0.8)	0.003*

SD, standard deviation; birr, Ethiopian currency

* Significant association

Due to transportation, time, and financial constraints, we were unable to collect the research cards that women received at enrollment. We were thus unable to estimate the delivery rates at surrounding health posts and health centers.

Table 4 shows results from the postpartum survey. Of 129 women that delivered in the hospital, 71 answered questions about their reasons for delivering in the hospital (missing data = 45.0%).

Table 4. Postpartum survey: factors contributing to hospital delivery.

All women that responded (n = 71)	n (%)*
Feeling of safety	59 (83.1)
Presence of a physician	25 (35.2)
Complication with a previous pregnancy	15 (21.1)
Complication with current pregnancy	12 (16.9)
Presence of coffee ceremony	9 (12.7)
Referral from health post or health center	6 (8.5)
Recommended by family	3 (4.2)

*Multiple answers were possible

At time of delivery in the hospital, concern arose that a number of enrolled women expressed the expectation that they were to receive a coffee ceremony, despite having been randomized to the no-coffee group. Conversely, some women in the coffee ceremony group did not anticipate receiving postpartum coffee. Table 5 shows a sample of 31 women with no significant difference in coffee anticipation between the coffee and no-coffee groups. More than half the women in the coffee ceremony group did not anticipate receiving coffee. In addition, one of the women that reported coffee as a motivating factor for hospital delivery was randomized to the non-coffee group.

Table 5. Coffee Anticipation by Randomization Group.

Anticipated coffee ceremony	All women (n = 31)	Coffee (n = 24)	No Coffee (n = 7)	P-value
No	15 (48.4)	13 (54.2)	2 (28.6)	0.394
Yes	16 (51.6)	11 (45.8)	5 (71.4)	

DISCUSSION

This non-blinded, randomized controlled trial of offering traditional Ethiopian coffee ceremony after delivery seems at first sight to indicate that this intervention did not influence women's decision-making on delivery location. However, a subsample of women reported that they were unaware of their randomization status. After delivery, we assessed women's self-reported reasons for delivery in the hospital. 12% of responders volunteered the presence of a coffee ceremony as a motivating factor. Only 31 women were specifically asked if they were expecting a coffee ceremony. It is unknown if this subsample was representative of all enrolled women. This undercuts our ability to draw any firm conclusions about the effect of this sociocultural intervention and to be able to formulate recommendations with regards to allocation of resources. This study illustrates the difficulty of designing and executing research in a setting with language barriers, women with low educational levels, and hospital staff without previous research experience. It also illustrates the need for careful ongoing quality control throughout the study. Moreover, this study was designed to assess an important Ethiopian cultural phenomenon as a possible contributor to improvement of maternity care. Sociocultural norms were taken into account, for example by performing group randomization per clinic day, to prevent some women being told that they would receive coffee, while others would not. However, it might still have been incomprehensible that some women would receive a coffee ceremony in celebration of their newborn, and others would not.

Another limitation of our study was the non-blinded nature of the intervention. Also, there were several

contributors to missing data. At Gambo Hospital, health records are paper-based and kept in a designated cardroom. Retrieval of records is contingent upon patients presenting a personal medical record number card. Without this card retrieval is almost impossible due to limited other helpful patient identifiers (for example, patients often are unaware of their date of birth). Even with the medical record number card the researchers were unable to locate 35 charts based on medical record number (8.0%). We were unable to quantify how many women we assume to have delivered elsewhere in fact delivered at Gambo Hospital as documented in a duplicate medical record. This makes it likely that we are underestimating the hospital-delivery rate in the study population. Survey responses and pregnancy complication data also suffered from missing data (45.0% and 30.2%, respectively).

Strengths of our study include the randomized controlled study design, which limited the presence of confounding variables that would have affected other study designs such as a pre-and post-implementation study. Furthermore, the trial was low cost.

Interestingly, the delivery rate of 31.9% (95% CI 27.4 – 36.5%) among our study population was notably higher than historic delivery rates at Gambo Hospital, which was less than 20% in the preceding 2 years. This increase in utilization of health services does fit a wider trend in Ethiopia. The most recent Ethiopian Demographic Health Survey reports a significant increase in births attended in a health facility, rising from 10% in 2006-2011 to 48% in 2014-2019 [4], reflecting a national effort to improve maternal health. We did not perform a formal pre- and post-intervention comparison due to financial and infrastructural barriers which precluded the ability to obtain reliable patient-level data from previous years. Also, several improvements in maternal care would have served as important confounders, such as the recent appointment of a physician dedicated to the Obstetrics & Gynecology department. Notably, 12.7% of women reported that the coffee ceremony played a role in their decision to deliver at the hospital. We can only speculate that organizing postpartum coffee ceremonies had a positive effect on the perception of hospital-based obstetrical care. Outside of the study setting, we have experienced that the postpartum coffee ceremony can function as a well-attended platform for educational sessions for admitted and antenatal care women. Lastly, study populations are prone to the Hawthorne effect [26], which could contribute to an improvement of hospital-based delivery rates.

With regard to predictors of hospital-based deliveries, our findings are mostly consistent with previously published Ethiopian data [6-9, 11-13]. Delivery at Gambo Hospital was positively associated with shorter travel time, higher education grade, and previous deliveries at a health-facility. Hospital delivery was negatively associated with any previous home deliveries. Contrary to several Ethiopian reports [11, 13, 27, 28], we found that a higher number of antenatal care visits was negatively associated with hospital delivery. We speculate that women with a higher number of antenatal care visits felt more confident that their pregnancies were uncomplicated. They therefore preferred either a customary home delivery or a delivery closer to home in a health post or center.

CONCLUSIONS & RECOMMENDATIONS

The likely flawed randomization process undercuts our ability to draw conclusions about the effect of this sociocultural intervention on the observed hospital-based delivery increase. We encourage future research on the effects of sociocultural interventions on maternal health outcomes. Consideration could be given to another randomized trial, but it might be more appropriate to consider a hospital implementation study with a similar hospital serving as a comparator. The coffee ceremony can also be further examined for its possible function as a platform for health education.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

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GUIDELINES AND BEST PRACTICE RECOMMENDATIONS ON CONTRACEPTION AND SAFE ABORTION CARE SERVICE PROVISION AMID COVID-19 PANDEMIC: SCOPING REVIEW

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Delayehu Bekele, MD, MPH[1], Matiyas Asrat Shiferaw, MD[1]

ABSTRACT

INTRODUCTION: Policy makers and health professionals prefer to use summarized evidence of practice recommendations. The aim of this scoping review is therefore to identify available practice recommendations on contraception and safe abortion care service provision during the COVID-19 pandemic.

METHODS: We searched guideline databases and websites of professional associations and international organizations working on sexual and reproductive health. Additionally, we searched: PubMed, EMBASE Google Scholar MedRxiv and Research Square. We included English records labelled guideline, or recommendation, or consensus, or practice parameter, as well as position papers on contraception and safe abortion care service practice during the COVID-19 pandemic. Data extraction was done by two independent reviewers using a customized tool that was developed to record the key information of the source that is relevant to the review question. The difference between the two authors on data extraction was resolved by discussion.

RESULTS: Fourteen records on safe abortion care and thirteen records on contraception service were identified. Identified recommendations were categorized into thematic areas. The records addressed approaches to the safe medication and surgical abortion, self-serving family planning and long-term and reversible contraception.

CONCLUSIONS: Consensus statements and recommendations consistently stated that there should be access to contraception service and safe abortion care during the COVID-19 pandemic. The practice recommendations focus on innovative ways of service provision to minimize patient and staff exposure to COVID-19, as well as alleviate the burden on the health care system. These include utilizing telemedicine or digital health and community/home-based care or self-care

KEY WORDS: COVID-19, Pandemic, Reproductive health, Abortion, Contraception.

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INTRODUCTION

The WHO considers reproductive health services, including care during pregnancy and child health, as essential health services to continue during the COVID-19 pandemic [1]. Additionally, WHO stated, "Women's choices and rights to sexual and reproductive health care should be respected irrespective of COVID-19 status, including access to contraception and safe abortion to the full extent of the law" [2]. But when staff and services are under extreme stress, there is a real risk of increasing avoidable harm. The tremendous burden caused by the COVID-19 outbreak is exceeding the capacity of many national and local health systems, which is jeopardizing routine service delivery and undermining other health priorities. Redirecting resources to COVID-19 mitigation, lock downs and travel restrictions forced health services to shut down [3]. Additionally, lockdowns and travel restrictions are affecting production and supply chain of different contraceptives methods, thereby impacting availability [4]. As such, the evolving COVID-19 pandemic may affect routine services including sexual, reproductive, and maternal health service delivery. Marie Stopes International (MSI) warned nearly 9.5 million people will miss out on reproductive service if service reduction continues for three months because of the lockdown which could lead to 1.3-3 million unintended pregnancies, 1.2-2.7 million unsafe abortions and 5000 to 11,000 pregnancy related deaths [5].

Riley et al. published a projection of the impact of the pandemic on SRH services using 2019 data on SRH services from 137 low-and middle-income countries [6]. According to the projection, 10% service reduction will result in nearly 48,558,000 additional women with an unmet need for modern contraceptives and 15,401,000 additional unintended pregnancies. Furthermore, according to the projection, a 10% service reduction will result in 3,325,000 additional unsafe abortions, resulting in 1,000 additional maternal deaths from unsafe abortion 6. Experience in past epidemics has also shown that lack of access to essential health services and shut down of services unrelated to the epidemic response resulted in more deaths than the epidemic itself [7].

To mitigate the impact of COVID-19 on reproductive health service, different institutions and organizations, including WHO, defined abortion and contraception service as essential service [1,8,9]. Different national and local protocols, consensus statements, practice guidance, and directions to maintain provision of safe abortion and contraception service were released[10-13]

The aim of this scoping review is therefore to locate, describe, and summarize available local, national or international guidelines and practice recommendations on provision of safe abortion and contraception service during the COVID-19 pandemic.

Review questions

Providers, institutions, and clients need to know the best way safe abortion and contraception service provision could continue during COVID-19. What are the available documents that inform such practice recommendations? What are the available clinical practice guidance and recommendations that guide safe abortion service provision amid the COVID-19 pandemic? What are the available practice guidance and recommendations that guide contraception service provision amid COVID-19 pandemic?

METHOD AND MATERIALS

The report included in this scoping review was prepared based on Preferred Reporting Items for Systematic scoping review (PRSIMA-SC) [14].

Inclusion and exclusion criteria

This review considered worldwide records issued by recognized local or international institutions or organizations addressing service delivery approaches and recommendations on safe abortion and contraception service during the COVID-19 pandemic. The review included reports that include adolescent girls, reproductive age women, women seeking abortion, women or men seeking contraception service, health care providers,

health managers and health care institutions connected to safe abortion and contraception. We included international, national, or local records labelled guidelines or recommendations, consensus statements, practice parameters, as well as position papers on contraception and safe abortion care service practice during the COVID-19 pandemic. We excluded records on safe abortion and contraception care not related to COVID-19, reports on reproductive service during COVID-19 in which abortion and contraception care were not clearly indicated, and documents with no clear recommendation on safe abortion and contraception care amid COVID-19.

Source of information

We searched for professional associations and international organization guidelines, protocols, consensus statements, and practice recommendations on safe abortion and contraception services during the COVID-19 pandemic. We looked for guideline databases and websites. We searched websites of the following associations and organizations: World Health Organization (WHO), America College of Obstetrics and Gynecology (ACOG), Royal College of Obstetrics and Gynecology (RCOG), Royal College of Midwives (RCM), International Federation of Obstetrics and Gynecology (FIGO), Society of Maternal and Fetal Medicine(SMFM), Society of Obstetrics and Gynecology of Canada (SOGC), RANZCOG (The Royal Australian and New Zealand College of Obstetricians and Gynecologists), UNICEF (United Nations International Children's Emergency Fund), Faculty of Sexual and Reproductive Healthcare (FSRH), British Society of Abortion Care Providers (BSACP), Society of Family Planning (SFP), United Nations Population Fund (UNFPA), International Planned Parenthood Federation (IPPF), and Marie Stopes International (MSI). The guideline data bases searched were: Turning Research into Practice (TRIP) database, Guideline International (GIN) library, National Guideline Clearinghouse (NGC) and National Institute for Health and Clinical Excellence (NICE).

Table 1: PubMed Search strategy; Search conducted on April 18, 2020.

Number	Search Query	Result
1	COVID-19 [tw] OR Sars cov-2[tw] OR Pandemics[tw] OR epidemics [tw] AND maternal care[tw] OR reproductive service[tw] OR abortion [tw] OR contraception[tw] OR family planning[tw]	92,0931
2	Limit 1 to English AND Human AND 1 year.	400

The above professional associations and organizations were selected based on consultation with ten experts providing safe abortion and contraception and two evidence-based health care experts. To make the search more systematic we also searched PubMed, EMBASE, Google Scholar, MedRxiv, and Research Square (Table 1 shows PubMed search strategy).

Search strategy

The search strategy aimed to locate both published and unpublished studies. We initially searched websites of organizations and associations working on reproductive health to identify articles on the topic, as well as keywords and text words commonly used in the relevant articles. The commonly used keywords were COVID-19, SARS-CoV-2, abortion care, reproductive health, gender equality, contraception, and telemedicine. These keywords were used to search relevant articles in guideline databases. The text words contained in the titles and abstracts of relevant articles and the index terms used to describe the articles were used to develop a full search strategy for data bases (see Table 1: PubMed search strategy). We conducted a systematic search in PubMed and EMBASE. Likewise, a search extended to Google Scholar and preprint publications in MedRxiv and Research Square. The reference list of all selected studies was screened for additional studies. The search is limited to English and within one year (considering

the duration of the outbreak to be after December 2019).

Data extraction and synthesis

Data extraction was done by two independent persons using an Excel sheet customized tool that was developed to record the key information relevant to the review question. The data extraction tool was developed for guideline related documents, consensus statements, and practice recommendations. Types of document and summary of recommendations were extracted. The difference between the two authors on data extraction was resolved by discussion. We looked for service delivery organization changes, new position statements, and guidelines on safe abortion and contraception service areas in relation to the COVID-19 pandemic. We categorized identified guidelines or practice recommendations according to the following thematic areas: first trimester and second trimester medication abortion, first and second trimester surgical abortion, short-term and long-term contraception. Additionally, we looked for post-abortion and postpartum contraception. The findings were summarized into similar and dissimilar recommendations and described narratively. Data extraction tool and guidelines extracted are provided as supplementary file (Appendix 2: S1 excel document).

RESULTS

The initial search yielded a total of 400 records. After removing duplicates, 380 documents were retained for further examination. After screening the titles and abstracts, 36 papers were retained for full-text review. Based on pre-defined inclusion criteria, 14 records were included in the scoping review.

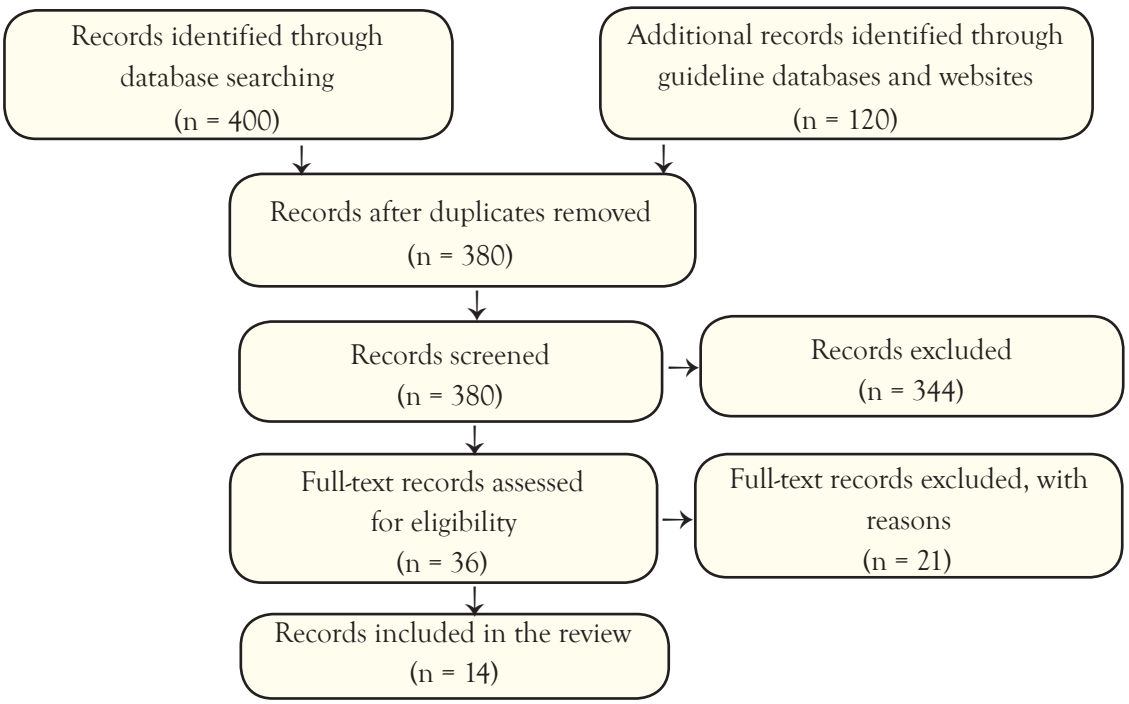

Fig 1: Prisma flow of records/documents selection process.

Characteristics of included guidelines and practice recommendations

Identified recommendations were categorized into the following service thematic area: Safe abortion and contraception areas and then into subthemes as first and second trimester, medication or surgical abortion, and different contraception types (Table 2 Characteristics of identified records). Data extraction tool and individual records included in the extraction are provided as supplementary file (See appendix 2: S1 excel document).

Table 2: Characteristics of identified records and common practice recommendations

	Practice recommendations	Number of records	Sources and name of the record	Types of document (guideline, commentaires, position statements)
Safe abortion	No-touch /no-test early medication abortion.	11	FIGO, RCM, SOGC, RCOG, RANZCOG, NAF, IPPF, UNFPA, MSI, FSRH, BSACP	Guidance, position statements and commentaries.
	Minimum contact second trimester .medication abortion.	11	FIGO, RCM, SOGC, RCOG, RANZCOG, NAF, IPPF, UNFPA, MSI, FSRH, BSACP	Guidance, position statements and commentaries
	Minimum contact surgical abortion.	11	FIGO, RCM, SOGC, RCOG, RANZCOG, NAF, IPPF, UNFPA, MSI, FSRH, BSACP	Guidance, position statements and commentaries
Contraception	Self-serving contraception methods.	9	FIGO, WHO, RCM, RCOG, FSRH, IPPF, UNFPA, MSI, RANZCOG	Guidance, position statements and commentaries
	Extended use of long-term contraceptives.	7	RCM, RCOG, FSRH, IPPF, UNFPA, MSI, RANZCOG	Guidance, position statements and commentaries
	Minimum contact long term contraceptives.	8	FIGO, RCM, RCOG, FSRH, IPPF, UNFPA, MSI, RANZCOG	Guidance, position statements and commentaries

Contraception service

For women already on contraception

Telemedicine and self-care family planning methods were recommended consistently in all the guidelines. Self-care family planning methods include contraceptive pills, self-injectables, subcutaneous depo shot, condoms, vaginal rings, and fertility awareness methods [WHO, FIGO, RCOG, RCM, SOGC, RANZOG, IPPF, UNFPA, MSI and FSRH] [10, 15-19].

There are consistent position statements that recommend combined hormonal contraception (CHC) and progesterone only pills (POP) users to continue 6-12 months without rechecking body mass index (BMI) and blood pressure. RCM, RCOG and FSRH recommends depot medroxyprogesterone acetate (DMPA) users to switch to available progesterone only pills (POP) to avoid face to face contact [9, 10, 15, 20]. For long-term contraceptive users RCM, RCOG, FSRH advised extended use and delaying removal of implants and IUCD during the pandemic crisis unless serious side effects happen or the woman wants to get pregnant. If women want long-term contraceptives, FIGO, SOGC, RANZOG, UNFPA, IPPF and MSI advise provision with precautions to avoid COVID-19 exposure [10, 13, 15, 18, 20, 21].

New contraception starters

Telemedicine and self-care family planning with remote assessment and prescription of CHC and POP for 6-12 months and self-injectable contraception were consistently recommended. However, administration of DMPA or insertion of implants or intrauterine device are to be considered where concerns about adherence, individual intolerance of oral contraceptives, or use of teratogens make longer-acting reversible contraception the only suitable option. Pre-procedure assessment and information-giving remotely to minimize face-to-face contact time (minimum contact service) with healthcare professionals was recommended [WHO, FIGO, RCOG, RCM, SOGC, RANZOG, IPPF, UNFPA, MSI and FSRH]. Optimal use of contact points, such as expanding post-partum family planning with special focus on long acting reversible contraception were recommended [FIGO, RCOG, RCM, FSRH, MSI and UNFPA]. RCOG, RCM, FSRH, MSI,NAF and BSACP all recommend self-care family planning with early medical abortion or routine post-abortion family planning [13, 20, 22].

Emergency contraception (EC)

Remote assessment of requirement and choice of EC

Oral emergency contraception remote prescription or provision without prescription or Cu-IUD provision with minimum face to face contact is recommended [RCOG, RCM, FSRH, BSACP, FIGO].

Safe abortion service

All records (practice recommendations and position papers or commentaries) consistently recommend screening for COVID-19 symptoms remotely before face-to-face contact or during remote early medication abortion without face-to-face contact. FIGO, RCOG, RCM, SOGC, RANZCOG, NAF, IPPF, MSI, FSRH, BSACP and Reproductive access project recommends no-touch early medication abortion [9-11, 13, 23]. UNFPA, WHO, and ACOG did not issue specific guidance other than stating abortion as an essential service to continue during the pandemic [1, 12] The no-touch protocol depicts pathways to minimize COVID-19 exposure to patient and staff by organizing early medication abortion services to be delivered via video or teleconferencing /telemedicine and delivery of a treatment package [9, 13, 23]. The treatment package includes mifepristone, misoprostol, ibuprofen, and self-care family planning if the patient has accepted post-abortion contraception. The no-touch protocol is self-administered medication abortion in early pregnancy without pre-procedure ultrasound and blood testing. The guideline also indicated that for women in self-isolation because of exposure to COVID-19, no-touch early medication abortion can be arranged at home. If face-to-face contact care is a must for COVID-19 exposed women, RCM, RCOG, FSRH, BSACP, and NAF recommend it should be booked when the isolation period is over, unless the gestation is uncertain and the delay may result in a woman not being able to access abortion in which face-to-face contact must be arranged with full personal protective measures [9, 11, 13, 20]. There is no specific recommendation issued for second trimester medication abortion (above 12 weeks), but professional associations and organizations position papers consistently recommend the utilization of telemedicine for digital patient education and counselling to reduce waiting periods and extent of face-to-face contact (minimal contact service) [1, 11, 13, 24].

For surgical abortion, position papers and practice recommendations focus on minimum contact procedure by remote digital patient education, counselling, and evaluation. The other focus of practice recommendations is increasing safety during the procedure by limiting the number of people in the procedure room, appropriate use of personal protective equipment, and decontaminating the area after the procedure as per the recommendation (Appendix II, S1 excel document see included records). RCM, RCOG, BSACP, NAF and FSRH also recommend surgical facemasks and sanitizer or hand washing for patients [11, 13]. Regarding procedures, vacuum aspiration, dilatation and evacuation or dilatation and curettage are not aerosol generating procedures unless done by general anesthesia [25]. Therefore, these procedures do not require full personal protective equipment like N 95, but abortion providers should screen all patients before the procedure and use standard precautions. Where possible and feasible it is also recommended to perform the procedures under local anesthesia or intravenous

sedation or spinal anesthesia to avoid the need for general anesthesia [9, 11, 13, 25]. It is recommended consistently that follow up visits are not required in all conditions, and where needed, can be done remotely by telemedicine.

DISCUSSION

In this review, we attempted to locate documents in the form of guidelines, consensus statements, best practice statements, and standards of practice indicating directions on provision of contraception and safe abortion care service during the COVID-19 pandemic. We searched guideline databases, PubMed, EMBASE, Google Scholar, MedRxiv, Research Square, and website of international professional associations and organizations working on sexual and reproductive health. We identified 14 documents that fulfilled predefined inclusion criteria.

KEY FINDINGS

1. Several international associations and organizations declared contraception and safe abortion care as essential health services to continue during the COVID-19 pandemic [WHO, ACOG, RCOG, FIGO, RCM, SOGC, RANZCOG, Reproductive access project, NAF, IPPF, UNFPA, MSI, BSACP and FSRH]. The common recommendations are:
2. Pre-triage (screening) of all clients for Covid-19 is recommended.
3. Telemedicine and self-care family planning methods are recommended consistently.
4. For women already on combined hormonal contraception (CHC) and progesterone-only pills (POP), it is recommended to continue 6-12 months without rechecking body mass index (BMI) and blood pressure during the pandemic.
5. For long-term contraceptive users its recommended to use options of extended use to avoid face-to-face contact during the pandemic or minimum contact provision of service implants and IUCD.
6. No-touch or no-test early medication abortion is recommended consistently.
7. Minimum contact first and second trimester surgical abortion.
8. Post-abortion follow-up is not recommended. However, telemedicine is recommended to address any post-abortion concerns.

Pre-triage (screening) of all clients for any service either remotely by telemedicine or at health facility is recommended consistently. This is, in fact, a universal recommendation by CDC, WHO and others that patients should be triaged and screened at intake with a minimum of a history of exposure, symptoms of COVID-19 with or without temperature [1, 26]. This is especially important in cases where face-to-face contact is a must, such as with surgical abortion, or if long-term contraception is needed. In such conditions, they call for minimum contact procedure or service in which remote screening and evaluation of patient is utilized, remote laboratory request is used, remote counselling employed and remote prescription using telemedicine incorporated to reduce patient exposure. In the case of long-term contraception, one viable option included in the guidelines was the option of extended use. This is supported by limited evidence that shows duration of long acting contraceptive effect is 2 years beyond Food and Drug Administration (FDA)-approved duration [27]. Self-care short-term family planning methods for new initiation or checking blood pressure and weight to continue combined hormonal contraception is consistently recommended. These are innovative self-care interventions that emerged recently, and their necessity becomes visible with COVID-19. WHO has guidelines on self-care interventions of which self-injectable and oral contraception service is one [28]. Self-care interventions are found to be an effective and viable option in increasing access to reproductive health service [29-31]. No touch early medication abortion with remote telemedicine evaluation and prescription of packages of medication for early pregnancy abortion are recommended. WHO guidelines recommend that in conditions where there is access to information, women can by themselves take mifepristone and misoprostol, evaluate completeness of their abortion, and take post abortion self-care injectable contraception [32].

LIMITATIONS

In this scoping review, we tried to capture unpublished records, published preprints, and previewed journals to get as much data as possible for the evidence synthesis. However, the current review has some limitations that are worth consideration. The pandemic is an evolving issue and our search addressed articles reported before July 30, 2020. We did not conduct a methodological assessment of primary studies and many of the recommendations are expert's consensus that did not pass through a rigorous guideline development process because of the nature of the pandemic. With the above limitations in mind, the scoping review provides insight into the potential viable, effective, and innovative ways to maintain safe abortion and contraception service during COVID-19. Such preliminary evidence might be an input to generate hypothesis or design rigorous implementation research projects that will inform policy decisions.

CONCLUSIONS

Implications for practice

There were consistent consensus statements and recommendations that there should be access to contraception service and safe abortion care during the COVID-19 pandemic. The practice recommendations focus on minimizing patient and staff exposure to COVID-19 by utilizing telemedicine or digital health and includes the following:

a) No touch early medication abortion and minimum contact second trimester medication abortion.
b) Minimum contact surgical abortion
c) Self-serving contraception methods.
d) Minimum contact long-term contraceptive service provision
e) Extended use of long-term contraceptive methods.

Implications for research

Most of the documents that are included in this review did not pass through rigorous guideline development process because of the nature of the pandemics. New evidence is evolving with time as the duration of the pandemic extends. Hence, we recommend primary studies and systematic reviews to generate further evidence on the impact of new practices, and to map and document best practice implementations.

ETHICAL CONSIDERATIONS

Formal ethical permissions are not required for this review and all data used is included in the manuscript and supplementary material.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest in this review.

AUTHORS' CONTRIBUTION

Conceptualization: LBT, TU, BN, MA, MAS, DB
Data curation: LBT, TU, BN, MA, MAS, DB
Formal analyses: LBT, TU, BN, MA, MAS, DB
Funding acquisition: NA
Investigation: LBT, TU, BN, MA, MAS, DB
Methodology: LBT, TU, BN, MA, MAS, DB
Project administration: LBT, TU, BN, MA, MAS, DB
Ressources : LBT, TU, BN, MA, MAS, DB
Software : LBT, TU, BN, MA, MAS, DB
Supervision: LBT, TU, BN, MA, MAS, DB
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Appendix: Supplementary materials.

1. S1 Excel document: Describes data extraction tool with records included and extracted recommendations.
2. S1 Table: Scoping review PRISMA checklist. It describes the review against the checklist for PRISMA reporting guideline

UTILIZATION OF MODERN FAMILY PLANNING METHOD AMONG WOMEN WITH PSYCHIATRIC DISORDERS AT AMANUEL MENTAL HEALTH SPECIALIZED HOSPITAL ADDIS ABABA, ETHIOPIA, 2018

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ABSTRACT

BACKGROUND: The family planning needs of patients with psychiatric disorders may not be routinely addressed in most psychiatric settings. Therefore, the present study aimed to assess the utilization of modern family planning and associated factors among women with a psychiatric disorder.

METHODS: Institution-based cross-sectional study design was conducted to assess utilization and associated factors of the modern family planning method among women with psychiatric disorders attending psychiatric outpatient services. 413 study subjects were selected using a systematic random sampling technique. Multivariate analysis was carried out to identify independent predictors of the utilization of modern family planning methods. A P-value of less than 0.05 was used to declare statistically significant associations.

RESULT: Among the total sample about (40.2%) of the respondents were using modern family planning methods at the time of the study. According to multivariate logistic regressions, a woman with a psychiatric disorder whose level of education was higher than primary was 6.6 times more likely to utilize modern family planning (FP) [AOR (95% C. I 6.6 (3.03-14.4)] than women whose level of education is primary. Moreover, women with a psychiatric illness living in urban areas were 7.8 times more likely to utilize modern FP methods [AOR 7.8(3.9-15.58)] than their counterparts. Similarly, women with a psychiatric illness counseled about modern family planningby a clinician or staff were 2.45 times more likely to utilize modern FP [AOR (2.45 (1.37-4.37)] methods than women who did not receive counsel.

CONCLUSION: This study revealed that marital status, educational status, residence, the status of employment, and counseling by health care providers were the significant predictors for the utilization of modern family planning methods. Therefore, psychiatrists and other health care providers should give a great emphasis regarding family planning utilization especially for those women with psychiatric illness, and who were unemployed, uneducated, and those residing in rural areas.

KEY WORDS: modern family planning, psychiatric disorder, Addis Ababa

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INTRODUCTION

Patients with major mental disorders, including schizophrenia-spectrum disorders, may have an enhanced risk when compared to groups of patients without psychiatric disorders for both unwanted pregnancies and children given up for others to raise [1, 2]. Women who haved psychiatric illness may have difficulty in accessing information about family planning methods [3]. The prevalence of unplanned pregnancies is very high among psychiatric patients due to the frequent lack of insight, lack of planning, and difficulty in behavioral control [4, 5]. Babies born to women with an untreated psychiatric disorder are at a higher risk of prematurity, low birth weight, and intrauterine growth restriction which could also affect childhood development [6]. Alcohol or illicit substance use disorders, which are likely more common in those with major mental disorders may contribute to the risk for unwanted pregnancies and the adverse consequences of those pregnancies [7, 8]. Moreover, some of the risks of psychiatric disorders in women with major mental disorders who have unwanted pregnancies also extend to their infants, particularly if these women are depressed, psychotic, or have histories of trauma or addiction [9]. Psychiatric disorders could also affect the quality of life factors such as employment rates, interpersonal and interfamilial communications, marriage, child-bearing, parental skills, reproductive behavior, and many other social cognitive areas. in different ways [10].

A study on family planning among psychiatric patients hasve documented that low utilization, misuse, and high discontinuation rate for COCs and condoms, but also highly demonstrated for DMPA, IUDs, and implants [11].

Various evidence suggested that counseling about family planning from health professionals, lack of integration with other health services, accessibility of family planning, place of residence, educational status, income status, employment status, desire to have children, and the number of alive children were significantly associated with utilization of modern family planning methods [1, 3, 12-14]. Likewise, another study showed that fear of side effects, indecision aboutto use, spousal opposition, as well as religious and cultural inhibitions were the most commonest predictors of contraceptives utilization in psychiatric patients [15]. Despite theseis significant factors, family planning needs of patients with major mental disorders may not be routinely addressed in most psychiatric settings [16, 17], and women with schizophrenia had multiple partners, high rates of coerced or forced sex, high rates of HIV risk behaviors, and limited knowledge about sexuality [18] . Even when many heterosexually active women with major mental disorders do not want to become pregnant, they may not use birth control consistently, if at all [2, 19]. However, in behaviorally disordered women, either by a psychiatric condition or by drug abuse, the provision of establishing a safe and effective means of birth control requires a great deal of clinical attention and effort [20]. Therefore, reproductive health services like sex education, provision of family planning, and prevention of sexually transmitted infections are very important for those women who have a psychiatric illness [21]. Particularly, improving the reproductive health needs of psychiatric patients concerning family planning is one way of supporting the whole family system [22]. Therefore, the present study aimed to assess utilization and associated factors of the family planning methods among women with psychiatric illness in Ethiopia.

METHOD & MATERIALS

Study setting

The institution-based cross-sectional study design was conducted from February 10 to March 10, 2018, at Amanuel Mental Specialized Hospital, which is found in Addis Ababa. Amanuel Mental Specialized Hospital is the major referral hospital for psychiatric patients in Ethiopia who come from all over the country, which has ten adult

psychiatric outpatient departments (OPD), a non-psychotic case team, and an addiction case team. According to reports on the Health Management Information system (HMIS), the average number of female psychiatric patients who receivedhave gotten services fromand appointed in Amanuel Hhospital from November 10¬to December 10 /2017 was 4180.

Sample Size Determination

The sample size was determined by using a single population proportion by taking the proportion of modern family planning among psychiatric patients who were attending the outpatient clinic to be 57.5%, which was done in Kenya [13]. In addition, considering anticipating adding a 10% non-repose rate, the final sample size became 413 women who had a psychiatric illness in their reproductive age groups (18 - 49 years). Patients who had a full insight at the time of data collection and attending were receiving the psychiatric outpatient service were included in the study. The systematic random sampling technique was applied after proportionally allocating the estimated sample size according to the intake capacity of the respective OPD to those who met the inclusion criteria and giving consent to participate during the period of the study.

Data Collection tools and procedures

Questionnaires were adapted from a similar study done in Kenya with accepted reliability and validity. All the staff in the outpatient clinic whereas sensitized about the study. An English version of the questionnaire was translated to Amharic and retranslated to its original language by third persons to check consistency. The pre-test was done on about 5 % of the sample and a face-to-face interview was conducted in Black Lion psychiatric outpatient clinic in, Addis Ababa. The data collectors were psychiatric professionals in collaboration with the assigned psychiatric nurse. The insight assessment was carried out by psychiatric professionals who were experts in their profession. The Beck Cognitive Insight Scale (BCIS) was utilized to understand patients' perspectives about their anomalous experiences and their interpretations of specific life events before the beginning of actual data collections.

Data collection mainly took place in ten psychiatric outpatient departments oin the working time of the hospital during the study period while patients attended their scheduled outpatient clinic time. Finally, the desired sample of psychiatric clients from each case team was determined based on proportional to population size for each case team.

Data Processing and Analysis

The data wasere cleaned and entered into the Epi-data version 3.1 then exported to SPSS (Statistical Package for Social Science) version 24 for analysis. The analysis part, which consisteds of descriptive statistics, percentage, mean, frequency, and bivariate and multivariate binary logistic regression, was carried out to determine the association between an independent variable with the outcome variable among study participants. The adjusted odds ratios were used to interpret the strength of the association at a 95% confidence interval. A statistical test of association was considered significant at a P-value of<0.05.

Operational Definitions

Modern contraceptives: includes male and female condoms, injectable (Depo Medroxy Progesterone Acetate) (DMPA), oral contraceptive pills, diaphragm, implants, intrauterine contraceptive devices (IUCD), female tubal ligation, and male partner sterilization.

Modern Family planning utilization: Ever Uuse of modern contraceptives when the study subjects are exposed to sexual intercourse to prevent an unintended pregnancy.

Salary employed: is a worker who is paid a fixed amount of money or compensation (also known as a salary) by an employer.

Self-employed is earning income directly from one's own business, trade, or profession rather than as a specified salary or wages from an employer.

Full insight: was defined based on the Beck Cognitive Insight Scale (BCIS). An overall score of Cognitive Insight is derived by subtracting the self-certainty (SC) score from the self-reflectiveness (SR) score; a higher score would be considered as full Cognitive insight [23].

Ethics approval and consent to participate

Ethical clearance was sought from Addis Ababa University, School of Aallied Hhealth Ssciences, ethical review Committee. After this, a supporting letter was written by Amanuel Mmental Sspecialized Hhospital to conduct this research in the hospital. After explaining the purpose and the possible benefit of the study, verbal consent was obtained from the study participants. Confidentiality of information was maintained and no identifiers were on the study instruments except serial numbers.

RESULT

Socio-demographic characteristics of respondents

In this study, 413 women with different psychiatric disorders werehad interviewed. All questions in the questionnaires responded to with a 100 % response rate. The mean age of the respondent was 28.99 ±4.82. Likewise, about 246 (59.6%) of them were married. The higher proportion of women were Oorthodox 199 (48.2%) followers. Regarding respondents' educational level, women with psychiatric disorders attended elementary (43.8%), secondary (36.6% 3), and higher education (19.6%), respectively **(Table 1)**.

Table 1. Socio-demographic characteristic of respondents among women with a psychiatric diagnosis in Amanuel Mental Specialized Hospital, Addis Ababa (n=413)

Variable	Category	Frequency	Percentage (%)
Age	18-24	75	18.2
	25-30	202	48.9
	31-35	94	22.8
	>=36	42	10.2
Religion	Orthodox	199	48.2
	Muslim	148	35.8
	Protestant	59	14.3
	Catholic	7	1.7
Marital status	Married	246	59.6
	Unmarried	167	40.4
Level of education	Primary(1-8) grade	181	43.8
	Secondary(9-12)grade	151	36.6
	Higher (>12 grade	81	19.6
Residence	Urban	201	48.7
	Rural	212	51.3
Income	<1200	46	11.1
	>=1200	291	70.5
Employment	None	178	43.1
	Salary employed	103	24.9

Reproductive history of women with a psychiatric disorder

Of the participants, 42.1% had ever given birth, and 94.8% of them were living with their children and had parenting responsibilities. Moreover, 12.6 % of patients had lost their children, and 3.1% of them faced miscarriages/abortions. Among the respondents 4.1% were pregnant and of these, 70.6% of the pregnancies were not intended **(Table 2)**.

Table 2. The reproductive history of women with different psychiatric illnesses in Amanuel Mental Specialized Hospital, Addis Ababa (n=413).

Variable		Frequency (N)	Percentage (%)
Have you ever given birth? N=413	Yes	174	42.1
	No	239	57.9
Do you have a child who is now living with you N=174	Yes	165	94.8
	No	9	5.2
Number of children live with you N=174	one	68	9.1
	Two	34	19.5
	Three and above	72	41.4
Do you have any child who is alive but not living with you N=174	Yes	9	5.2
	No	165	94.8
Do you have a child who was born alive, but later died N=174	Yes	22	12.6
	No	152	87.4
Are you pregnant? N=413	Yes	17	4.1
	No	396	95.9
Gestational age N=17	1-3 month	127	0.6
	4-6 month	5	29.4
Did you want to be pregnant when you got pregnant at that time?	Yes	5	29.4
	No	12	70.6
Did you want to have babies later on or did not want any additional children? N=17	Later	2	11.8
	No more	15	88.2
Have you ever aborted or ended in stillbirth N=413	Yes	13	3.1
	No	400	96.9

Types of psychiatric disorder

Regarding types of psychiatric disorders, results showed that 37% had psychotic disorder, 17.9% mood disorder with psychosis feature, 16.2% major depressive disorder, 12.1% generalized anxiety disorder, 7.7% bipolar disorder, 4.4% schizophrenia, 3.4% PTSD, 1% of women diagnosed with postpartum psychosis and 0.2% substance-induced psychosis (**Table 3**).

Table 3. The previous psychiatric diagnosis of respondents in Amanuel mental specialized hospital, Addis Ababa

Psychiatric disorder	Frequency (N=413)	Percentage (%)
Psychotic disorder	153	37.0
Mood disorder with psychosis	74	17.9
Major depressive disorder	67	16.2
Generalized anxiety disorder	50	12.1
Bipolar disorder	32	7.7
Schizophrenia	18	4.4
PTSD	14	3.4
Postpartum psychosis	4	1.0
Substance-induced psychosis	1	0.2

Utilization of modern family planning method

Among the total sample about (40.2%) of the respondents were using modern family planning methods at the time of the study. Similarly, a result showed that women withdifferent psychiatric disorders used implants (17.7%), injectables (19.4%), pills (1.5%), and emergency pills (1.7%) (Figure 1).

Factors associated with the utilization of modern family planning

Binary logistic regression has been done to identify significant factors with modern family planning utilization. A p-value of less than 0.25 during bivariate analysis, taken to multivariate analysis.

According to multivariate logistic regressions, educational level, resident, employment, and counseling about family planning by psychiatric professionals were independently associated with the utilization of modern family planning method. A woman with a psychiatric disorder whose level of education was higher (>12 grade) was 6.6 times more likely to utilize modern FP [AOR (95% C. I 6.6 (3.03-14.4)] than women whose level of education was primary (1-8 grade). Regarding the place of residence, women with a psychiatric illness living in urban areas were 7.8 times more likely to utilize the modern FP method [AOR 7.8(3.9-15.58)] than their counterparts. Additionally, women who had salary employed were 7.4 times more likely to utilize a modern family planning method [AOR 7.4 3.4-16.2 than those who werenot employed. Similarly, women with a psychiatric illness counseled about the modern family planning method by a clinician or staff were 2.45 times more likely to utilize modern FP [AOR (2.45 1.37-4.37 methods than women who did not counsel **(Table 4)**.

Table 4. Factors associated with the utilization of modern family planning among women with psychiatric illness at Amanuel mental specialized hospital, Addis Ababa (n=413).

Variables	Category	Used modern FP		COR (95%CI)	AOR (95% CI)
		Yes	No		
Marital status	Married	133(32.2)	113(27.4)	4.80(3.5-7.80)**	3.18(1.10-9.56)*
	Unmarried	33(8)	134(32.4)	1.00	1.00
Education level	Primary (1-8)	45(10.9)	136(32.9)	1.00	1.00
	Secondary (9-12)	60(14.5)	91(22)	1.99(1.25-3.2)**	1.68(0.88-3.2)
	Higher(>12 grade)	61(14.8)	20(4.8)	9.20(5.0-16.90)**	6.60(3.03-14.4)**
Resident	Urban	133(32.2)	68(16.5)	10.60(6.6-17.0)**	7.80(3.9-15.58)**
	Rural	33(8)	179(43.3)	1.00	1.00
Employment	None	27(6.5)	151(36.6)	1.00	1.00
	Self employed	70(16.9)	62(15)	6.30(3.7-10.67)**	4.40(2.2-8.5)**
	Salary employed	69(16.7)	34(8.2)	11.30(6.3-20.3)**	7.40(3.4-16.2)**
Number of alive children	One	30(17.2)	38(21.8)	1.00	1.00
	Two	6(3.4)	28(16.1)	0.27(0.10-0.70)**	0.3(0.1-1.2)
	Three & more	54(31)	18(10.3)	3.80(1.85-7.80)**	1.2(0.4-3.3)
Knowledge of FP	Good	130(31.5)	134(32.4)	3.0(1.95-4.75)**	0.7(0.37-1.35)
	Poor	36(8.7)	113(27.4)	1.00	1.00
Counseled by psychiatrist	Yes	77(18.6)	72(17.4)	2.10(1.4-3.20)**	2.45(1.37-4.37)**
	No	89(21.5)	175(42.4)	1.00	1.00

Note: 1.00=reference, *=significant at p-value <0.05, **=significant at p-value <0.001

DISCUSSION

To our knowledge, this is the first study to be conducted in Ethiopia to assess utilization and associated factors of modern family planning among women with psychiatric illness. This study showed that 40.2%, which was comparable with studies done in Kenya, which was 41.2% [13] but this is higher as compared with a study done in Nigeria [15] (27%) the difference might be due to small sample size and variation in demographic factors in Nigerian study.

In this study, the most utilized family planning methods were injectables (19.4%), implants (17.7%) emergency pills (1.7%), and pills (1.5%) to prevent unintended pregnancy. However, this contradicts a study done in Chicago among women with schizophrenic spectrum disorders in which the most commonly used birth control method was tubal ligation [1]. Moreover, this finding was also slightly different from a study done in Kenyan women with psychiatric illness in which the most commonlyct utilized methods by descending order were injectables (9.2%), implants (8.5%), pills (7.8%), IUD (6.5%), female sterilization (4.6%) and male condoms (2.6%) [13]. This variation might be due to low knowledge towards permanent methods of family planning in our study area.

Regarding factors, women with psychiatric illness with a higher level of education more likely utilize modern family planning than women whose level of education was primary. This finding is consistent with EDHS 2016, which showed women with more than a secondary education were more likely to utilize family planning methods than women with no education [12].The possible reason might be that educated women with psychiatric illness have a better knowledge of family planning and translate their knowledge to the utilization of modern family planning. Similarly, women with psychiatric illness who are salary employed were more likely to utilize modern family planning than those who did not have employment. This finding is also supported by a study that was done in Kenya in which salary employed women were more likely to utilize family planning than the non-employed [(13)]. The consistency might be because salary employed women with psychiatric illness have more knowledge about family planning methods. Additionally, women with psychiatric illness who were married were more likely to utilize a modern family planning method than those who did not marry which is in line with a study done in Kenya [13]. This might be due to married women being more highly engaged in sexual practice than unmarried women

Likewise, women with a psychiatric illness living in urban areas were more likely to utilize modern family planning than those living in a rural area. This finding is consistent with EDHS 2016 in which women who were living in an urban area were more likely to use modern family planning [12]. The possible reason might be explained by urban women have more education and higher , economic status, as well as more access to family planning service than women who resides in a rural area.

Finally, women with psychiatric illness who were counseled by a psychiatrist were more likely to utilize modern family planning than those who did not counsel. This finding was also supported by a study done in Kenya in which counseling by staff at a health facility in the last year had a significant association with the utilization of modern family planning methods [13]. This could be explained as women with psychiatric illness who were counseled by health care providers could have a better opportunity to access appropriate information and services, which ultimately increases family planning utilization.

CONCLUSION

In this study, about 40.2 %,) of women with a psychiatric disorder were using modern family planning methods and injectable was the most common currently used method by respondents.

Marital status, educational status, residence, the status of employment, and counseling by health care providers onmodern family planning methods were the significant predictors for utilization of modern family planning methods among the women with psychiatric illness. Therefore, psychiatrists and other health care providers should give a great emphasis regarding family planning utilization. especially for those women with psychiatric illness and who were unemployed, uneducated, and or residing in the rural area.

List of abbreviations

AOR: Adjusted Odds Ratio, DMPA: Depo Medroxyprogesterone Acetate, EDHS: Ethiopian Demographic Health Survey, FP: Family Planning, IUD: Intrauterine Device, OR: Odds Ratio, PTSD: post-traumatic stress disorder, SPSS: Statistical Package for Social Sciences,

DECLARATIONS

Consent to Publish

Not Applicable

Availability of data and materials

Data is not available for online access, however, readers who wish to gain access to the data can write to the main author of this manuscript at abdus3536@gmail.com with their requests. Access can be granted subject to the Institutional Review Board (IRB) and the research collaborative agreement guidelines. This is a requirement mandated for this research study by our IRB.

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Competing interest

The authors confirm that this research is their original paper and that there is no conflict of interest in this work.

AUTHOR CONTRIBUTION

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis, and interpretation, or in all these areas. Some took part in drafting, revising, or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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DETERMINANTS OF INTRAUTERINE CONTRACEPTIVE DEVICE UTILIZATION AT PRIMARY HEALTH CARE FACILITIES IN MEKELLE CITY, NORTHERN ETHIOPIA

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ABSTRACT

BACKGROUND: Each year, the current level of modern contraceptive use averts 188 million unintended pregnancies, which in turn results in 112 million fewer abortions. Of the 867 million women in the developing world who are sexually active and want to avoid becoming pregnant, about 222 million of them have an unmet need for modern contraception.

OBJECTIVES: To identify the determinant factors for utilization of intrauterine contraceptive devices among women visiting primary health care facilities in Mekelle city.

METHOD: Facility based unmatched case-control study design was conducted among 234 women (78 cases and 156 controls). Data was collected by questionnaire. Data entry and cleaning was done using EPI- Info version 5.3.1 and analysis done using SPSS version 20. The study used a logistic regression model to identify the association between independent variables with Intrauterine Contraceptive Device.

RESULT: Marital status ([AOR (95%CI) =8.59(2.60 - 28.43)], number of pregnancies (AOR (95%) CI=5.69(1.020-31.802), and number of alive children [AOR (95%CI) =3.5 (1.03-11.9) had a significant association with the use of Intrauterine Contraceptive Device (IUCD). Other determinants found to have significant association included awareness about Intrauterine Contraceptive Device, visual exposure to Intrauterine Contraceptive Device during counseling about contraception, and participants told about the availability of health care provider able to insert Intrauterine Contraceptive Device.

CONCLUSION: The study identified marital status, gravidity, number of alive children, information on availability of IUCD provider and visual exposure to IUCD and awareness to Intrauterine Contraceptive Device as major determinants for use of Intrauterine Contraceptive Device. Thus, stake holders like Tigray Regional Health Bureau, health care facilities and providers should work to increase the utilization of this effective and safe modern contraceptive method IUCD.

KEY WORDS: Case control, Determinant factors, Intrautterine Contraceptive Device, Logistic regression

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INTRODUCTION

Family planning is defined as the use of contraceptive methods which enable couples to have the desired number of children and to control the timing and spacing of pregnancy [1]. The use of modern contraception is of great importance in public health, as its advent has resulted in the decline of fertility and the improvement of economic productivity, as well as the health of mother and child [2]. Modern contraceptive methods are categorized into three: long acting reversible contraceptive methods which consist of development and introduction of modern intrauterine devices (IUCDs) and implants, permanent contraceptive methods which include tubal ligation and vasectomy, and short term contraceptive methods, which constitute the predominant method in developing countries, and include injectables, , oral pill, male and female condoms, foam tablet and cervical cap [3].

The development and introduction of modern intrauterine devices (IUDs) in 1960, shortly after the advent of oral contraceptives, marked the beginning of the modern era of long-acting reversible contraception. These rapidly became the method of choice in pioneering programs in Taiwan, Korea, and United States of America [4].

It is estimated about 500 million women in the developing world are using some form of family planning. Of the 113 million married women of reproductive age in sub-Saharan Africa, 21 million (one in five) married women use family planning. 14.7 million (less than one of seven) women currently use modern contraception, and only 2.7 million women use long-acting or permanent contraception [5].

Copper IUCD are the most reliable and effective form of long acting reversible contraceptives (LARCs) and have several advantages over other forms including Implanon. IUCD serves us both long and short acting as fertility returns immediately after removal, has fewer side effects than hormonal methods, has a lower discontinuation than other forms of contraception. It can be inserted immediately after delivery and abortion, has no adverse effect with other medications like anti-retroviral therapy, and can be inserted by trained health providers at all levels. In spite of these advantages and cost-effective potential of IUCD, utilization is still low at only 8% in Sub Saharan countries, 9% in South Central Asia, and 22% in South East Asia [6].

The world-wide fertility rate is 2.5 children per woman (WFP 2015). According to WHO estimates about global maternal mortality rates 800 maternal deaths every day occur with preventable causes related to pregnancy and childbirth. Ninety-nine percent of these deaths are in developing countries; Sub-Saharan Africa contributes 66% of maternal mortality [6]. Each year, the current level of modern contraceptive use averts 188 million unintended pregnancies, which in turn results in 112 million fewer abortions, 1.1 million fewer newborn deaths, and 150,000 fewer maternal deaths [7].

Africa remains the region with the highest fertility rate at 4.7 children per woman, and projected to account for 21% of the global population by 2050 [9]. The Federal Democratic Republic of Ethiopia is the second most populous country in Sub Saharan Africa with an estimated population of approximately 92.08 million people and total fertility rate (TFR) of 4.6 and the tenth largest by area at 1.1 million square kilometers [9].

Globally, 163 million (15% of reproductive aged women) use IUCD [10]. Countries with the higher number of IUCD users include Cuba (43.5%), Vietnam (37.7%), Egypt (36.5%) and China (44.9%) The lowest use of the IUCD is observed in Africa, where few countries show more than one or two percent use of the method [11].

The progress of contraceptive prevalence rate (CPR) in Ethiopia has increased from 6% in 2000 to 35% by 2016. However, The CPR is highly dependent on short-term family planning methods (e.g. Nearly 23% receive injectables, followed by implants at 8%, and IUCD constituting 2%), Unmet need for family planning is still high for spacing births (13%) and limiting (9%) [12]. The CPR in Tigray is similar to the national average (35%) in EDHS 2016, and dependent on injectables (19%) followed by

implants (11%) and pills (4%), but the prevalence of IUCD (1%),is below the national level [12].

Recent evidence related to intrauterine contraception provides various assumptions as to the reasons for low and declining use of the IUCD. Among various reasons, incorrect perceptions and knowledge of IUCDs, as well as skills of providers and facility readiness for IUCD service have been considered as major limitations [13].

Although the IUCD is available free of charge in the public sector services, it is not being utilized adequately. Various studies suggest that lack of clients' knowledge and/or misunderstanding about IUCD method, reluctance of service providers in providing information about IUCD in adequately trained health care providers, and absence of continuing education and awareness of clients have been suggested to be major limiting factors to improve acceptability of this safe and effective contraceptive method of IUCD [14].

Recognizing this situation, the Federal Ministry of Health (FMOH), under Health service development program IV, set a target CPR of 66 percent by 2015., The FMOH has considered the important role of long-acting nonpermanent and permanent methods and aims to provide 20 percent of all family planning clients with these long-acting methods [12]. But this remained un-attainable as CPR in the country is 35% which relies on injectables [13].

In general, it is possible to conclude from the above discussions that modern contraceptive use in Ethiopia is dependent on short acting contraceptive methods and IUCD use remains underutilized in most women in Ethiopia [13]. Thus, understanding the factors that limit the use of IUCD in women in Mekelle city can help to inform interventions that can strengthen women's empowerment in ways to plan their pregnancies to achieve desired family size.

METHOD AND MATERIALS

Study setting, design and population

This study was done in Mekelle town, which is the capital of Tigray region, from October 25-November 25, 2017 where the overall prevalence IUCD in the city is 1.5% [15]. Facility-based unmatched case-control study design was used. The study population was those who were IUCD users, as well as short acting hormonal contraceptive users,including oral contraceptives (OCPs) and injectables, during the time of the study. The number of participants was determined by using formula for comparison of two population proportions with unequal proportion and Epi Info Version 3.5.3 statistical software. Based on the assumption of level of significance, α = 0.05, power = 90 % and control to case ratio is 2:1. Based on the study done in Debremarkos, partner discussion about modern contraceptive was a determinant factor for the utilization of IUCD Women who had discussions with their partner were 2.5 times more likely to use IUCD than their counterparts. 62.5% of users and 40% of non-users had partner discussion about contraceptives [3]. Finally, the calculated sample size is 234 (78 IUCD users and 156 non users).

Case definition:

Cases: Women who were users of IUCD.

Controls: Women who took OCPs and injectables.

Exclusion Criteria: Women who took other forms of contraception such as implants, condoms, or permanent methods

Sampling procedures

In the town there are 13 health facilities, from which more than 7 (50%) of the facilities were randomly selected by using a lottery method. Then, cases were allocated based on their last two months provision (August and September 2017). In each facility, all women who were using IUCD during the study period were selected as cases. If the individual did not fulfill case inclusion criteria, the individual was excluded before control selection. For each case, two controls that used OCPs/implant/ injectable/ condom during the study were included.

Data collection procedures and tools

A structured questionnaire was used to interview the study participants. It was prepared in English and translated to Tigrigna language. Training was

given for seven nurse data collectors to assure the quality of data. A pretest was done at Mekele General Hospital, which was not the actual study setting. The written consent was taken before starting the interview. Quality and completeness of collected information was checked by the investigators.

Operational definition

Unmarried: includes those who are single, divorced, or widowed according to reproductive health classification of marital status.

Data Analysis

The data entry was done using Epi- Info version 3.5.3 and analysis was done using SPSS version 20.0 statistical software. The logistic regression model was used to identify the association between independent variables and outcome of IUCD utilization. The independent variables that were associated to the outcome at bivariate analyses up to 25% significance level were used in the multivariable logistic model to examine the magnitude and associations between the outcome of IUCD utilization and independent variables. The statistical significance level was set at P-value <0.05.

Ethical Approval

The study was conducted after getting approval from Mekelle University institutional review board (IRB) to conduct the study. Following the approval, official letter of co-operation was written to concerned bodies by the department of Midwifery of Mekelle University. Permission was granted from all selected primary health care administration. Informed written consent was obtained from the study participants after explaining the purpose of the study. Participants were assured that their namewould not be stated, data would be kept confidential and anonymous, and would be used only for research purposes.

RESULT

Socio-demographic Characteristics

A total of 234 women of reproductive age attending the selected primary health care facilities were interviewed. The age of respondents was normally distributed at the mean (+SD) is 32±6.22 (range 20-43) and 26.28±5.83 (range 17-40) for the case and control respectively. Around 20 percent of cases and controls ha primary level of education. (See **Table 1)**

Table 1. Socio-demographic characteristics of clients visiting family planning clinic at Primary Health Care Facilities in Mekelle city. Northern Ethiopia, Tigray region, 2017

Variables		Cases (78)	Controls (156)	Total (234)
Age (years)	15-24	9(11.5)	69(44.3)	78(33)
	25-29	23(29.5)	42(26.8)	65(27)
	30-34	17(21.8)	26(16.7)	43(18)
	35-39	16(20.5)	13(8.3)	29(12)
	≥40	13(16.7)	6(3.8)	19 (8)
Religion	Orthodox Christian	69 (88.5)	134 (85.9)	171(73.1)
	Muslim	9 (11.5)	22(14.1)	31(13.5)
Ethnicity	Tigray	64(82.2)	130(83.3)	194(82.9)
	Amhara	10(10.6)	19(12.2)	29(12.4)
	Others	6(7.7)	12(7.7)	18(7.7)
Educational status	Primary school	10(12.8)	37(23.7)	47(19.3)
	Secondary school	41(52.6)	82(52.6)	123(52.6)
	Above secondary	27(34.6)	37(23.7)	64(27.4)
Marital status	Married	73(93.6)	101(64.7)	174(74.4)
	Unmarried	5(6.4)	55(35.3)	60(25.6)

Reproductive health characteristics of the women

About ninety seven percent of cases and around seventy five percent of controls had previously experienced pregnancy. More than half (56.6%) of cases experienced pregnancy 3 to 4 times, and less than 10% of controls were pregnant 5 or more times. Among those who had a history of pregnancy, the majority of cases 72 (98.6%) and controls 105 (93.8%) had a history of normal birth. The majority of cases 58 (80.6%) and controls 82 (78.1%) were planning to space their pregnancies . All of the cases have no history of STI, but 15 (9.6%) of controls had STIs treatment history. (See **Table 2)**

Table 2.Reproductive health characteristics of clients visiting family planning clinic at Primary Health Care Facilities in Mekelle city. Northern Ethiopia, Tigray region, 2017

Variables		Cases(78)	Controls(156)	Total (234)
History of pregnancy (N=234)	Have experienced pregnancy	76(97.4)	118(75.6)	194(82.9)
	No Experience of Pregnancy	2(2.6)	38(24.4)	40(17.1)
Number of pregnancy(N=194)	≤2 times	19(25)	67(57.35)	86(44.6)
	3 to 4 times	43(56.6)	40(34.2)	83(43)
	≥5 times	14(18.4)	10(8.5)	24(12.4)
History of abortion (N=194)	Experienced abortion	37(48.7)	56(47.9)	93(48.2)
	No experience of abortion	39(51.3)	61(52.1)	100(51.8)
Number of Abortion (N=93)	Experienced Abortion Once	32(86.5)	51(91.2)	83(89.4)
	Experienced Abortion≥ Twice	5(13.5)	5(8.8)	10(10.6)
History of birth (N=194)	experienced birth	72(98.6)	105(93.8)	177(95.7)
	No experience of birth	1(1.45)	7(6.2)	8(4.3)
Number of Birth (N=177)	Once	6(8.2)	33(31.4)	38(21.9)
	Twice	22(30.1)	30(28.6)	52(29.2)
	>Twice	45(61.6)	42(40)	87(48.9)
Number of alive children (N=177)	1 child	6 (8.2)	33 (31.4)	39(21.9)
	2 children	25(34.2)	30(28.6)	55(30.9)
	>2 children	42(57.5)	42(40)	4(47.2)
Plan of fertility (234)	Spacing Birth	58(80.6)	82(78.1)	140(79.1)
	Limiting Birth	14(19.4)	23(21.9)	37(20.9)
History of STI	No history of STI	78(100)	141(90.4)	219(93.6)
	History of STI	0(0%)	15(9.6)	15(6.4)
Screening for HIV	Ever screened for HIV	76(33.5)	151(66.55)	227(97)
	Not screened for HIV	2(2.6)	5(3.2)	7(3)
Test result	Reactive	2(2.6)	5(3.2)	7(3)
	Non-reactive	76(97.4)	149(96.8)	225(97)

Awareness and Practice

The majority of cases 76 (97.4%) and two-thirds (66%) of controls had heard about IUD.. Regarding partner discussion about modern contraception, 79.2% of cases and 69% of controls had discussion with their partner.

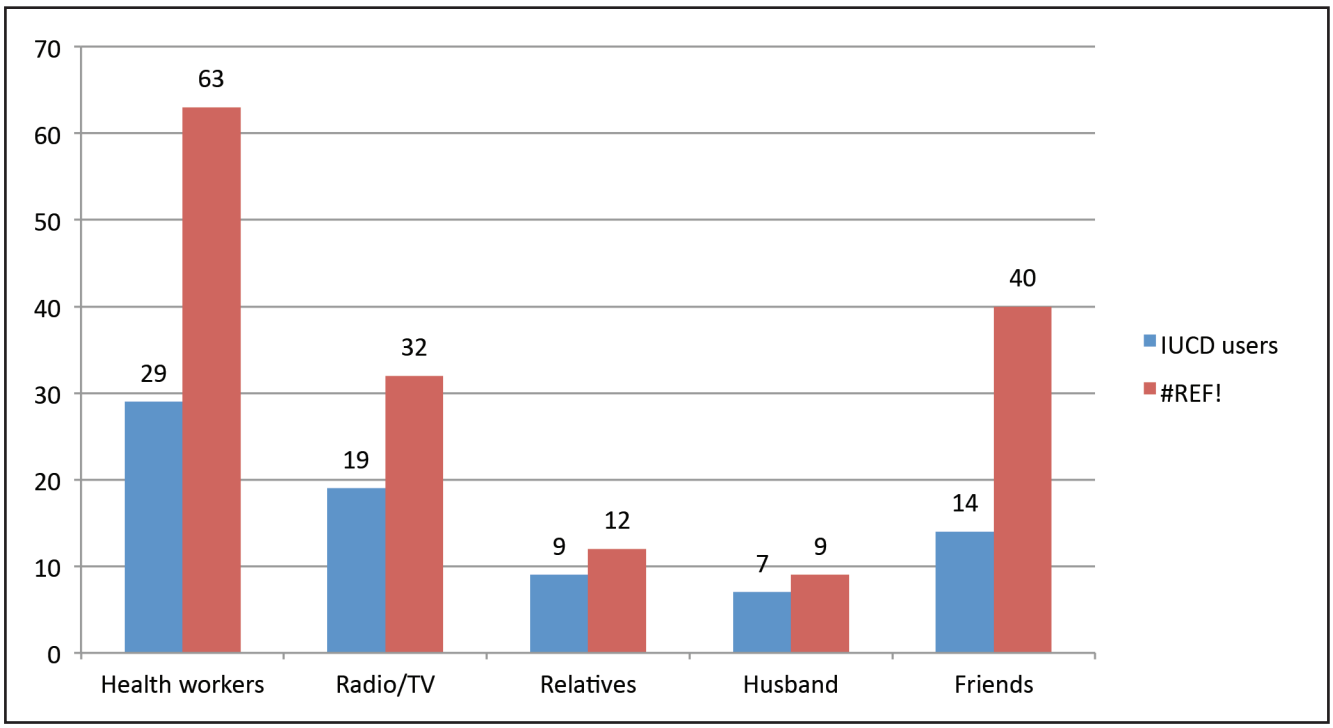

Figure 1: Source of information to modern contraception for women visiting family planning clinic at primary health care facilities in Mekelle city, Northern Ethiopia, Tigray region, 2017

The above graph showed that the health workers were a source of information for 29 (37.2%) of cases and 63 (40.4%) of controls followed by mass media for nearly a quarter (24.4%) of cases and friends for 40 (25.6%) of controls.

Factors associated with IUCD utilization

In this study, the variables- age, occupation, marital status, ever heard about IUCD, visual experience of IUCD, the information given about availability of IUCD, and availability of health care providers able to insert IUCD at facilities protect pregnancy to 12 years IUCD require minimal follow up were included in the multivariable logistic regression model at P value <0.25. Accordingly, marital status, number of pregnancies, number of living children, awareness about IUCD, visual exposure of IUCD during FP counseling and information given about the availability of health care provider able to insert IUCD were identified as independent predictors of IUCD utilization. **(See Table 3)**

Table 3. Determinants of IUCD utilization in Primary health care facilities in Mekelle city, Northern Ethiopia, Tigray region, 2017

Variables		Cases (78)(%)	Controls 156(%)	COR (95% CI)	AOR (95% CI)
Age (years)	15-24	9(11.5)	69(44.3)	1 1	
	25-29	23(29.5)	42(26.8)	4.19(1.78, 9.93)*	1.14(.28, 4.65)
	30-34	17(21.8)	26(16.7)	5.01(1.99,12.65)*	1.34(.26, 6.81)
	35-39	16(20.5)	13(8.3)	9.43(3.44, 25.88)*	2.75(.46, 16.35)
	40-44	13(16.7)	6(3.8)	16.61(5.05,54.65)*	7.23(.74, 70.79)
Occupation	House wife	10(12.80)	47(30.10)	1.97(0.57-6.78) *	0.1(0.01-1.26)
	Merchant	26(33.30)	24(15.40)	10.02(3.11-32.33)*	0.62(0.05-7.29)
	Govt. Employee	23(29.50)	29(18.60)	7.34(2.28-23.58)*	0.43(0.04-4.89)
	Private Employee	15(19.20)	19(12.20)	7.30(2.13-25.08)*	0.65(0.06-7.76)
	Student	4(5.10)	37(23.70)	1 1	
Marital status	Married	73(93.60)	101(64.70)	7.95(3.03-20.84)	8.59(2.6 - 28.40)**
	Unmarried	5(6.4)	55(35.3)	1 1	
Number of pregnancy (N=194)	≥5 times	14(18.40)	10(8.50)	4.94(1.89-12.87)	5.7(1.02-31.80) **
	3 - 4 times	43(56.60)	40(34.20)	3.79(1.95-7.39) *	2.04(0.67-6.23)
	1 - 2 times	19(25)	67(57.35)	1 1	
Number of alive children (N=177)	>2 children	42(57.50)	42(40)	5.50(2.08-14.45)	3.5(1.03-11.91) **
	2 children	25(34.20)	30(28.60)	4.58(1.65-12.70)	3.94(1.14-13.55) **
	1child	6 (8.20)	33(31.4)	1	1
Ever heard about IUCD (234)	Yes	76(97.40)	103(66)	19.55(4.62-82.74)	14.15(2.82-71.18)**
	No	2(2.60)	53(22.60)	1	1
Have you ever seen IUCD (234)	Yes	70(89.70)	54(34.60)	16.53(7.41-36.87)	10.40(4.0 -27.17) **
	No	8(10.30)	102(65.4)	1	1
Information on availability of IUCD provider	Yes	73(93.60)	120(76.90)	4.38(1.65-11.67)*	6.11(0.55-68.02)
	No	5(6.40)	36(23.10)	1	1
Information told on the availability of HCP that insert IUCD	Yes	67(85.90)	84(53.80)	5.22(2.56-10.63)	3.90(1.50-9.70) **
	No	11(14.10)	72(46.20)	1	1
Information on IUCD protect pregnancy for about 12 years	Yes	60(76.90)	66(42.60)	4.49(2.43-8.32) *	1.42(0.33-6.15)
	No	18(23.10)	89(57.40)	1	1
Information on IUCD requires less follow up	Yes	35(44.90)	105(68.20)	2.63(1.53-4.61) *	1.26(0.36-4.39)
	No	43(55.10)	49(31.80)	1	1

*Significant p<0.25, and ** Significant p<0.05

DISCUSSION

In the current study marital status was a significant determinant of IUCD utilization. Those women who are married were 8.6 times more likely to use IUCD than those unmarried ([AOR (95%CI) =8.59 2.598 - 28.42. It could be because of women who are married and in long-term relationship are more likely to choose IUCD for its ability to act as long-term contraceptive methods. On the other hand, those who are unmarried might not think IUCD is necessary for their infrequent sexual activity or they may perceive their short-term relations not mandate IUCD. It also may be the professional counseling bias and misleading to choose nulliparouse for short actind and other methods. It also may be due to joint decision with their husband or partner to prefer IUCD. However, this finding is contrasted with a study done in Ethiopia based on evidence from EDHS 2011, in which women who were temporarily living with their partners were about two times more likely to use LARC ([AOR (95%CI) =1.9(1.2,3.0) [16]. This might be a result of the social and cultural unacceptability of giving birth before formal marriage in most parts of Ethiopia.

Another strong predictor of IUCD utilization was awareness. The women receiving an IUCD were 14 times more likely to utilize the method than their counterparts ([AOR (95%CI) =14.2 (2.814-71.184). This finding is higher than the results of other studies done in Ethiopia [15, 16, 17]. This might be a result of continuous promotion and advertisement through media and the observed difference is due to the educational background of clients.

In the current study, the number ofliving children was an important factor for IUCD utilization; it implies that those having >2 children are more than three times more likely to use IUCD compared with women having one child [AOR (95%CI) =3.5 (1.03-11.9). This finding was similar to studies done in Nepal in which women having more than 2 children were two times more likely to utilize IUD compared with those having ≤ 2 children [AOR (95%CI) = 2.20 (1.12-4.32)] [18].

Information on the availability of IUCD providers had a statisticaly significant effect on IUCD utilization. The women who had awareness on the availability of IUCD provider information were four times more likely to use IUCD [AOR (95%CI) =3.89 (1.55, 9.74) compared to their counterparts. This finding is relatively low compared with a case control study conducted in Addis Ababa , which indicated that those who were provided with this information were around six times more likely to utilize the method [AOR (95%CI) =5.765(1.646, 51.486) [16]. It could be evidenced by health care providers in counseling aspects of IUCD and sociodemographic differences of the study population. It also might be a result of providers not possessing adequate knowledge about the IUD as a LARC methods and providing incomplete information to potential clients.

One of the critical factors for women to use IUCD is visualizing the method. Women who had ever seen IUCD were more than ten times more likely to use IUCD than those with no visual exposure [AOR (95%CI) =10.4(4.0 -27.17). Effective communication and counseling can avert the variation on utilization. This can be due to counselors' bias to show IUCD during counseling and lack of demonstration skills can affect the decision to use a method [16, 17].

We, the authors of this study made effort to address all important variables through primary source of data and close supervision to attain quality; therefore, we believe there are no lost variables which determine IUCD use and no possible recall bias.

CONCLUSION AND RECOMMENDATION

The results of this study showed that being married, number of pregnancies, number of living children, having awareness about IUCD, information on availability of IUCD providers, and visual exposure to IUCD was positively affected IUCD utilization. Thus, stakeholders like Tigray Regional Health Bureau, health care facilities, and providers should work to increase the utilization of this effective and safe modern contraceptive method IUCD.

COMPETING INTERESTS: The authors declare that they have no competing interest.

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UTILIZATION OF ANTENATAL CARE AND ASSOCIATED FACTORS IN GEDEO ZONE, SOUTHERN ETHIOPIA

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ABSTRACT

BACKGROUND: Antenatal (ANC) is care given for pregnant women with the purpose of prevention, early detection of existing disease, and treating health and health-related problems for both mother and unborn baby. The purpose of this study was to assess the utilization of ANC and associated factors in the Gedeo zone.

METHOD: A community-based cross-sectional study was carried out from August 1 to September 30, 2018, among women of reproductive age (15-49 years) in Gedeo zone Southern Ethiopia. A stratified, two-stage cluster sampling technique was used to select the study population. The study population was selected from the respective source population using a simple random sampling technique. Data was checked, coded and entered into Epi data version 3.1 and exported to SPSS version 20.0 for analysis. The wealth index was computed using principal component analysis. Descriptive statistics was employed to display the study findings. Bivariate and multivariable analyses were computed to identify the determinants of utilization ANC.

RESULTS: Utilization of at least one ANC contact was 72.6% (95% CI: 69.3, 75.8).Women with highest wealth index (rich) and grand multigravida were more likely utilize ANC contact. Whereas when the husband's education status was secondary and above, there were lower odds of utilization of ANC contact.

CONCLUSION: ANC utilization in the Gedeo zone is low. The highest wealth index (rich) and grand multigravida were more likely to utilize ANC services. Therefore, the minister of health, regional health offices and stakeholders should work to improve wealth of women and families to increase the utilization of ANC contact.

KEY WORDS: Antenatal care, utilization, Ethiopia

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INTRODUCTION

Antenatal care (ANC) is care given to pregnant women for the prevention, early detection, and treatment of health and health-related problems for good health outcomes of both the mother and the unborn baby [1, 2, 3]. It is a promotion of obstetric health care programs to optimize maternal and fetal outcomes through regular monitoring of pregnancy [4].

Despite the World Health Organization recommended minimum of 8 ANC contacts for normal pregnancy, the existing situation shows that Ethiopia is yet to meet this goal [5]. ANC is provided by obstetric health care providers for a pregnant woman throughout pregnancy [4] . The main purpose of ANC is to promote and protect the health of mothers and their unborn babies during pregnancy to achieve at the end of a pregnancy a healthy mother and a healthy baby [6].

ANC provides the promise of screening of mothers and their unborn babies for actual and potential problems as the pregnancy advances, and for preventing and treating any complications that may arise. It is a fundamental component of obstetric care provision in most contexts globally. Research reviews provided information on the efficacy of standard and alternative versions of antenatal care interventions and programs for women which use them, and for their babies [7, 8].

Similarly, ANC is crucial for assessing the wellbeing of pregnant women and their fetus. Worldwide, 85% of pregnant women had at least one antenatal care contact and 58 % of pregnant women had at least four antenatal care contacts [9]. In sub-Saharan Africa, 49% of pregnant women had at least four antenatal contacts and in South Asia, 42% of pregnant women had at least four antenatal care contacts [10]. Likewise in Ethiopia, 74% of pregnant women had at least one antenatal care contact and 43 % of pregnant women had at least four antenatal care contacts [11].

The responsible bodies and stakeholders made tremendous progress in reducing maternal and child deaths over the last two decades in low and middle income countries. However, 810 women die every day due to preventable causes related to pregnancy and childbirth [4, 12]. Approximately 295,000 women died during pregnancy and childbirth globally in 2017. The vast majority of these deaths (94%) happened in developing countries and most could have been prevented [13]. Sixty six percent of global maternal deaths occurred in sub-Saharan Africa, at an estimate of 542 maternal deaths per 100,000 live births in 2017. In Ethiopia 14,000 maternal deaths occurred with an estimated rate of 401 maternal deaths per 100,000 live births in 2017 [13].

Moreover, to achieve the Sustainable Development Goals of reducing maternal and child morbidity and mortality, quality antenatal care takes the lion share for better pregnancy outcomes. ANC provides an opportunity to offer care for the prevention and management of existing and potential causes of maternal and newborn morbidity and mortality [14]. In 2016, the World Health Organization recommend that antenatal care should be initiated before 12 weeks of gestation to improve pregnancy outcomes. The utilization of antenatal care is pivotal for the achievement of Sustainable Development Goals (SDG) concerning maternal, neonatal and child health improvement by policymakers and stakeholders. Nevertheless, evidence on the utilization of antenatal care in the study setting is scarce. Therefore, this study aimed to assess the utilization of antenatal care and their determinants among pregnant women in Southern Ethiopia.

METHOD AND MATERIALS

A community-based cross-sectional study was carried out from August 1 to September 30, 2018, among women who gave birth within six months in Gedeo zone Southern Ethiopia. Gedeo is one of the zones in Southern Nations, Nationalities and Peoples Regional State (SNNPRS). It has 8 woredas (2 towns and 6 rural woredas) and 148 kebeles (13 towns' kebeles and 135 rural kebeles).

Its administrative center is Dila which is located 377 km south of Addis Ababa, the capital city of Ethiopia. According to the 2007 G.C Census conducted by the Ethiopian Central Statistical Agency, the zone has a total population of 847,434. A total of 179,677 households were counted in Gedeo Zone. According to the regional health office, the current (2016/2017) estimated a total population is 1,112,951.

Study population and sample size determination

The population of interest for this study were all women aged 15 to 49 who gave birth within six months of the study and live in the Gedeo zone during the study period. It is estimated there are 239,053 women and girls of reproductive age (15-49) residing in Gedeo zone. Women were excluded if they had difficulties in communicating during the study period, if they were critically ill, refused to give consent, or were psychiatric patients. The sample size was calculated using a single population proportion formula under the assumptions of 95% CI, 80% power, and a 69.3% antenatal coverage in SNNPR from Ethiopian Demographic Heath Survey (EDHS) 2016[15] and 5% degree of precision and non-responsive rate of 10%. Total sample was 720.

Sampling technique and Sampling Procedures

A stratified, two-stage cluster sampling technique was used. Initially, all administrative kebeles in the Gedeo zone were stratified into town and rural. Then 2 urban and 21 rural kebeles were randomly selected. Census was conducted in each randomly selected kebele to identify study participants who gave birth within six months. The sample size was proportionally allocated for each selected kebele depending on the number of women who gave birth within six months. Finally, the study population was selected from the respective source population by using computer generated random numbers.

Outcome variable

Women who had utilized to at least one skilled ANC service were the outcome variables for this study. Skilled ANC service is one that is offered by medical doctors, nurses, midwives, or health officers. Therefore, ANC service is said to be skilled if it is provided by any one of these healthcare professionals [15]. Information about these ANC services is secured based on the woman's self-report.

Data collection procedure and quality control

Data collection and quality control preliminary survey/census of study participants in the selected kebeles was carried out before the actual data collection. The data was collected using structured and pretested interview questionnaires and checklists in participants' homes. Face- to-face interviews with cross-checking document records was done. The questionnaires were prepared reviewing different similar literature and Demographic and Health Survey (DHS) questionnaires. First, the questionnaires were written in English and then translated into local language, Gedeo'ffa, and then translated back to English to enhance consistency. The questionnaire consisted of two sections that focused on socio-demographic data and antenatal care. The questionnaires were pretested 5% at another kebele having similar socio-cultural characteristics with the study subjects. The tool was checked for reliability during the pretest and the Alpha coefficient was calculated. A total of 10 trained data collectors who completed grade 10 or 12 who were proficient in Gedeo'ffa and 2 supervisors with Master of Public health (MPH) were recruited for data collection. The role of supervisors were to supervise and check the questionnaires immediately after completion. Throughout the data collection process, data collectors were supervised and regular meetings were held among the data collectors, supervisors, and the investigators to raise, discuss, and solve problematic issues. Two more additional visits were made for participants who were not available during the first visit. The collected data was reviewed and checked for completeness before data entry.

Data management

Data were checked, coded and entered into Epi data version 3.1 and exported to Statistical Package

for Social Sciences (SPSS) version 20.0 for analysis. The wealth index was computed using principal component analysis. Descriptive statistics including percentages and frequencies were generated to describe the study participants. Bivariate and multivariable analyses were computed to identify the determinants of antenatal care contact utilization. All explanatory variables with a p-value of less than 0.2 in the bivariate analysis were included in the multivariable analysis. Finally, statistical significance was considered at P value of less than 0.05.

Ethical Approval and Consent to participate

Ethical clearance was obtained from the Institutional Review Board (IRB) with reference IRB/018/10 of the College of Medicine and Health Sciences, Hawassa University. The ethical clearance paper then was presented to the Gedeo zone health office to grant official permission to undertake research activities in the selected kebeles. After a detailed explanation of the purpose and the total course of the study, verbal consent was obtained from each participant before the actual data collection. The verbal consent was taken because the study was conducted in the rural area and most of the participants were not educated and the IRB also approved it. Confidentiality was assured by making the questionnaire anonymous.

RESULTS

Socio-demographic characteristics

Seven hundred twenty study participants were included with the response rate of 100%. Nearly three fourth (72.5%) of women were followers of Protestant religion. About half (49.4%) of the study participants were housewives. Whereas, more than half, 50.5% of study subjects had never attended formal education **(Table1)**.

Table 1: Socio demographic characteristics of reproductive age women in Gedeo zone, South Ethiopia, 2018

Variables	No	Percent (n=720)	
Age	15-19	26	3.6
	20-24	169	23.5
	25-29	230	31.9
	30-34	113	15.7
	35-39	139	19.3
	40-44	40	5.6
	45-49	3	0.4
Religion	Orthodox	134	18.6
	Muslim	24	3.3
	Protestant	522	72.5
	catholic	24	3.3
	Others	16	2.2
Ethnicity	Gedeo	593	82.4
	Sidama	13	1.8
	Oromo	44	6.1
	Amhara	52	7.2
	Gurage	5	0.7
	Others	13	1.8
Educational status of the participants	Non formal education	363	50.5
	Primary school	234	32.5
	Secondary school	77	10.7
	College and above	46	6.4
Occupation of the participants	House wife	356	49.4
	Merchant	238	33.1
	Gov't Employee	51	7.1
	Farmer	62	8.6
	Others	13	1.8
Residence	Rural	540	75.0
	Urban	180	25.0
Marital status	Married	692	96.1
	Divorced	17	2.4
	Widowed	11	1.5
Husband's educational status (n = 692)	can't read and write	93	13.4
	can read and write	58	8.4
	Primary school	274	39.6
	Secondary school	137	19.8
	College and above	130	18.8
Husband's Occupation (n = 692	Farmer	301	43.5
	Merchant	191	27.7
	Gov't Employee	150	21.7
	Daily laborer	42	6.1
	Others	8	1
Family size	<=4	121	16.8
	5-8	436	60.6
	>=9	163	22.6
Wealth index	Poor	235	32.6
	Medium	224	31.1
	Rich	261	36.3
Distance to the nearest health facility	<=20 minutes	416	57.8
	> 20 minutes	304	42.2

Obstetrics and Reproductive health service-related factors

More than half (57.4%) of women in this study had their first marital relationship when they were in the age range of 19-24 years, and 56.3% of women had 2-5 pregnancies (a multigravida). The utilization of ANC with at least one contact was 72.6%. Whereas 43.6% women had four and above ANC contacts **(Table2)**.

Table 2: Obstetrics and Reproductive health service-related characteristics of reproductive age women in Gedeo zone, South Ethiopia, 2018

Variables		No	Percent (n=720)
Age at first marriage	<15	32	4.4
	15-18	266	36.9
	19-24	413	57.4
	25-29	9	1.3
Number of total pregnancies (Gravidity)	Primigravida (1)	108	15.0
	Multigravida (2-5)	405	56.3
	Grandmultigravida (≥6)	207	28.7
Number of live children	1-2	218	30.3
	3-4	216	30.0
	5-6	148	20.6
	7-8	89	12.4
	>=9	49	6.8
Pregnancy complications	Yes	189	26.3
	No	531	73.8
	1	33	6.3%
	2	69	13.2%
	3	193	36.9%
	4+	228	43.6%

Determinants of ANC utilization

In the multivariate analysis, a woman's husband's educational level, being in the highest wealth index (rich), and being grand multigravida were significantly associated with utilization of ANC service. Accordingly, a woman's husband with secondary level of education had 51% lower odds of utilizing ANC contact than their counterparts (AOR: 0.49; 95% CI: 0.28:- 0.87). A woman's husband with college and above level of education had 87% lower odds of utilizing ANC contact than their counterparts (AOR: 0.13; 95%CI: 0.05- 0.35). Whereas, women in the highest wealth index (rich) had a 2.10 times higher odds of utilizing ANC service than their counterparts (AOR: 2.10; 95%CI: 1.26- 3.50) and grand multigravida women had 4.85 times higher odds of utilizing ANC contact than their counterparts (AOR: 4.85; 95%CI: 2.29-10.26) **(Table 3)**.

Table 3: Factors associated with utilization of ANC in Gedeo zone, South Ethiopia, 2018

Variables		ANC use		COR(95% CI)	AOR(95% CI)
		Yes	No		
Educational status of the husband	No formal education	93	64	1.00	1.00
	Primary school	182	102	0.81(0.55, 1.22)	0.80(0.52, 1.22)
	Secondary school	121	26	0.31(0.18, 0.53)	0.49(0.28, 0.87)*
	College and above	127	5	0.06(.02, 0.15)	0.13(0.05, 0.35)**
Residence	Rural	370	170	2.60(1.66, 4.07)	1.62(0.98, 2.67)
	Urban	153	27	1.00	1.00
Wealth index	Poor	197	38	1.00	1.00
	Medium wealth	162	62	1.98(1.26, 3.13)	1.26(0.76, 2.10)
	Rich	164	97	3.07(2.00, 4.71)	2.10(1.26, 3.50)**
Number of gravida	Primigravida (1)	97	11	1.00	1.00
	Multigravida(2-5)	323	82	2.24(1.15, 4.37)	1.59(0.78, 3.22)
	Grandmultigravida (≥6)	103	104	8.90(4.51, 17.58)	4.85(2.29, 10.26)**
Pregnancy complications	Yes	117	72	1.00	1.00
	No	406	125	0.50(0.35, 0.71)	0.67(0.44, 1.01)

** P < 0.01 * P<0.05

DISCUSSION

Antenatal care is a key strategy for the reduction of maternal and neonatal morbidity and mortality. This strategy is accomplished through the prevention of disease, treating existing disease, and health promotion to prevent adverse maternal and neonatal outcomes during childbirth. The purpose of this study was to assess the utilization of ANC and its associated factors in the Gedeo zone. In this study, women in the highest wealth index (rich), the husband's educational level, and grand multigravida were significantly associated with ANC utilization. In this study, the utilization of at least one ANC contact was 72.6%. This finding is higher than a study conducted in Benishangul Gumuz was 37.7% of pregnant women had at least one ANC contact [16]. Another study conducted in Ethiopia indicated that 48.5% of pregnant women had at least one ANC contact [17] whilst a study conducted in Eastern Ethiopia had 53.6% of pregnant women who had at least one ANC contact [18]. A study conducted in Tigray showed that 54% of pregnant women had at least one ANC contact [19] and a meta-analysis conducted in Ethiopia found that 63.77% of pregnant women had at least one ANC contact [14]. A possible explanation might be this study was done after the government has invested to scale up maternal health services utilization and the government's increased attention to the reduction of maternal and neonatal morbidity and mortality that led to increased utilization of ANC contact. In addition, community mobilizations, deploy midwifery in the health centre and free maternal health services had implemented across the country. This finding is in line with a mini EDHS of 2019, which indicated that 74% of pregnant women had at least one ANC contact [11] and in sub-Saharan Africa, 69% of pregnant women had at least one ANC contact [6]. The possible explanation might be this study was done after the government has invested to scale up maternal health services utilization and stakeholders' have invested in maternal health to enhance the utilization of ANC contact. In addition, community mobilizations, deploy midwifery in the health centre and free maternal health services may be factors.

On the other hand, this finding was lower than a study was done in South West Ethiopia in which 91.9% of pregnant women had received at least one ANC contact [5]. Similarly, a study conducted in Holeta town indicated that 87% of pregnant women had received at least one ANC contact [20]. Moreover, a study conducted in developed countries found that 97% of pregnant women had received at least one ANC contact [6]. The possible explanation for this finding might be the socio-cultural differences, study area, health coverage differences within the region and the differences in the inclusion criteria in the studies.

In this study, 43.6% of pregnant women had received at least four ANC contacts. This finding was inconsistent with study done in Eastern Ethiopia was 15.3 % [18], in depth analysis of EDHS 2011 was 22.3 % [21], Study done in Holeta was 33.7 [20], study done in Debre Tabor was 35.3% [22] and in depth analysis of EDHS 2016 was 36.6 % [23]. This finding is similar to mini EDHS 2019 was 43% [11], and the WHO report 2017, in South Asia was 42 % [10]. This finding is lower than study done in Southwest Ethiopia was 66.6 % [5], the WHO report 2017, in Sub-Saharan Africa was 49 % [10] and 58% of women received at least four ANC contacts across the globe [9].

In this study, the highest wealth index quartile (rich) has higher odds of utilizing ANC contact. This finding coincided with studies conducted in Ethiopia [11, 18, 20, 21, 24], in Nairobi Kenya [25], in Uganda [26], in sub-Saharan Africa [27] and Nepal [28]. The possible explanation might be that the household wealth index might have increased health seeking behaviors of the families and also the women were eager to know their health status and apply what the health care providers counselled them. In addition, it could be due to less financial problems such as transport costs. However, woman's husbands with secondary and above education level had lower odds to utilize ANC contact. This finding was inverse with other studies conducted in Ethiopia [11, 18, 20, 21, 24], in Nairobi Kenya [25], in Uganda [26], in sub-Saharan Africa [27] and Nepal [28]. In this study grand multigravida women had higher odds of utilizing ANC contact. This finding was inversely related to other studies conducted in Ethiopia [11, 18, 20, 21, 24], in Nairobi Kenya [25], in Uganda [26], in sub-Saharan Africa [27] and Nepal [28]. The possible explanation might be the women who did not have ANC contact and had experienced bad obstetric outcome led them to be alert to the next pregnancies to avert the problems. The potential limitation of this study was recall bias, and social desirability.

CONCLUSION

ANC utilization in the Gedeo zone is low. The highest wealth index (rich) and grand multigravida women have higher odds of utilization of ANC contact. Therefore, this study recommends that the government and stakeholders should work to improve wealth of women and their families to increase the utilization of ANC contact.

Abbreviations

ANC: Antenatal care
AOR: Adjusted odds ratio
EDHS: Ethiopian health demography survey
SDG: sustainable development goals
SNNPRS: Southern, Nations, Nationalities and Peoples Regional State

Declarations

Consent for publication
Not applicable
Availability of supporting data
All data are included in this article.

COMPETING INTERESTS

Authors declare there is on conflict of interest

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EPIDERMOID CYST COMPLICATING FEMALE GENITAL MUTILATION AND ITS PSYCHOLOGICAL IMPACT: A CASE REPORT

Tafese Dejene Jidha, MD[1]

ABSTRACT

Epidermoid cysts are slowly growing tumors arising from invagination of the epidermis into the dermis traumatically or spontaneously. This is a case of an epidermoid cyst of the vulva reported in a 20 year-old patient.

KEY WORDS: Genital swelling, epidermoid cyst

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BACKGROUND Epidermoid cysts are slowly growing tumors arising from invagination of the epidermis into the dermis traumatically or spontaneously. While the most common locations are the face, scalp, neck and trunk, external genitalia can also be involved with clitoral, labial or scrotal implantation [1]. These cysts can arise in the clitoris as a result of invagination of squamous epithelium under the dermis or subcutaneous tissue during the procedure of female genital mutilation (FGM) which leads to the accumulation of epidermal desquamations, secretions, and other debris in a closed space [2]. Most patients present late because it is painless and slow growing. However, if they develop complications like pain, difficulty in walking or micturition, sexual difficulty, or discharge from the swelling, they may present early [3]. In this report, we describe a case of 20 year-old nulliparous woman who presented with swelling around the genitalia of three years duration which affected her sexual relationship with her boyfriend.

CASE PRESENTATION

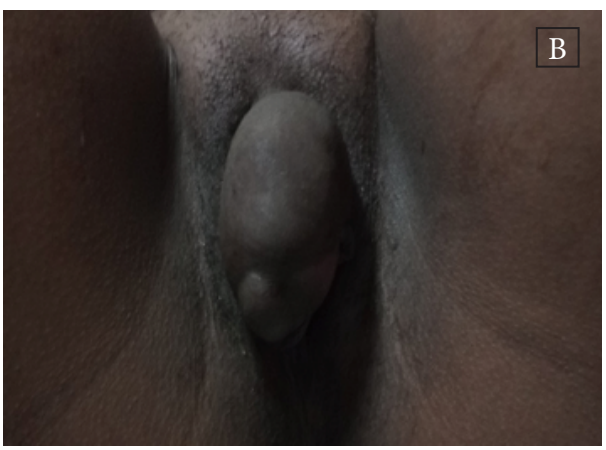
A 20 year-old nulliparous woman presented with a progressively increasing mass around her genitalia with a duration of 3 years. She complained of mild discomfort from the mass. She had difficulty of urination and she pulled up the mass to urinate. She was worried about having a penis and did not tell anybody about it. She avoided sexual intercourse for the last two years due to discomfort during initial penetration. She ended her relationship with her boyfriend. The patient decided to seek medical attention after she developed difficulty with urination.

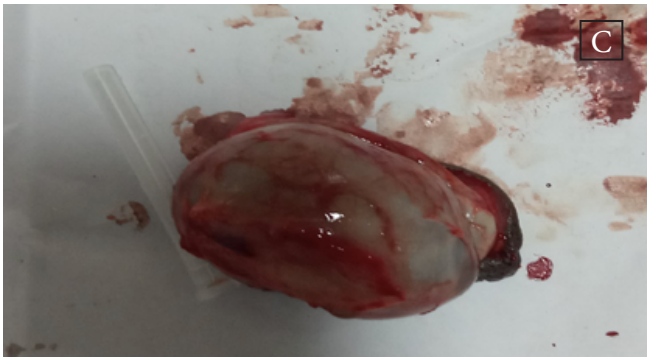
At the age of 6 years, she underwent genital cutting, otherwise her medical and surgical histories were unremarkable. She had no other history of trauma to the genital area. There was no similar illness in her family. She has no habits of cigarette smoking.

On physical examination, her vital signs were within normal range. External genital examination revealed a 6 × 7-cm, well-circumscribed, mobile, non-tender, cystic swelling in the periclitoral area that was obscuring the urethral meatus and vaginal introitus. The mass was along the scar of her type II FGM (Fig. 1 A and B). Ultrasound (US) revealed lobulations and septations in a cystic swelling.

After informed consent was obtained, urinary Foley catheter inserted, and under local anesthesia, the mass was excised with minimal bleeding. The cyst was a well-demarcated, encapsulated subcutaneous cystic mass measuring 6 × 7 × 8 cm, filled with dark yellow material (Fig.1 C). Microscopic examination revealed a squamous epithelial cystic wall with keratinous material in the lumen, on which the diagnosis of epidermoid inclusion cyst was made (Fig.1 D).

On her seventh postoperative day follow-up visit, the wound was well-healed (Fig. 2) and on her second month postoperative visit, she had no genitourinary complaint and had no pain during intercourse.





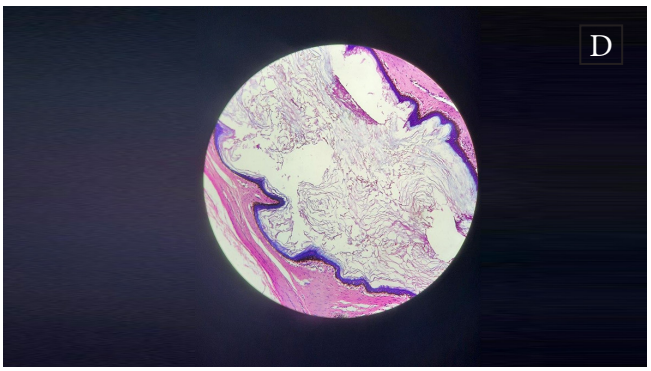


Fig.1 clinical images. (A) and (B) Preoperative appearance of vulvar mass. (C) Intraoperative appearance of the cyst. (D) Histopathological appearance of the epidermoid cyst lined by stratified squamous epithelium and filled with keratinous material.

Fig. 2 postoperative appearance of vulva on day 7 check up visit

DISCUSSION

This case report described the presentation of a vulvar epidermoid cyst with its psychological impact on a 20 year-old nulliparous woman. Epidermoid cysts represent the most common cutaneous cysts. Epidermoid cysts can be localized on any part of the human body, especially inside the mouth, on the extremities, and on the scalp when exposed to trauma; however, they are rarely seen in the vulvar region. Vulvar cysts can arise as a result of implantation of squamous epithelium under the dermis or subcutaneous tissue following trauma to vulvar area or during the procedure of FGM, which leads to the accumulation of epidermal desquamations and secretions in a circumscribed space of dermis or subcutaneous tissue [4,5]. In our case, the patient had undergone genital cutting at the age of 6, but no history of trauma to perineal area. These cysts grow slowly, usually without symptoms, and may become infected causing pain and discomfort. They may rarely grow to the size that cause sexual difficulty, difficulty of urination and may restrict movement. They may cause psychological problems, including disfigurement, shame, and fear of cancer, and they may affect the personal and family life of the patient [6]. Our patient had a boyfriend and had sexual intercourse but abstained for almost two years because she had associated sexual difficulty (discomfort during initial penetration).

The diagnosis is usually made by careful genital examination, a soft, mobile, non-tender mass in the clitoral region in the absence of any virilization sign is the typical physical finding [1], which is in accordance with the findings of our patient. US can differentiate a cystic mass and its relationship with nearby structures like urinary tract and MRI is important to characterize the location and consistency of the vulvar mass and its extension to surrounding tissue [2]. In our case US showed benign lobulations and septations in a cystic swelling.

CONCLUSION

Medical practitioners should be aware of all complications associated with FGM and its psychological and its psychosexual impact, as well as surgical technique of excision with the aim of achieving a successful surgical and cosmetic outcome.

COMPETING INTERESTS

Theauthorofthiscasereportdeclarednocompeting interests.

CONSENT

Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available.

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