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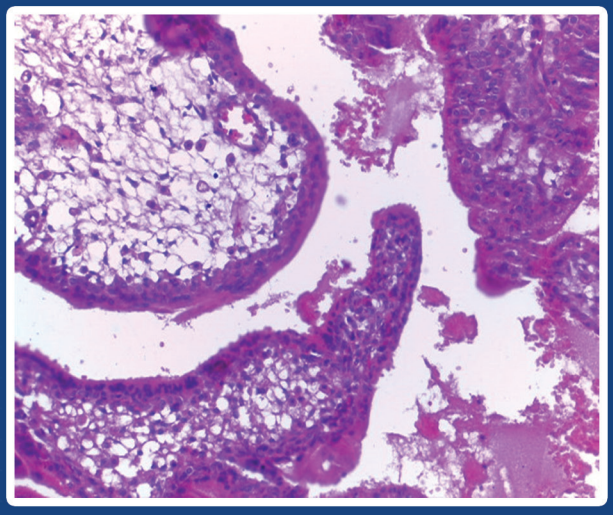

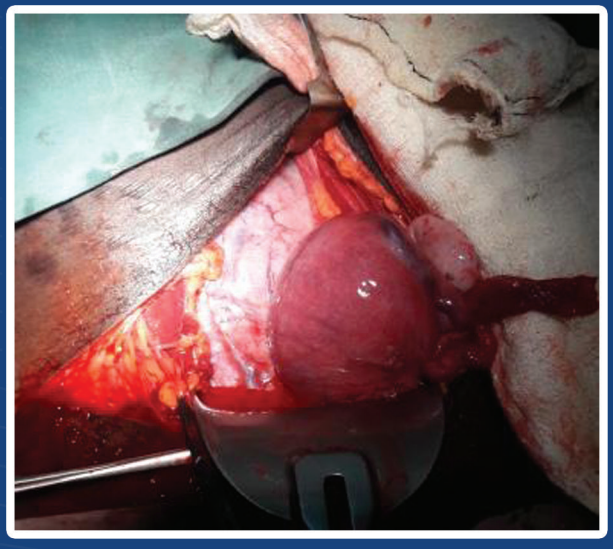

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THE MAGNITUDE AND PATTERN OF CESAREAN SECTION DELIVERIES IN PRIVATE HEALTH FACILITIES IN ADDIS ABABA

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ABSTRACT

BACKGROUND: In Ethiopia, the national Cesareans Section (CS) rate stands at 3.79% nationally currently, which is significantly below the World Health Organization (WHO) recommended rate of 10-15%, signifying barriers in access. On the otherhand the prevalence of CS in hospitals in Addis Ababa was found to be 38.3% while private facilities performed more CSs than public health facilities, 46.9%.

OBJECTIVE: To assess the magnitude of CS delivery and associated risk factors among women who give birth in private health facilities in Addis Ababa

METHODS: This is a cross-sectional study on magnitude, indications and associated factors with CS deliveries from 24 private facilities in Addis Ababa.

RESULTS: The finding from this study show that the magnitude of CS in private health facilities was 57.3%. CS was highest amongst age group 25-29 years (42.0%) while those above the age of 40 were 1.8 times likely to have a CS delivery unlike other age groups. Similarly, CS was higher in primiparous (35.0%) and at GA of 37- 42(84.0%) weeks. Majority were primary CS 253(55.0%) . The three most common indications were Non- reassuring fetal heart rate (14.6%), maternal request, (10.8%), and breech presentation (8.8%). The mean CS procedure and 48 hrs hospital cost were 4,905.00 and 14,657.00 ETB respectively..

CONCLUSION AND RECOMMENDATIONS: We have documented higher magnitude of CS delivery. The rates were higher amongst relatively young age group and primiparous. Previous CS, non-reassuring fetal heart rate, and client request were the commonest indications. The reasons behind the high CS rate are likely a combination of provider behavior and incentives, social and cultural factors affecting the mothers' decision. We recommend the conduct of further studies to uncover and address the causes the high CS rates.

KEY WORDS: CS rate, private facilities, Addis Ababa.

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2 ABT Associates Inc.

INTRODUCTION

CS deliveries can be life-saving for both the mother and child when it is medically required[1]. However, there is a growing concern regarding the increasing rate of CS deliveries globally where there is no medical need[1]. The risks and costs associated with CS deliveries are significant, and evidence shows that CS delivery and maternal death are positively associated largely due to bleeding, infection and anesthesia related complications. CS delivery is a marker of access to, and availability and utilization of obstetric services but, where rates are extremely high, it may also indicate a mismatch between evidence and practice[1]. WHO recommends an ideal CS rate of 10-15%. According to this guidance, when rates fall below 10%, it indicates mothers are not able to access what can be a lifesaving procedure. Moreover, a WHO survey on maternal and perinatal health carried out in 24 countries and 373 facilities (using data from 289,635 deliveries) had showed higher CS rates were associated with increased maternal mortality and morbidity[1]. More alarming is that the increased CS rates were associated with poor newborn health outcomes in all three regions, after controlling for many factors. In Africa, increasing emergency cesarean rates were associated with increased intrapartum stillbirths, neonatal deaths, and severe neonatal morbidity[2]. Therefore, the decision to perform CS should be based on clear, compelling, and well-supported medical justifications. Clients/patients should be clearly informed about the benefits and the risks of the procedure and be guided ethically for either informed consent or informed refusal for the procedure. Further research showed that CS rates beyond 15% are considered medically unjustified or unnecessary, with negligible benefits for most mothers, and are costly and often unequally distributed amongst the population[2].

According to the 2010 FMoH annual report, the CS rate in Addis Ababa was 36%. A study investigating CS delivery practices in teaching public, NGO and private MCH hospitals in Addis Ababa, found that the CS rate in public hospitals was 31.1%, and in NGO and private hospitals 48.3%[2].

And in Ethiopia, the national CS rate currently stands at 3.79%, which is below the WHO with significant regional variations, ranging as low as 0.76% in Somali region to a high of 41 % in Addis Ababa, FMoH 2011, which may indicate unequal access across different groups[3].

The contrast between the extremely low cesarean rates for most of the population of the country and the high institutional rates in Addis Ababa and the private for-profit hospitals is a dramatic indicator of a country in transition; struggling to ensure equitable and appropriate access to comprehensive obstetric and newborn care.

The FMoH states that every pregnant woman in Ethiopia has the right to information about her health, to discuss her concerns with a provider, to know in advance about any planned procedure to be performed, privacy, confidentiality, and to express her views about the services. To fulfil these rights, in 2010 the FMoH developed an Obstetrics Management Protocol based on the WHO's goal-oriented model which focuses on a limited set of essential antenatal, delivery, postnatal and newborn care services, and prescribed statements about indications in the use of procedures such as CS[4].

Moreover, in the above mentioned document, it was established that "CS is performed when safe vaginal delivery is either not feasible (absolute) or would impose undue risks to the mother and/or fetus (relative)".

The protocol further states that appropriate indications, and the presence of a trained manpower and instruments required. It also requires providers explain the procedure to the client or relatives to seek informed consent. The protocol has details of the possible complications of the procedure and it states that maternal mortality is higher after CS than after vaginal delivery. Although the protocol does not discuss high rates of inappropriate CS that can be due to maternal requests, provider misjudgment, or an overall failure to properly counsel on birth preparedness during ANC, the protocol does caution about the possible inappropriate and excessive reliance on technology or procedures that can ultimately increase complications and cost[4].

Additionally, according to the PHSP project data collected from the 30 PHSP-supported MNCH facilities, the CS rate increased by nearly twice between April 2017 –Dec. 2018 from 25% to 47%. And CS rate Addis Ababa during similar period stands was 44%. These figures raises alarm of high rates of the performance

of the procedure possibly without justifiable medical indications. Therefore, this study aims to explore the details regarding the magnitude, indications and associated factors and cost of CS deliveries in private health facilities in Addis Ababa city[5].

METHODS:

This is a cross-sectional study based on information retrieved from delivery registration book and CS client charts for the number, indications, outcomes and associated factors for CS delivery using a semi-structured data collection tool.

To select facilities for this study, PHSP obtained facility profiles from the Addis Ababa RHB. Based on this information, a total of 60 facilities were found (36 private for-profit, 20 government, and 4 non-profit NGO facilities) who are performing CS. All government facilities were excluded from the study. To ensure included facilities had sufficient numbers of CS deliveries for study, those with less than 100 CS deliveries per 6 months, between July and Dec. 2018 were excluded. Based on this, 24 facilities were selected for the study.

The study population was mothers who delivered by CS at private facilities in Addis Ababa from Jan.-Dec 2018 and the study subjected were those who delivered in the selected 24 facilities with 100 or more CS deliveries in last 6 months. To collect information on CS deliveries , one month from each quarter in Jan.-Dec.20182018 was randomly selected, assuming there could be seasonal variation in the number of deliveries and, hence CS deliveries. Accordingly, the months of March, May, August, and November 2018 were selected.

All deliveries conducted in the above months were reviewed for this study from the 24 selected facilities. From each month, 10% of the CS delivery charts were randomly selected, and data was abstracted at the using a standardized pretested data collection tool. And information regarding coast of delivery services was obtained by interviewing hospital managers using standard format.

Data entry and analysis was conducted at Private Health Sector project using SPSS 25.0. Data abstracted at the facilities using the standardized tool was entered into SPSS. The CS rate in the facilities was determined, and analysis conducted to indications and outcomes of CS.

The data collection tool did not abstract patient names and collected data was kept confidential. Ethical clearance was obtained from Abt Associates Inc. (Institutional review board) IRB and was submitted to the Addis Ababa Regional Health Bureau(RHB) with data collection tools for review following which a written support letter from was obtained and presented to the facility heads.

RESULT

There were a total of 7522 deliveries documented with 4350 (57.8%) CS deliveries, 2693 (34.9 %) SVDs and 291 (3.9%) instrumental assisted vaginal deliveries.

Details regarding maternal age, parity, gestational age at CS delivery, ANC follow-up, previous obstetric, medical and surgical histories, indications for CS, type of CS delivery (elective verses emergency, and primary verses repeat) and fetal and maternal outcomes following CS procedure were abstracted from the 460 CS charts selected randomly (10 % CS charts of the four randomly selected months from Jan.-Dec.2018 as stated above) with the findings stated below.

Accordingly, the mean age was 29.6 with a standard deviation of ± 4.3 years and a median and mode of 29 and 26 years respectively. The minimum and maximum age was 19 and 43 years. The majority, 195 (42 .0 %) were in the age range of 25-29 years.

Regarding parity, 158 (35.0 %) were primparious, 148 (33.0 %) were para one, 86 (19.0 %) were para two, 41 (9.0 %) were para three and 18 (4.0 %) were para four and above.

And regarding history of previous deliveries, 180 (70.0 %) gave birth to their first (singleton only) children by CS, 76 (29.4 %) by SVD with episiotomy. And on delivery of twins, 88 (75.0%) delivered by CS.

And it was only in 2.8% and 3.5% of the cases that history of medical and surgical conditions respectively was documented. History of post-date, post-term, pre-eclampsia and GDM were documented in 10.1%.

And 401 (87.0%) had ANC follow-up at the same facility whereas 13 % were referred. Counselling for birth preparedness during ANC was documented in 54 (12.0%).

The majority, 84.0 % occurred at GA of 38-42 weeks followed by 28-37 weeks and >=42 weeks, accounting for 13.0% and 1.0% respectively.

And 59.0% were electively done and 41.0% were emergency CS. The majority, 253 (55.0%), were primary while repeat while 207(45.0%) were primary CS. And the three commonest indications for primary CS were NRFHR in 38, (15.0%), maternal request in 28, (11%) and breech presentation in 23 (9%) of the cases (Table 1).

Table 1: Indications for CS, private health facilities, Addis Ababa, Jan.-Dec. 2018

Indications	Number	Percent
NRFHR	38	15.0 %
Others *	28	11.0 %
Maternal request	28	11.0 %
Breech presentation	23	9.0 %
Failure to progress	21	8.3 %
Failed induction	21	8.3 %
Cephalo-Pelvic Disproportion (CPD)	20	7.9 %
Poor Bio physical profile	14	5.5 %
Pre-eclampsia/eclampsia	13	5.1 %
Post term	11	4.3 %
APH	9	3. 5%
Obstructed Labor	7	2.7 %
Multiple pregnancy	6	2.3 %
Not documented	5	1.9%
Cord prolapsed	4	1.5%
Malpresentations/malpositions (other than breech)	3	1.1%
Unfavorable cervix	2	0.7%
Not documented	5	1.9%
Total	253	100.0 %

*The word "Others" describes a group of other indications other than mentioned in the list.

Labor follow-up with partograph was documented for only 20.0 % of the laboring mothers before CS.

Regarding maternal outcome, 7308 (97.2%) mothers had stable outcome, while 9 (0.1 %) resulted in death. The likelihood of having a CS delivery and a stable maternal outcome was 1.3 times more than in other modes of delivery (1.0-1.7) with p vale > 0.05.

Regarding fetal outcome for the first baby, 7,398 (98.3 %) were live births. The likelihood of having an outcome of livebirth is 3.2 times more in CS delivery unlike other modes of delivery, with 95% CI (1.7-6.1), P< 0.001.

On the Apgar score of the first newborns at 1st and 5th minutes in 87.2 % had scores of 8-10 at 1st minute which improved at 5th minutes for 96. 2% of the newborns. The likelihood of having a CS birth with an Apgar score of the first baby 1-7 and 8-10 were 1.8 times (1.3-2.5) and 1.6 times (1.2-2.1) at 1st minute and 5th minutes respectively, p<0.05.

And a total of 136 twin deliveries were recorded, in which 93.0 % were live, 47 % weighed more than 2,500 grams, and 71% had Apgar scores of 8-10 at the 1st minutes which improved in 87.0 % at the 5th minutes (Table 2).

Table 2: The fetal outcome of CS delivery in private health facilities, Addis Ababa, Jan.-Dec., 2018

Fetal outcome	Number	Percent
Live birth	7398	98.4 %
Stillbirth fresh	52	0.7 %
Still birth macerated	27	0.4 %
Still birth not labelled	18	0.2 %
Not documented	27	0.4 %
Fetal outcome second baby		
Live birth	133	98.0 %
Still birth (fresh and macerated)	3	2.0 %
Fetal weight (first baby) n=7488		
Less than 1500 grams	94	1.2 %
1500-2500 grams	543	7.2 %
2501-3500 grams	4592	61.0 %
Greater than 3500 grams	2259	30.0 %
Fetal weight (second baby) n=136		
Less than 1500 grams	14	10.0 %
1500-2500 grams	58	43.0 %
2501- 3500 grams	61	45.0 %
Greater than 3500 grams	3	2.0 %
First baby, Apgar scor,e at 1st minute		
Apgar score of 1-7	881	11.9 %
Apgar score of 8-10	6454	87.2 %
No record of Apgar	63	0.9 %
First baby Apgar score, at 5th minutes		
Apgar score of 1-7	147	2.0 %
Apgar score of 8-10	7118	96.2 %
No record of Apgar	131	1.8 %
Apgar score of second baby live birth (n=133)		
Second baby, Apgar score, at 1st minute		
Apgar score of 1-7	33	25.0 %
Apgar score of 8-10	94	71.0 %
No record of Apgar	6	4.0 %
Second baby Apgar score, at 5th minutes		
Apgar score of 1-7	10	8.0 %
Apgar score of 8-10	116	87.0 %
No record of Apgar scores	7	5.0 %

And 94.9 % of the births weighted were above 2,500 grams, and 5.7% were above 4,000 grams for singletons while all second born twins had a birth weight of greater than 1,500 grams.

CS delivery was found to be associated with fetal weight, Agar score at first and fifth minutes, fetal outcome of the first baby, maternal outcome and the absence of obstetric complications. With logistics regression analysis, all of the above variables were found to be confounders except maternal age, fetal outcome and fetal weight of the first baby with $p < 0.001$, 0.05 and 0.05 respectively (Table 3).

Table 3: Association of CS delivery with maternal; age, maternal and fetal outcome in private facilities, Addis Ababa, Jan.-Dec., 2018

Indicator	C/S delivery	None-C/S Delivery	Crude OR and 95 % CI	Adjusted OR and 95 % CI
1.Age of the mothers				
15-20 years	59	133	1	1
21-29 years	2275	1928	2.7(1.9-3.6)	0.93(0.5-1.7)
30-39 Years	1857	1039	4.0(2.9-5.5)	1.2(0.8-1.7)
40 years and above	59	26	5.1(2.9-8.9)	1.8(1.3-2.6)**
No record	100	46	4.9(3.0-7.9)	4.9(3.1-7.8)**
2. Fetal weight of the 1st baby				
Less than 1500 grams	79	50	1.1(0.8-1.6)	1.68(1.11-2.62)*
1500-2500 grams	343	200	1.2(0.9-1.4)	1.23(1.0-1.45)*
2501-3500 grams	2596	1996	0.9(0.8-1.0)	1.0(0.9-1.1)
Greater than 3500 grams	1332	926	1	1
3. Fetal outcome of the first baby				
Live birth	4304	3094	2.4 (1.6-3.4)	3.2(1.7-6.1)
Still births	46	78	1	1
4. Apgar score of first baby at 1st minute				
1-7	536	346	1.8 (1.3-2.5)	0.8(0.38-1.62)
8-10	3729	2726	1.6(1.2-2.1)	0.8(0.39-1.64)
No score	85	100	1	1
5. Apgar score of first baby at 5th minute				
1-7	104	44	2.2(1.5-3.4)	0.97(0.5-1.8)
8-10	4115	3004	1.3(1.0-1.7)	1.5(0.8-2.4)
No score	131	124	1	1
6. Maternal outcome				
stable	4239	3069	1.2(0.9-1.5)	1.2(0.87-1.56)
None -stable	111	103	1	1
7. Have Obstetrics complications				
Yes	13	8	1.2(0.5-2.9)	0.86(0.35-2.1)
No	4336	3153	1	1

Finally, the amount clients are paying currently for CS procedure ranges from 2,500.00-7,000.00 ETB ($87.0-$242.4 USD with conversion rate of $1 USD to 28.8 ETB), with mean and median costs to conduct the procedure of 4,905.00 ETB and 4,900.00 ETB ($169.8 and $169.6 USD) respectively. Conversely, the cost for normal SVD ranges from 1,000.00 ETB to 10,000.00 ETB ($34.6-$346.2

USD), with mean of 4,404.00 ETB ($152.5 USD). If episiotomy was performed, the price is increased up to 12,000.00 ETB ($415.5 USD), with mean 5,315.00 ETB ($184.0 USD). The total cost including procedure, beds, medication, physician rounds, and meals that CS clients pay at discharge at 48 hours in uncomplicated cases ranges from 3,500.00 ETB-22,000.00 ETB ($121.0-$761.7 USD), with a mean of 14,657.00 ETB, and median of 16,000.00 ETB ($507.0 and $554.0 USD) respectively.

DISCUSSION

We have documented CS delivery rate of 57.3% with commonest indication 45, 0% being for previous CS. And it was commonly done in age group of 25-29 years, 42.0% and for primi parous in and 35.0 % of the cases. The CS rate (57.8%) from our study is somewhat higher than a retrospective study done in maternity hospital at Albania and public tertiary hospital in Northwestern Nigeria, and an analytic study conducted at the NGO and government-run Tanzania St. Joseph Medical Hospital with CS rates of 32.3%., 11.3%, and 18% respectively[6,7,8]. It is also higher than the study conducted on CS delivery practices in teaching public and non-government/private MCH hospitals in Addis Ababa where the CS rate in private hospitals was 48.3%[2]. Similarly our CS rate is higher than the rates reported from the PHSP program data from 30 MNCH facilities, 25% -47.0%, from April 2017-Dec. 20185. Higher rates found in this study may be due to the fact that all the other studies were conducted in public facilities.

Concerning indication this study found that previous history of CS was higher than what was found by Hiwot et al, 27.2 %[9]. Also in Hussen et al. study it is similarly documented that pervious CS delivery accounted for 29.3 %[1]. However, our finding was different from the study conducted in Felegehiwot Referral Hospital in Northwest Ethiopia where the most frequent indication was obstructed labor, 30.7 %, followed by fetal distress, 15.9%, and abnormal presentation, 13.4%. It is different than the study in Attat Hospital, Gurage Zone SNNPR, the leading causes for caesarean birth were CPD (38.1%), previous CS, and 18.9%[8]. These difference might be due to a decline in the trend to consider vaginal birth after CS in the private facilities[2,10,11].

The majority of mothers who delivered through CS in this study were between 25 and 29 years old (42.0%), yet CS delivery was found to be 1.8 times more likely to be the mode of delivery in mothers aged 40 years and above to other age groups. This is unlike what was reported in a cross-sectional survey conducted in Addis Ababa where women older than 30 years were found to be more likely to have CS delivery than younger age groups. However, it is consistent with the findings from the Yebeltal et al. study, where compared with young mothers ages 15–24 years, older mothers aged 30–49 years had greater odds of CS delivery, (odds ratio = 2.56) (Hussen, Shifewaw, and Lukman 2014). In is interesting to note however, that the three most recent EDHS data (2000, 2005 and 2011) did not show significant variation in CS rate across the categories of maternal age groups. The higher likelihood of CS in older age groups found in this and other studies may be related to the fact that many of the indications for CS, including previous CS, and other risk factors, occur more often in older women.

When it comes to parity, 35.1% of the CS cases were primiparous which is somewhat similar to study conducted in Addis Ababa which found 48.7 % primiparous. Regarding GA at CS, the majority, 91.0% occurred 37-42 weeks which is similar to Hiwot et al. study of 85.2 % for GA of 37-42 weeks[9].

Regarding CS timing, 59.0% were elective in our study which is somewhat higher than Hiwot's et al. study which documented a CS performed on elective bases to be 41.2% of cases. Moreover, our emergency CS rate of 41.0% is less than Hiwot's study finding of 58.8%. However, the rate of elective CS operations in this study was lower than a study conducted in Atat Hospital, Gurage Zone SNNPR, Ethiopia which found 90.4% emergency CSs, and only 9.6% as elective. A similar trend was identified in Felegehiwot referral hospital in Northwest Ethiopia; 90.3% emergency, and 9.7% elective[9,10,11]. The observed discrepancy could be the increasingly large number of previous CS cases and failure to consider trial of scar for possible vaginal delivery in private facilities currently.

Our study also found that about 52.4% of CS's were primary, which is less than the study conducted in Addis Ababa, Attat Hospital Gurage Zone SNNPR which

documented rates of primary CS at 64.0%, 68.7%, rates respectively. The repeat CS rate in this study was 45.0 %, is similar to study by Hiwot, (46.1%). However it is more than the study in Attat Hospital, Gurage Zone SNNPR, and a study in Harar which documented rates of repeat of 36.0% and 31.3 % respectively[9,10,11]. This is likely due to the fact that the public facilities are handling referred and difficult cases and hence perform more of first CS (primary).

The partographic labor follow up rate of 20% was higher than the finding of Fesseha et al. group which was 12%. On the other hand, 87.0% of mothers had ANC visits in the same facility, only 12% of cases received some form of counselling on birth preparedness[12].

Regarding outcomes of CS deliveries, 98.4% of the first born baby was born alive; this finding is higher than the 81% live birth documented in Fesseha et al. study. No maternal deaths were documented in this study, unlike the findings in the above mentioned study where two out of the 267 (0.7%) died[12].

The percentage of births having birth weight of 2,500-3,999 grams, 88.8% is somewhat higher than the Hiwot study of 76.2%[9]. This could be due to the fact that the private for-profit clients are from higher socioeconomic groups with better nutritional status, resulting in higher birth weight.

The mean cost for the CS procedure alone (4,905.00 birr) was slightly higher than the mean for a SVD (4,404.00 birr), though lower than the mean for an SVD with episiotomy (5,315.00 birr). However, when adding in the cost of the required 48-hour stay for uncomplicated CS, the mean cost rises to 14,657.00 birr. It is important to note that it is common practice for the attending physician to receive a percentage of the delivery procedure cost (not including the 48-hour stay) in private facilities, regardless of delivery mode. Given the relatively small difference in the mean cost for CS versus SVD (not including SVD with episiotomy), it is difficult to extrapolate whether this may or may not provide an incentive for providers to indicate CS over SVD. However, at the facility management level, there may be a financial incentive to favor CS, given the high cost of the 48-hour stay.

However our study has all the limitations of a retrospective study. Moreover, only 24 of the 60 facilities met the study inclusion criteria and hence this small size may not be representative. And the fact that only 10% of the CS delivery charts were analyzed also is a potential limitation. It also doesn't implement capture client, providers, and managers perspectives.

CONCLUSION

We have provided evidence of higher CS rates in private facilities in Addis Ababa compared to the available literature on CS rates in private and public facilities in Addis Ababa, Ethiopia, and other low- and middle-income countries. These high rate could indicate unjustified overuse, which is of equal concern as underuse. Factors such as suboptimal client birth preparedness and counselling on safe delivery options, and the presence of non-medical factors such as cultural norms, personal characteristics of the woman/mother, and socioeconomic factors, and financial incentives for the providers/facilities could be the drivers for the observed high CS rate in this study.

RECOMMENDATIONS

We recommend that the findings of this study be used by the FMoH, AARHB, ESOG, and the AA PHFA to begin a policy dialogue to address the problem of high CS rates. Providers must be advised to inform expectant mothers about birth preparedness in general and the risks and benefits of CS in particular, provide pain relief medications during labor and delivery, provide trial of vaginal birth as per the standard recommendation for previous CS, and refrain from unnecessary increased medicalization of labor and delivery by decreasing intervention as recommended by the WHO. We highly recommend the conduct of prospective study to uncover clients, providers and managers perceptions and roles in the increasing CS delivery.

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SEXUAL HARASSMENT AND ASSOCIATED FACTORS AMONG FEMALE STUDENT OF PREPARATORY SCHOOLS IN SODO TOWN, WOLAITA ZONE, SOUTHERN ETHIOPIA

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ABSTRACT

BACKGROUND: Sexual harassment is a common problem among women and it is a public health problem all over the world. Almost all females encounter sexual harassment in many different forms. In Ethiopia, studies on sexual harassment are limited.

OBJECTIVE: The study was conducted to assess sexual harassment and associated factors among female students of preparatory schools in Sodo Town, Wolaita Zone, Southern Ethiopia.

METHODS: School-based cross sectional study design was employed. Data were collected using Self-administered questionnaire among randomly selected female students from 11th and 12th grades. Data entry was done using Epi-data version 3.5.1 then the data were exported to SPSS version 20 statistical software for analysis. Bivariate and multivariable logistic regression analyses were used

RESULT: The prevalence of sexual harassment was 32.6 % (95 % CI: 28, 36). Educational status of father (AOR=0.470, CI=0.230, 0.962), female students living with mother only house (AOR=2.202, CI=1.302, 3.725), offensive sexual discussions (AOR=1.586, CI=1.013, 2.484), intimate relationship of female students with their teachers, (AOR=0.297, CI=0.198, 0.446) and orienting students about sexual harassment (AOR=0.676, CI=0.493, 0.925) were significantly associated with sexual harassment.

CONCLUSION & RECOMMENDATION: There is high prevalence of sexual harassment in the study area. Students living arrangement, offensive sexual discussions, intimate relationship of female students with their teachers, orientation of female students about sexual harassment were predictors of sexual harassment. Governmental and non-governmental organizations are recommended to design strategies for prevention of sexual harassment in the study area.

KEYWORDS: Female student, Ethiopia, Preparatory School, Sexual harassment

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INTRODUCTION

Sexual harassment is typically defined self-report of unwanted or unwelcome sexual attention and is considered as a form of gender-based violence. If it is among youth encompasses acts that are sufficiently severe, persistent, or pervasive to limit a student's ability to participate in or benefit from an education program or activity, or to create a hostile or abusive educational environment[1]. Sexual harassment comes in different forms. It can include making verbal or written comments, making gestures, displaying pictures or images, using physical coercion, or any combination of these actions. It can take place in person or through electronic means such as text messages and social media. School staff can be harassers, but student peer-to-peer sexual harassment makes up the bulk of sexual harassment at middle and high schools[2].

According to the United Nations Declaration, sexual harassment is declared as violence against women which includes any act of physical and psychological harm or suffering to women. Any sexual act, attempt to obtain a sexual act, unwanted sexual comments or advances, against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work[3].

Prevalence of sexual violence victimization among young women ranges from 5% to 73% worldwide. The existence of sexual harassment in the society is undeniable, but what need to be investigated further are its precise nature, extent and impact particularly in learning institutions. In Sub – Saharan Africa, a study in Botswana shows, out of 422 girls interviewed, 38 percent reported that they had been sexually harassed[4,5].

To enhance the sexual and reproductive health and well-being of the young's population, Ethiopia had a national strategies and activities. Some of the strategies are delivery of all youth reproductive health related interventions and policies by gender, age, and residence and strengthening multicultural partnerships to respond to young women's heightened vulnerability to sexual violence and nonconsensual sex[6,7].

Studies conducted in Ambo district, Oromia region Ethiopia reported that 35.5% female students experienced sexual harassment throughout their school life [1]. While, other study conducted in Hadiya Zone, Southern, Ethiopia reported that young women are socialized to be submissive to discuss issues related to sex and sexuality which leaves them unable to refuse sex or insist condom use. Women's economic dependence on men also leads young females to exchange sex for the sake of earning money[8].

The study conducted in Bale Goba, Oromia, Ethiopia, 66% of the participants have faced unwanted sexual act such as asked to have sex , verbal jokes and comment on physical appearance in relation to sexuality in the lifetime[9].

Therefore, this study was conducted to assess prevalence of sexual harassment and associated factors among female students of all preparatory schools, in Sodo Town, Wolaita Zone, Southern Ethiopia.

METHOD AND MATERIALS

The study was conducted in Sodo Preparatory School located in Sodo town, in Wolaita Zone from February to March, 2017. The town is about 329 km away from Addis Ababa on away through Hossana to Arbaminch and 166 Kilometer from Hawassa, the regional city. The town has five preparatory schools among which two, namely Sodo Preparatory School, Maremiya Secondary &Preparatory school are public and Wolaita Liqa School, Chora Academic and Preparatory School and Bethlehem Academic and Preparatory School are private.

The school-based cross-sectional study design with quantitative data collection method was employed. The study population included all randomly selected female students from Sodo town preparatory schools. Respondents, who were acutely ill, at the time of the study, were supposed to be excluded from the study.

The sample size was calculated using single population proportion formula by considering the following assumptions: The prevalence of female students' sexual harassment is 35.5% taken from the study conducted in Ambo, Oromia Ethiopia [1]. With the level of confidence interval 95%, Margin of error (d) =5%., the sample size was 854 after considering 10% non-response rate and design effect of two.

Samples were selected by using stratified sampling

technique in the first stage. Simple random sampling method with proportional allocation to the size of population was used to select study participants. The numbers of the female students to be in the sample were calculated by proportional to their class size.

The questionnaires were prepared by reviewing relevant literatures (1.5, 9). Pre- test was done on 10% of the subjects at Bodit preparatory school. Data were collected through Pre-tested and self-administered structured questionnaire. The questionnaire was initially prepared in English and then translated into Amharic language. The Amharic version was again translated back to English language to check for any inconsistencies.

First, data were checked manually for its completeness and consistency. Each completed questionnaire was assigned a unique code and entered to Epi-data version 3.1. Then, data were exported into SPSS version 20 for data processing and analysis. Descriptive statistic and bivariate analysis followed by and multivariate logistic regression was used as appropriate. The degree of association between dependent and independent variables were assessed using odds ratio and coefficient with 95% confidence interval and p-value.

The dependent variable was sexual harassment while varied independent sociodemographic, individual and community factors such as living arrangement, access money were assessed. The following definition (measurements) were used:

- Sexual harassment: self-reporting of the girls in one or more of physical sexual, verbal or/and no-verbal acts against their will
- Physical sexual acts include sexual assault, rape, touching, kissing without the consent of the victim.
- Verbal acts include sexual suggestions, whistling, phone calls of a sexual nature or sexual related jokes and insults.
- Non-verbal acts encompasses unwelcomed gestures i.e. displaying pornographic materials or movies involving sex, rude finger signs, sending letters, short messages on phones or emails containing sexually clear or explicit remarks.

The study was reviewed and approved by Research Ethics Review Committee, college of health science and medicine, Wolaita Sodo University. The purpose and the importance of the study were explained and verbal assent was sought from participants whose age was less than 18 years and written consent was obtained from their parents or guardians. Verbal consent was obtained from those whose age was greater than 18 years. Moreover, confidentiality of the information was provided by each respondent was kept secret by omitting the personal identifiers of the respondents.

RESULT

In this study, a total of 854 female students who are learning in both government and private preparatory schools, have responded the questions making the response rate 100%.

The mean age of respondents was 17.28 (+_1.431). Most of respondents age 15-19 years which accounts to 808(94.6%). Majority of the students (n=708, 82.9%) were learning in government owned school and 146 (17.1%) were private school students. Most of the respondents, were Wolaita by ethnicity (n=761, 89.1%), not attending their religions (n=290, 34%). Three hundred eleven (36.4 %) of the students reported that their mothers' educational status was writing and reading and 353 (41.3%) are complete of 10th and 12th grade and 46 (5.4%) only graduated from higher education institutions followed by illiterate which accounts 144 (16.9%). More than half of fathers 465 (54.4%) were able to read and write. Most parents of a study participant, 460(53.9%) were living together (Table 1).

Table 1: Socio-demographic and economic characteristics of preparatory female students in Sodo town, Wolaita zone, South Ethiopia, 2017

Variables	Categories	Frequency	Percent
Age	15-19	808	94.6
	20-29	46	5.4
Schools identity	Government owned	708	82.9
	Private owned	146	17.1
Ethnicity	Wolaita	761	89.1
	Tigre	66	7.7
	Amhar	21	2.5
	Others	6	0.7
Religion	Protestant	517	60.5
	Orthodox	290	34.0
	Catholic	23	2.7
	Muslim	20	2.3
	Others	4	0.5
Education status of Mother	Illiterate	144	716.9
	Read and write	311	36.4
	Attended primary and secondary education	353	41.3
	Attended secondary education and above	46	5.4
Education status of father	Illiterate	80	9.4
	Read and write	465	54.4
	Attended primary and secondary education	190	22.2
	Attended secondary education and above	119	13.9
Parents live together	No	89	10.4
	Yes	765	89.6

Majority of the students (n=765, 89.6%) were living with both parents. More than half of the respondents, 439 (51.4%) were getting their pocket money from their parents but the rest 415(48.6%) were not getting pocket money from their parents. More than two-third, 730(85.5%) of the participants reported that they were provided school materials by their both parents. Regarding communicating sexual affair with family, 491 (57.5%) were not discussing on the issue with their family. Regarding hearing about sexual harassment, 420 (49.2%) never heard about sexual harassment from different sources (Table 2). Regarding to sexual

Table 2: Family factors of preparatory female students in Sodo town, Wolaita zone, South Ethiopia 2017

Variables	Categories	Frequency	Percent
Students live with	With both parents	765	89.6
	With mother only	89	10.4
Pocket money provided	No	415	48.6
	Yes	439	51.4
Scholastic materials provider	Both parents	730	85.5
	Father only	10	1.2
	Mother only	114	13.3
Communication with family members about sexual affairs openly?	No	491	57.5
	Yes	363	42.5
Seeing or hearing about harassment	No	420	49.2
	Yes	434	50.8

harassment, 32.6% of the participants experienced sexual harassment and 110 (12.9%) of the participants reported they were harassed by their school officials but, 168(19.7%) did not report it. Out of reported respondents, thirteen (1.5%) were claimed that the school officials never take action against the offenders, 29(3.4%) were noticed that the action was taken rarely and the other respondents reported that 35 (4.1%) and 33(3.9%) replied that the officials were taking action sometimes and always respectively.

When we see the reason of not reporting sexual harassment, out of 110 respondents, 49(44.5%) reported that they did not think anything would be done for them and the rest 21 (19.1%) , 21 (19.1%) and 19(17.3%) respondents feared negative social consequences, ashamed and did not know where to go respectively (Table3).

Table 3: Contribution of concerned bodies on sexual harassment

Variables	Categories	Frequency	Percent
Reporting sexual harassment	Yes	168	19.7
	No	110	12.9
	Not harassed	576	67.4
Reason for not reporting harassment(n=110)	Did not know where to go	19	17.3
	Felt ashamed	21	19.1
	Fear of negative social consequence	21	19.1
	expecting no response	49	44.5
Orientation given about harassment	Yes	393	46
	No	461	54

The overall prevalence of life time sexual harassment among the study participant was 32.6 % (95%CI: 28, 36). The prevalence of life time harassment among female school students in government is higher than those from private owned schools. 33.7% Vs 26.7%.

Out of those harassed female students in the life time, 113(13.2%) offended by sexual jokes or speech, 56(6.6%) forced to talk about sexual issues, 30(3.5%) were texted or phoned on unwanted sexual issue, 11(1.3%) were kissed without their will, 26(3%) were exposed for forceful sexual intercourse ,11(1.3%) were kissed without their will and 42(4.9%0 were faced nonverbal sexual incidence and the rest did not harassed. Among those harassed nonverbally, 37(88.09%) faced rude finger signs and 5 (11.9%) harassed by short message through phone.

Among 278 harassed participants, 215(77.3%) reported that they were harassed at school compound. It also reported that most of the perpetrators, 147(52.8%) were students 9(3.2%) were teachers. The reasons for this harassment reported by 217(78.05%) respondents was promise to get money. As the result of this harassment, 138(49.6%) notified that they lost concentration on education and 133(47.8%) respondents contracted sexually transmitted disease. Regarding reporting sexual harassment, 110(12.9%) reported, 168(19.7%) did not report and the rest 576(67.4%) never had been harassed. Most of the variables were lost their significance during multivariate analysis and only status of fathers' education, offensive sexual discussions, harassers relationship, living with either with both parents or not and orienting about harassment were statistically significantly associated with life time sexual harassment at P-Value < 0.05 after controlling all possible confounders.

In this study, Status of fathers' education has significant impact on sexual harassment: students from educated fathers were 53.0% (AOR=0.470, 95%CI=0.230, 0.962) less likely harassed when compared to students from illiterate fathers. The students who lived with only mothers were 2 times (AOR=2.202, 95%CI=1.302, 3.725) more likely to be sexually harassed when compared to those students who lived with both parents.

Offensive sexual discussions also expose students to sexual harassment. Those students faced offensive sexual discussions were 1.6 times (AOR=1.586, 95%CI=1.013, 2.484) more likely sexually harassed as compared to students that did not face offensive sexual discussions. The relationship of harassers towards students was risk factor for sexual harassment in this study. Those students who had relationship with teachers were 70.3% (AOR=0.297, 95%CI=0.198, 0.446) less likely harassed when compared to those study participants who had relation with students. Besides this, students oriented about sexual harassment either in school or other organization 34.2% (AOR=0.676, 95%CI=0.493, 0.925) were less likely to be harassed when compared with did not oriented (Table 4).

Table 4: Factors associated with sexual harassment during Bivariate and Multivariate analysis among the students in Wolaita Sodo town, 2017

Variables	Sexually harassed		COR 95% C	AOR I95% CI
	Yes (N, %	No (N, %)		
School type				
Government	239(33.8)	469(66.2)	1	1
Private	39(26.7)	107(73.3)	0.715(0.480,1.075)	0.640(0.391,1.065)
Mothers' education				
Illiterate	43(29.9)	101(701.)	1	1
Read and write	104(33.4)	207(66.6)	1.180(0.769, 1.810)	1.372(0.852,2.208)
Attended primary and secondary education	110(31.2)	243(68.8)	1.063(0.697,01.622)	1.131(0.708,1.806)
Attended secondary education and above	21(45.7)	25(54.3)	1.973(0.998, 3.899)	2.049(0.977, 4.296)
Fathers' education				
Illiterate	28(35.0)	52(65.0)	1	1
Read and write	156(33.5)	309(66.5)	0.938(0.570, 1.543)	1.232(0.712,2.131)
Attended primary and secondary education	117(61.6)	73(38.4)	1.159(0.672, 1.997)	1.452(0.799,2.640)
Attended secondary education and above	21(17.6)	98(82.4)	0.398(0.206,0.769)	0.470(0.230,0.962)
Living status				
Live with both parents	243(31.8)	522(68.2)	1	1
Live with mother only	35(39.3)	54(60.7)	1.392(0.886,2.187)	2.202(1.302,3.725)
Communication				
Yes	132(36.4)	231(63.6)	1.350(1.012, 1.802)	1.337(0.969, 1.844)
No	146(29.7)	345(70.3)	1	1
Harasser relationship				
Student	72(50.0)	72(50.0)	1	1
Friend other than student	8(53.3)	7(46.7)	1.143(0.394,3.317)	1.113(0.363, 3.410)
Family member	60(50.4)	59(49.6)	1.017(0.626,1.653)	0.847(0.501,1.432
Teacher	138(24.0)	438(76.0)	0.315(0.216,0.460)	0.297(0.198,0.446)
Orientation about sexual intercourse				
Yes	112(28.5)	281(71.5)	0.708(0.530,0.947)	0.676(0.493,0.925)
No	166(36.0)	295(64.0)	1	1

COR= Crude Odds Ratio, AOR= Adjuster Odds Ratio

DISCUSSION

The prevalence of sexual harassment among female preparatory school students in Sodo town was 32.6.0 %. This finding is consistent with studies conducted among school students in Ghana, 30% and Mekelle town, Ethiopia (35%)[10,11]. However, this finding is higher than a study conducted among female students of Arbaminch town, Ethiopia, which was 11 %[12]. The result of this study also much lower when compared with the study conducted on female students in Ambo which resulted with76.4%[13]. This discrepancy may be due to social and cultural variation among various localities.

Educational status of students' family was positively associated with reduction of sexual harassment. Female students whose Fathers' educational level was from higher institute graduate were 53.2% less likely sexually harassed when compared with those whose father educational status was illiterate. This finding is similar with a study conducted in Ambo University, where achieving secondary education by the father was associated with decreased sexual abuse[13]. The

possible reason could be as fathers' educational level is higher, they may give more attention to their daughters, understand their needs, discuss reproductive and sexual issues freely thereby transferring life skills could be easy; this strengthens the decision making capacity of their daughter against sexually abusive advances.

Our study also stated that female students' relationship with harassers was risk factor for to harassment. Those study participants who had relationship with teachers were 70.2% less likely sexually harassed when compared with those students who had relationship with classmates or students. This finding is similar with a study conducted among school children in Addis Ababa and Jimma, which showed that more episodes of sexual harassment were perpetrated by someone they closely know. The most frequent perpetrators were intimate partners14. Similarly, this finding is consistent with a study conducted in Bahirdar and Tanzania, Dareselam school children, which showed that the most common perpetrators were peers[15]. This is may be close relationship among peers and intimacy they develop and the time they spent together.

Orienting students about sexual harassment by either their schools or any other organization was significantly associated sexual harassment. Those students who were oriented about sexual harassment were 32.5 % less likely harassed when compared with students who were not oriented about sexual harassment. A similar finding was reported in as study in Kenya and Nigeria[16,17]. The reasons could be due to the health system structure difference and awareness may be through health education at school. Media was the most reported source of information on risk of sexual harassment. Lack of discussion with parents followed by no clubs in the school was the most mentioned reasons for the lack of information on risk of sexual harassment.

This study was based on cross-sectional data, which implies that the direction of causal relationships cannot always be determined;

CONCLUSION AND RECOMMENDATION

This study was conducted in Sodo town preparatory school female students regarding sexual harassment having the prevalence of 32.6%. In this study, Status of fathers' education at higher institute level has also significant impact on sexual harassment: students from educated fathers were less likely harassed when compared to students from illiterate fathers. The students who lived with only mothers were more likely to be sexually harassed when compared to those students who lived with both parents. Offensive sexual discussions were also exposed students to sexual harassment. Those students faced offensive sexual discussions were more likely sexually harassed as compared to students that did not face offensive sexual discussions. Those students who had relationship with teachers were less likely harassed when compared to those study participants who had relation with students. Besides this, students oriented about sexual harassment either in school or other organization were less likely to be harassed when compared with did not oriented.

Education offices should work on preventing and designing strategies to tackle sexual harassment through mini-media clubs and organizing peer education programs; Schools need to capacitate parents through training or orienting them about sexual harassment and its negative consequences. Parents should orient their children about sexual harassment so that they can discuss each other and develop awareness about sexual harassment.

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AUTHORS' CONTRIBUTIONS

Ashebir Thomas: had made substantial contributions to conception and design, acquisition of data, analysis and interpretation of data.

Amene Abebe and Bahailu Balcha involved in supervision of data collection, analysis and interpretation of data. All authors read and approved the final manuscript.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

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QUALITY OF ANTENATAL CARE AT JIMMA MEDICAL CENTER SOUTH WEST ETHIOPIA

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ABSTRACT

BACKGROUND: Globally complications during pregnancy, childbirth and the post-natal period are the leading causes of death and disability among women of reproductive age. The causes of these deaths are mostly preventable through proper care during pregnancy. Despite adoption of this model by Ethiopia, there is low utilization of antenatal care and skilled personnel at delivery in addition to poor quality of antenatal care which result in high maternal and perinatal mortality rate. The main objective of this study was to assess quality of antenatal care and factors associated with satisfaction of mothers in Jimma Medical center.

METHODS: Hospital based cross sectional study was conducted among 358 mothers attending antenatal care in Jimma University Medical center, from April 01/2018 to May 31/2018. Systematic random sampling method with k-interval was used to trace the study participants.

RESULT: The mean age of study participant was 27.8 ±4.1. Three-fourth of the study participant-mothers started ANC visit after 16 weeks of gestational age. The study also showed that overall satisfaction of client was 58.1%. The likelihood of satisfaction from antenatal care service was higher among clients who started antenatal care visit before 16 weeks [AOR = 1.76 (95%CI =1.04-2.99)], routine investigation was done [AOR =6.1 (95% CI= 2.54-14.63)] and respectful [AOR= 2.15 (95% CI= 1.18-3.9)] are factors associated with quality of ANC.

CONCLUSION: This study showed that gestational age at start of antenatal care, routine investigation done, respectful, privacy and waiting time were independent predictors of client satisfaction.

KEYWORD: Quality antenatal care, satisfaction, Jimma medical center, Ethiopia

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INTRODUCTION

Antenatal care (ANC) is the care provided by skilled health care professionals to pregnant women in order to ensure best health conditions for both mother and baby during pregnancy[1]. ANC is one of the central interventions for improving pregnant mother's outcome[2]. Evidences indicate that ANC services allow early recognition of pregnancy related risks and complications; and make certain access of services[3]. Visiting health facilities for ANC is the milestone for pregnant women in order to get advice, support4 and that being guide to an increased utilization of emergency care services[5,6].

Maternal mortality is unacceptably high according to different data worldwide. The vast majority of these deaths (94%) occurred in low-resource settings, and most could have been prevented using basic interventions with low cost. All women need access to high quality care in pregnancy, and during and after childbirth. Maternal health and newborn health are closely linked[7]. Women die as a result of complications during and following pregnancy and childbirth. Most of these complications develop during pregnancy and are preventable or treatable. The major complications that account for nearly 75% of all maternal deaths are severe bleeding , infections (usually after childbirth), pre-eclampsia and eclampsia and unsafe abortion[8].

Poor women in remote areas are the least likely to receive adequate health care. This is especially true for regions with low numbers of skilled health workers, such as sub-Saharan Africa and South Asia. The latest available evidence suggest that in most high income and upper middle income countries, more than 90% of all births benefit from the presence of a trained midwife, doctor or nurse. The main factors that prevent women from receiving or seeking care during pregnancy and childbirth are poverty distance to facilities, lack of information, inadequate and poor quality services, cultural beliefs and practices. To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at both health system and societal levels[9].

One of the key prime concerns of World Health Organization (WHO) is improving maternal health. The strategies includes addressing inequalities in access to and quality of reproductive, maternal, and newborn health care services; addressing all causes of maternal mortality, reproductive and maternal morbidities, and related disabilities; strengthening health systems to collect high quality data in order to respond to the needs and priorities of women and girls ensuring accountability[10]. WHO and working groups builds on the momentum generated by MDG 5 the Sustainable Development Goals (SDGs) establish a transformative new agenda for maternal health towards ending preventable maternal mortality; target 3.1 of SDG 3 is to reduce the global MMR to less than 70 per 100 000 live births by 2030[11]. The approximate global lifetime risk of a maternal death fell considerably from 1 in 73 to 1 in 180. Developing regions account for approximately 99% global maternal deaths in 2015.From 2013 report, Ethiopia did one among ten countries comprise 58% of the global maternal deaths with 420 deaths per 100,000 live births[11]. Maternal mortality rate among women age 15-49 is 1.14 maternal deaths per 1,000 woman-years of exposure. This rate is 15% lower than what is reported before 6 years[12].

Estimated pregnancy related mortality ratio (PRM) is 412 deaths per 100,000 live births according to EDHS. Thus, for every 1,000 live births in Ethiopia during the 7 years, approximately four women died during pregnancy, childbirth, or within 2 months after childbirth[13]. In Ethiopia the average annual decline of maternal mortality rate was 5% from 1990 to 2013. This figure was below the least expected 5.5% to achieve the targeted 75% decline between 1990 and 2015[11]. It is estimated that more than 40% of all pregnant women were not receiving early antenatal care in 2013[14].

WHO reports 83% of pregnant women received ANC at least once in the period 2007–2014 globally. However,

in the same report 64% had the recommended four or more ANC visits. Which suggest that large expansions in antenatal care coverage are still needed. In addition, despite increasing coverage of delivery by a skilled birth attendant both globally and in several regions, coverage is still only 51%[15].

Measuring the components of antenatal care is essential for assessing the quality of the services. Most of clients don't get information on about the progress, complication, danger signs, plan for complication & birth and other care information. Even low range information provision also has a variation on women's background characteristic[12,16].

Reducing maternal mortality crucially depends upon ensuring that women have access to quality care before, during and after childbirth. Necessary inputs for ANC service have a great impact on the service quality. Evidences suggest that there was lack of skilled personnel and necessary equipment supplies and drugs in most health facilities[12,17].

However, little is known about the quality of ANC service provided. Several studies conducted in Ethiopia investigated factors affecting ANC and they are conducted in primary health care18-20. This study attempted to address both perspective of quality care (technical and perceived) which is not labeled well in the study area.

METHODS

Study area and period:

Institution based cross sectional study was conducted among mothers attending antenatal care in Jimma Medical center (JMC), from April 01/2018 to May 31/2018. The center is one of the oldest public hospitals in the country located in Jimma town Oromia Regional State, Ethiopia. ANC service is provided five working days and on average 30-40 clients per day was seen in a facility.

Source and study population: The source population was all pregnant women attending ANC service and Health care providers who were working in maternal and child health Unit of JMC. The study populations were selected pregnant women attending ANC and service providers.

Sampling procedure and sample size: A total of 358 sample size was calculated by using single population proportion formula with an expected quality of the service 69.5% among pregnant women (21) with 5% margin of error 95% confidence level and adding 10% non-response rate. Systematic random sampling technique was used. On average of 35 mothers visit the center for ANC and there was 44 days for data collection. Every day minimum of 8 clients was interviewed to achieve the expected sample size with k interval of 4. Thirty-two health care providers were observed while they were examining pregnant women. Each health care provider was observed on five clients. Totally 160 clients were observed.

Data collection Methods: Data were collected by 10 trained nurses and General practitioners using pre tested semi-structured interviewer administered questionnaires. Checklist was used to observe service provision of health care providers. The principal investigator daily supervises the data collection process, check the completeness and consistence of data and hand over.

Data Analysis: Data were cleaned and checked for consistencies and completeness and entered in to EpiData version 4.1 and exported to SPSS version 20 for analysis. Descriptive statistics (mean ± SD, frequencies, proportions and tables) and binary logistic regression analysis was done.

Ethical consideration: Ethical clearance and permission were obtained from Research Review Board of Jimma University and offered to JMC and respective administrative officials. Information about the objective of the study, confidentiality and justice were explained for the participants during data collection. Informed verbal consent was obtained from each study participants.

RESULT:

A total of 358 participants were included in to this study with 100% response rate. The mean age of

study participant was 27.8 ±4.1. Majority (97.2%) of respondents were married and housewives account for (41.1%) followed by government employee (19.6%). (See table1).

Table 1: Socio-demographic and economic characteristics of pregnant women attending ANC at JMC, Jimma, South western Ethiopia, 2018.

Characteristics	Categories	Frequency	Percent
Age	<20	4	1.1
	20-34	327	91.3
	≥35	27	7.6
Marital status:	Married	340	97.2
	Divorced/ widowed/single	10	2. 8
Religion	Muslim	162	45.2
	Orthodox	131	36.6
	Protestant	59	16.5
	Other	6	1.7
Educational status of Mothers	No formal education	96	26.8
	Primary school	85	23.7
	Secondary school	103	28.8
	College/university	74	20.7
Ethnicity:	Oromo	146	40.8
	Amara	107	29.9
	Gurage	31	8.6
	Dawuro	20	5.6
	Kafa	33	9.2
	other**	21	5.9
Occupation	Housewife	147	41.1
	Government employee	70	19.6
	Merchant	62	17.3
	Daily laborer	27	7.5
	Unemployed	20	5.6
	Student	13	3.6
	Other***	19.6	5.3
Place of Residence:	Urban	267	74.6
`	Rural	91	25.4
Family monthly income:	<1039 birr	24	6.7
	1039-1662birr	27	7.5
	1662-3324 birr	153	42.7
	3324-10,803 birr	143	39.9
	≥10,803 birr	11	3.1

Majority (62.3%) of mother's gravid status ranges from two to four. About three fourth of the study participant mothers started ANC visit after 16 weeks of gestational age and more than half had visited two to three visits. More than half (61.5%) of pregnancies were planned (See table2). The study finding indicates that majority

Table 2: Obstetric Profile of Pregnant Women Attending ANC at JUMC, Jimma, Southwestern Ethiopia, 2018.

Characteristics	Categories	Frequency	Percent
Gravidity	1	99	27.7
	2-4	223	62.3
	≥5	36	10
Parity	Para 0	123	34.3
	Para 1-4	224	62.6
	Para ≥5	11	3.1
Gestational age at start of ANC	< 16 weeks	95	26.5
	≥16 weeks	263	73.5
Number of visit	1st visit	104	29.1
	2-3 visit	186	51.9
	≥4 visit	68	19
Pregnancy status	Not planned	138	38.5
	Planned	220	61.5

of the routine laboratory investigation recommended for pregnant mother per guide line was conducted even though sometimes there is service interruption. Nonetheless hematocrit, blood group, Rh factor and HIV are tests which are conducted at most in about (97%) while VDRL, HBSAg, and urine are carry for about (88%) of clients (see fig: 1). Regarding service

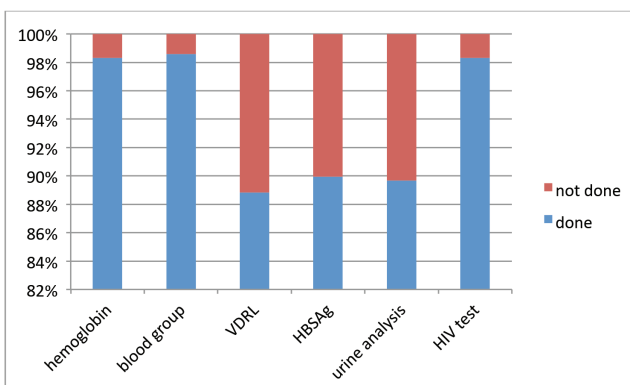

Figure 1: Routine investigation done for women attending ANC at JUMC, Jimma, Southwestern Ethiopia, 2018

provision for pregnant mother large number more than (90%) get examined by skilled personnel, but the health promotion part which focus on preventive care is not as to the standard only (36.5%) mothers told about birth preparedness. Forty six percent of mother heard about the way of communication in case of emergency for help (see table3).

Table 3: Service provided for pregnant women attending ANC at JUMC, Jimma, Southwestern Ethiopia, 2018.

Characteristics	Categories	Frequency	Percent
Examination	General examination	354	98.9
	Weight	346	96.6
	Blood pressure measurement	350	97.8
	General physical examination	351	98.0
	Obstetric examination	350`	97.8
Health information on:	Health promotion	138	38.5
	Danger sign	260	72.6
	Nutritional need	264	73.7
	Contraception and family planning	96	26.8
	Personal hygiene and general care	148	41.3
	Importance of rest	181	50.6
	STI and HIV/AIDS prevention	128	35.8
	Neonatal care	154	43.0
	Birth preparedness	130	36.3
	Importance of SBA	159	44.4
	Place of birth	194	54.2
	Items needed for the birth	207	57.8
	To save money	178	49.7
	A way to communicate with source of help	165	46.1
	Support during and after birth	144	40.2
	Blood donors in case of emergence	103	28.8

On the subject of infrastructure and service provision at ANC department there were five separate consultation rooms equipped with necessitate materials, but only two rooms has hand washing facility ,never the less there is no screening for clients (see table: 4).

Table 4: Provider Performance observations on ANC services on pregnant women attending ANC at JUMC, Jimma, Southwestern Ethiopia, 2018

ANC Observation checklist	Performed N (%)	Not performed N (%)
ECheck for the availability of washing facilities	47(29.4)	113(70.6)
Greets and calls client by her name and introduce her /himself	142(88.	7)18(11.3)
Reviews clinic record before starting the session	129(80.	6)31(19.4)
Determines weeks of gestation, & progress of pregnancy	149(93.1)	11(6.9)
Take pulse rate, blood pressure, temperature and Measured weight (vital sign)	154(96.3)	6(3.7)
Examine skin, conjunctivae, legs for edema and other	143(89.4)	17(10.6)
Palpates uterus and perform maneuvers to detect fetal position and situation	139(86.9)	21(13.1)
Routine investigation ordered	146(91.3)	14(9.7)
Informs mothers about her and fetus's health condition	160(100)	
Orients women for the place of delivery	84(52.5)	76(47.5)
Told the client about danger sign	146(91.3)	14(9.7)
Prescribed iron and folic acid	113(70.6)	47(29.4)
Advise on personal hygiene, rest and general care	73(45.6)	87(54.4)
Danger of unprescribed medicine during pregnancy	19(11.9)	141(88.1)
Advise on breast feeding, neonatal vaccination	23(14.4)	137(85.6)
Prepare and save money for emergency cases	88(55)	72(45)
Advise client family or partner on preparation for emergency	27(16.9)	133(83.1)
Communicate with client and gives her feedback	129(80.6)	31(19.4)
Record of findings (history, physical finding, laboratory)	146(91.2)	14(8.8)
Schedules the next appointment on women's convenience	160(100)	

About (83.2%) of pregnant mothers are convinced that they treated respectfully and majority (61.7%) of the clients waiting time was more than one hour. Sixty two percent of clients prefer to give birth in JMC because they believe the medical center is better equipped compared to other service provision areas (see table: 5).

Table 5: Interpersonal aspects of pregnant women attending ANC at JUMC, Jimma south western Ethiopia, may 2018.

Variable	Frequency (n=358)	Percent (%)
Respectful:		
No	60	16.8
Yes	298	83.2
Privacy:		
No	271	75.7
Yes	87	24.3
Confidential:		
No	116	32.4
Yes	242	67.6
Waiting time:		
≤60 minute	137	38.3
>60 minute	221	61.7
Mean waiting time	72.5 minutes	
Consultation time:		
≤ 30 minute	290	81
>30 minute	68	19
Time spent:		
Short	75	21
Appropriate	226	63.1
Very long	57	15.9
Payment for service:		
Expensive	9	2.5
Appropriate	15	4.2
Minimum	334	93.3
Preference of place of delivery:		
Here (JUMC)	311	86.9
Other health facility	47	13.1
Why Here (JUMC):		
It is near to my house	92	29.6
I like the health care provider	9	2.9
Health care providers provides good care	4	1.3
Better medical equipment's are Available	195	62.7
I usually give birth in this specific place	11	3.5
Explain the result of examination:		
No	46	12.8
Yes	312	87.2

The mean score of client satisfaction during ANC service received was 44.35.Over all 208(58.1%) of the respondents were satisfied or scored greater than or equal to the mean satisfaction score and the rest150 (41.9%) were dissatisfied (See table 6).

The finding of the study showed that clients who started ANC before 16wks were 1.8 times more Level of satisfaction on each item (n=358)

Table 6: Level of satisfaction of pregnant women attending ANC at JUMC, Jimma, Southwestern Ethiopia, 2018.

Item	Strongly unsatisfied	Unsatisfied	Uncertain	Satisfied	Strongly satisfied	Mean
Greeting in good and friendly way	5 (1.4)	33 (9.2)	40(11.2)	254(70.9)	26(7.3)	3.73
Waiting time was fair	3(0.8)	57(15.9)	40(11.2)	241(67.3)	17(4.7)	3.59
Waiting area was adequate & with seats	9(2.5)	59(16.5)	44(12.3)	240(67.0)	6(1.7)	3.49
Privacy maintained	12(3.4)	62(17.3)	73(20.4)	204(57.0)	7(2.0)	3.37
The provider was easy to understand	2(0.6)	17(4.7)	35(9.8)	294(82.1)	10(2.8)	3.82
The cost incurred for the service was fair	2(0.6)	11(3.1)	24(6.7)	254(70.9)	67(18.7)	4.04
Provide and perform the procedure with clean lines and sanitation	4(1.1)	37(10.3)	53(14.8)	257(71.8)	7(2.0)	3.63
Clinic has clean latrine & adequate water supply	5(1.4)	61(17.0)	69(19.3)	223(62.3)	----	3.42
Feel you received full information about ANC	5(1.4)	15(4.2)	63(17.6)	272(76.0)	3(0.8)	3.71
Want to continue ANC visits in JMC	2(0.6)	12(3.4)	28(7.8)	313(87.4)	3(0.8)	3.85
Recommend your relatives & others to attend ANC in JMC	2(0.6)	8(2.2)	38(10.6)	308(86.0)	2(0.6)	3.84
How did you rate your satisfaction on service you get	2(0.6)	7(2.0)	33(9.2)	315(88.0)	1(0.3)	3.85

likely to be satisfied as compared to their counterparts [AOR=1.76(95%CI=1.04-2.99)]. Likewise clients whom routine investigation was done were 6.1 times more likely to be satisfied than for whom routine investigation was not done [AOR=6.1(95%CI=2.54- 14.63)]. Comparably clients who were treated respectfully were 2.1 times more likely to be satisfied compared to their counterparts (See table: 7).

Table 7: Multiple logistic regression model predicting the likelihood of being satisfaction of pregnant women attending ANC at JUMC, Jimma, Southwestern Ethiopia, 2018

Characteristics	Category	SatisfiedN (%)		COR (95%CI)	AOR (95%CI)
		No	Yes	1.602	1.76(1.04, 2.99)**
GA at start of ANC	< 16 weeks	32(8.9)	63(17.6)		
	≥16 weeks	118(33)	145(40.5)	1	1
Number of visit	1st visit	53(14.8)	51(14.2)	1	1
	2-3 visit	76(21.2)	110(30.7)	1.50	1.01(0.58,1.74)
	≥4 visi	21(5.9)	47(13.1)	2.33	1.58(0.77,3.26)
Routine investigation	Not done	26(7.3)	8(2.2)	1	1
	Done	124(34.6)	200(55.9)	5.24	6.1(2.54,14.63)**
Health information	No	101(28.2)	119(33.2)	1	1
	Yes	49(13.7)	89(24.9)	1.54	1.581(0.9,2.54)
Respectful	No	33(9.2)	27(7.5)	1	1
	Yes	117(32.7)	181(50.6)	1.89	2.15(1.18,3.90)**
Privacy	No	124(34.6)	149(41.6)	1	1
	Yes	26(7.3)	59(16.5)	1.89	1.84(1.07,3.18)**
Confidential	No	54(15.1)	62(17.3)	1	
	Yes	96(26.8)	146(40.8)	1.33	1.37(.84,2.25)
Waiting time	≤60 minute	45(12.6)	92(25.7)	1.85	2.05(1.28, 3.29)**
	>60 minute	105(29.3)	116(32.4)	1	1
Time spent	Short	30(8.4)	45(12.6)	1.55	1.80 (0.84, 3.86)
	Appropriate	91(25.4)	135(37.7)	1.54	1.50 (0.79,2.84)
	Very long	29(8.1)	28(7.8)	1	1

** Significant at <0.05 Hosmerlemshewu's goodness of fit test=0.986

DISCUSSION

This is one of the few studies to examine both technical and perceived quality of ANC in a low resource setting. We find that ANC quality is fair in terms of providing recommended ANC services. Most women receive basic ANC services such as blood pressure and urine test at least once during pregnancy much better than other settings[22-25], but there are pregnant mother who did not receiving these consistently at every visit as recommended by World Health Organization (WHO) guide line[26-27]. In the domain of communication the women are not given enough information during ANC about their care; for this reason they do not understand the purpose of examinations. In this study most women felt respected by their health care providers, which is inspiring. However, 16.8% women did not feel respected which indicates the presence of room for improvement[22,28]. Client satisfaction of antenatal care service in this study was found to be 58.1% which is almost consistent with the study from health center in Jimma town, but lower than studies conducted in Ambo town 89% and higher than study conducted in Bahirdar 52.3% and Demba Gofa woreda, Gamo Gofa Zone 21.5%[21,22,23,25], the disparities could be due to difference in the study setting. The very low figure reported from Gamo zone might be related with limitedness of service provider. Few clients report they don't feel their privacy is maintained because there are examination rooms missing screen, though

privacy maintaining is one component there is a need to give attention in provision of required equipment's in all examination room. The current study revealed that 8 in 10 clients were provided tetanus toxoid vaccine(TT vaccine) and Iron/ folic acid and only one fifth of clients got deworming medication which is in conflict with WHO and the National protocol recommendation of routine iron supplementation and TTV for all pregnant women[1,27].The finding was comparable with study done at Bahirdar and Chencha District, Gamo Gofa Zone[22,29], the possible justification for non-compliance could be lack of updated guidelines, standards and protocols on ANC service package. This study revealed that clients whose privacy was maintained were 1.8 times more satisfied than those whose privacy was not maintained. This finding was in line with study done in Bahirdar but lower than study done in Chencha District, Gamo Gofa Zone which showed that mothers whose privacy was kept were about two times and six times more likely to be satisfied than those whose privacy was not kept respectively[22,23,29] this might be explained by to fearfulness to discuss about their reproductive history in the presence of other person in the ANC room during consultation. The study find outs that guidelines, standards and protocols on ANC and other related care services were neither displayed nor present at the clinic, which may lead to non-compliance to procedures affecting pregnancy outcome.

This study also showed that the level of satisfaction of the study participants were significantly associated with their timing of first ANC visits for present pregnancy, clients who started ANC visit before 16 weeks were 1.8 times more likely to be satisfied as compared to those who started ANC visit after 16 weeks. Similarly study done in Bursa district, Sidama zone showed that those women who had started first visits of ANC after 4 months of pregnancy were less likely to be satisfied than who started before 4 months of pregnancy[30]. Clients who get respect from their care givers were 2 times more likely to be satisfied as compared to their counterpart. Similarly, study done in Kenya on factors affecting ANC showed that greeting clients was found to be a strong determinant in satisfaction levels and indeed the findings indicated that the ANC women who were greeted were seven times more satisfied than those who were not greeted[31]. Clients whose waiting time was less than 60 minutes were 2 times more likely to be satisfied as compared to those who waiting times were greater than 60 minutes. The finding was similar with study done in Kenya were shorter waiting time was strongly associated with increased client's satisfaction[32].

CONCLUSION

The finding highlighted the need to improve ANC services utilizing National and WHO protocol recommendations on routine care provision. Some investigation show heterogeneous impression where some of the investigation done regularly while missed for some clients. Attention should be given to the supplying of adequate information about ANC, privacy keeping, minimizing waiting time and availing hand washing equipment and water for care providers in all room of ANC. The study demonstrated that long waiting time and non-availability of guide lines at the work site.

LIMITATION

Firstly, the measures of ANC quality are based on self-report recall bias might be the potential limitation. Since care providers are observed this may cause observation bias due to prior knowledge and using observation only to address well the technical aspect of quality of care is another potential limitation of the study. Despite these limitations, this study makes valuable contributions to existing research on ANC quality in Ethiopia and other low resource setting, special for Jimma Medical center.

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PREVALENCE OF AND FACTORS ASSOCIATED WITH IMMEDIATE POSTPARTUM ANEMIA IN TWO TEACHING HOSPITALS, NORTHERN ETHIOPIA

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ABSTRACT

BACKGROUND: Anemia is a major global health problem affecting the health, quality of life, and working capacity of billions of people all over the world. Globally, it is estimated that 20% of maternal deaths are caused by peripartum hemorrhage and anemia. The frequency of postpartum anemia is poorly assessed especially in owner area.

OBJECTIVES: Determine the prevalence and associated risk factors of immediate postpartum anemia in the two teaching hospitals in Mekele, North Ethiopia.

METHODS: A facility based cross-sectional survey was employed in two teaching hospitals in northern Ethiopia. A sample of 236 consecutive postpartum women was included from April 1 to July 30, 2017 G.C. Socio-demographic and clinical factors were collected by a questionnaire and hemoglobin determined using CBC machine. A p-value <0.05 was considered significant. Variables which were significantly associated by bivariate analysis were further processed by multivariate analysis.

RESULT: The prevalence of immediate postpartum anemia was 24.2% (n=57). Even though bivariate analysis indicated that immediate postpartum anemia was significantly associated with age, residence, educational, parity, ANC, mode of delivery, episiotomy, and birthweight, on multiple analyses, the association persisted for residence, education level, and mode of delivery only. Immediate postpartum anemia was significantly lower among rural resident (AOR=0.34; 95%; CI=0.118, 0.998); and those delivered vaginally (AOR=0.13 and CI=0.038, 0.454) while it was significantly high among participants who were unable to read and write (AOR=14.4; 95% CI=2.27, 91.14).

CONCLUSION AND RECOMMENDATION: The prevalence of immediate postpartum anemia was high and it was significantly associated with residence, literacy level and vaginal delivery. It is recommended to have universal postpartum hemoglobin determination besides blood loss estimation after each delivery and clinical assessment for anemia. The study participants being women delivered in teaching hospitals, the prevalence may not be implied to the general population at community level.

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INTRODUCTION

There is no consensus on the definition of Postpartum anemia, but so far the WHO hemoglobin cut-off value of <100 g/L has been employed. It is recommended that postpartum anemia should be defined by hemoglobin <110 g/L at 1 week postpartum and <120 g/L at 8 weeks postpartum. The major causes of postpartum anemia are prepartum anemia combined with acute bleeding and anemia due blood losses at delivery[1,2]. Postpartum iron deficiency and anemia are major public health problems. In the United States, approximately 13 percent of women 0 to 6 months postpartum are iron deficient and 10 percent are anemic. In developing countries postpartum anemia is a major cause of maternal morbidity and mortality. It has been estimated that of the 500,000 maternal deaths occurring each year on a global scale in association with delivery, 20% are caused by peripartum hemorrhage and anemia[4,5,6,7,8]. The frequency of postpartum anemia is poorly elucidated. In developing countries, the prevalence of postpartum anemia is in the range of 50-80%. In healthy women after normal delivery, the prevalence of anemia (hemoglobin <110 g/L) 1 week postpartum is 14% in iron-supplemented women and 24% in non-supplemented women. In consecutive series of European women, the prevalence of anemia 48 h after delivery is approximately 50%.In unselected series of women who have not taken iron supplements, the prevalence of anemia (hemoglobin level <110 g/l) 48 h after delivery is approximately 50%. These figures emphasize that postpartum iron deficiency and anemia are continuing major health problems that should be given more attention[1,2,7].

The performance of postpartum hematocrit measurements after vaginal delivery to identify patients who are anemic is a standard practice in most hospitals and is the recommendation in most scientific bodies but we don't have such a practice in our facility; so this research will help as to know the disease burden and also the most common associated factors so that we can base either universal or selective postpartum anemia screening in our facility and also the country at large. There is no such published literature in our country and most national and international scientific bodies which have issued recommendations on postpartum recognize the lack of scientific evidence, which is reflected in the variety of recommendations published; this paper will have its own contribution for scientific evidence based practice and also can serve as a base for other related researches.

MATERIALS AND METHOD

A cross-sectional study was conducted at two public health facilities, Ayder Comprehensive Specialized Hospital and Mekelle Hospital in Mekele city, the capital city of Tigray region, north Ethiopia.

A sample size of 236 was calculated using the formula for single population proportion with 95% confidence interval (z=1.96), 5% degree of precision, and p-value of 19% for of immediate postpartum anemia [6]. All women in their immediate postpartum period were recruited and data was collected from eligible participants until the sample size is achieved. It took three months (April 1 to July 30, 2017) to achieve the required sample size. Eligible participants were parturient who had vaginal or cesarean deliveries. Women delivered by cesarean hysterectomy or laparotomy after uterine rupture were excluded.

Socio-demographic, reproductive and clinical characteristics (including iron supplementation and hemoglobin level) were collected using a questionnaire from clinical records and by interviewing women in their immediate postpartum period. At the same time, participants' hemoglobin were documented. Immediate postpartum anemia was defined as hemoglobin <10 gm/dl within 48 hours of delivery. Data was entered, cleaned, checked for completeness and analyzed using SPSS version 23. Variable found to be associated with postpartum anemia were further assessed by multivariable logistic regression. Two sided values, statistical significance of p-value < 0.05, and odds ratio of 95% confidence intervals were used to determine associations.

Participants were approached before being discharged from the hospitals and within 48 hours of delivery, at a time they were comfortable for interview. They were interviewed in Tigrigna, the local language of the region, after briefing them on the purpose and objectives of the study and consent secured by trained data collectors. The proposal was approved by the Research and Community Service Ethical Review Committee of Mekelle University College of health Sciences.

RESULTS

Among the 236 participants, 24.2% (n=57) of them had anemia (Hg< 10 gm/dl) in their immediate postpartum period with a mean hemoglobin (±1SD) of 11.65 (±1.76) mg/dl, ranging from 5.2 to 16.3 mg/dl.

The age of all respondents ranged from 17 to 40 with a mean (±1SD) of 26.3 (± 4.86 SD) years. Most of them were in the age group of 20 to 29 years (n=157, 67.9%), married (n=230, 97.5%), urban residents (n=120, 50.8%), Orthodox Christians (n=219, 92.8%), and Tigre in ethnicity (n=234, 99.2%), educated up to grade 9 to 12 (n=87, 36.9%), housewives (n=123, 52.1%) and had no personal income (n=140, 59.3%) (Table 1).

Among the socio-demographic variables, age, income, education and residence are significantly associated with immediate postpartum anemia. Immediate postpartum anemia was significantly associated (P <0.05) with urban residence (30.0%) than rural residence (18.1%). Anemia also had a significant increasing trend (P <0.05) with increasing age, but a decreasing trend with increasing educational level (Table 1).

Table 1: Sociodemographic characteristics of 236 immediate postpartum participants at Ayder Comprehensive Specialized and Mekelle hospitals, 2017

Characteristics	Postpartum Hemoglobin		Total	p-value
	< 10 gm/dl	> 10 gm/dl		
	No (row %)	No (row %)	No (column %)	
Age				
20-29	34(16.5)	138(83.5)	172 (72.9)	0.016
30-34	23(31.9)	41(68.1)	64 (27.1)	
Residence				
Rural	21 (18.1)	95(81.9)	116 (49.2)	0.034
Urban	36 (30.0)	84(70.0)	120 (50.8)	
Religion				
Christian	52(23.3)	171 (76.7)	219(92.8)	0.393
Islam	5(38.5)	8(61.5)	13(5.5)	
Ethnicity				
Tigrigna	55(23.5)	179(76.5)	234(99.2)	0.999
Amhara/ Afar	2(100)	0 (0.0%)	2(0.8)	
Marital status				
Single*	1(20.0)	5(80.0)	5(2.1)	0.830
Married	56(24.3)	174(75.6)	230(97.5)	
Educational status				
Illiterate/read & write	20(66.7)	12(33.3)	32(13.6)	0.000
1 to 8 grade	37(26.9)	167(73.1)	204(86.4)	
Occupation				
Student	3(27.3)	8(72.7)	11(4.7)	0.016
Private business	4(13.3)	26(86.7)	30(12.7)	
Employee	11(17.0)	46(83.0)	57(24.2)	
House wife	30(24.4)	93(75.6)	123(52.1)	
Farmer	8(66.7)	4(33.3)	12(5.1)	
Others**	1 (33.3)	2 (66.7)	3 (1.3)	
Family income/month				
≤ 2000	11(37.9)	18(62.1)	29(12.3)	0.129
2001-5000	30(23.1)	100(76.9)	130(55.1)	
5001-10000	12(17.9)	55(82.1)	67(28.4)	
≥ 10001	4(40.0)	6(60.0)	10(4.2)	

* One of the 5 was a divorcee

** Two of them were daily laborers while the third was sex worker

Most of the respondents were para 1-4 (n=222, 94.1%) with a mean (±1SD) of 2.0(±1.3) previous deliveries. Parity was significantly associated (P<0.05) with parity of 5-9 (n=7, 50%). There was no association with previous multiple pregnancy or abortion (Table 2).

Table 2: Obstetrics characteristics of 236 immediate postpartum participants at Ayder Comprehensive Specialized and Mekelle hospitals, 2017

FACTORS	Postpartum Hemoglobin		Total	p-value
	< 10 gm/dl	> 10 gm/dl		
	No (%)	No (%)	No (%)	
Parity				
1-4	50(22.5)	172(77.5)	222(94.1)	0.027
5-9	7(50.0)	7(50.0)	14(5.9)	
History of multiple pregnancy				
Yes	1(50.0)	1(50.0)	2(0.8)	0.416
No	56(23.9)	178(76.1)	234(99.2)	
Previous abortion				
Yes	1(7.7)	12(92.3)	13(5.5)	0.186
No	56(25.1)	167(74.9)	223(94.5)	

Almost all (except 1) of the participants (n=235, 99.6%) had antenatal care: 165 (n=70.2%) had 1 to 4 visits and the remaining 70 (29.8%) had more than 5 visits. Participants with more than 5 visits (n=11, 15.7%) were less likely to have anemia than those with 1-4 visits (n=46, 27.9%) with borderline significance (p=0.05). Most of the participants (n=207, 87.7%) had iron supplementation but 17 (18.2%) participants only took the supplementation for more than 3 months. Anemia was not significantly associated with iron supplementation (Table 3).

Table 3: ANC and iron supplementation among 236 postpartum participants in ACSH and Mekelle hospital, 2017.

Characteristics	Postpartum Hemoglobin		Total	p-value
	< 10 gm/dl>	> 10 gm/dl		
	No (%)	No (%)	No (%)	
ANC follow up (n=236)				
Yes	57(24.3)	178(75.7)	235(99.6)	1.000
No	0	1(100)	1(0.4)	
Number of ANC follow up (n=235)				
1-4	46(27.9)	119(72.1)	165(70.2)	0.050
>=5	11(15.7)	59(84.3)	70(29.8)	
Iron supplementation (n=236)				
Yes	48(23.2)	159(76.8)	207(87.7)	0.358
No	9(31.0)	20(69.0)	29(12.3)	
Duration of Iron supplementation (in months) (n=207)				
1	17(21.8)	61(78.2)	78(37.7)	0.834
2	22(28.6)	55(71.4)	77(37.2)	
3	5(14.3)	30(85.7)	35(16.9)	
4	3(21.4)	11(78.6)	14(6.8)	
6	1(33.3)	2(66.7)	3(1.4)	

Almost all of the participants (n=233, 98.7%) had singleton pregnancy; only 3 (1.3%) had twin gestations. Most of the newborns were delivered vaginally (n=179, 75.8%) and had birthweight less than 4,000 g (n=217, 91.9%). Immediate postpartum anemia was significantly higher among cesarean deliveries (n=29, 50.9%), vaginally deliveries with no-episiotomy (n=43, 29.3%), and vaginal deliveries with second or third degree perineal tear (n=11, 36.7%). Similarly, birth weight of more than 4,000 g (n=10, 52.6%), PPH (n=6, 59.3%) and APH (n=6, 100%) were also significantly associated with anemia (Table 4).

Table 4: Intrapartum events and obstetric complications among 236 immediate postpartum participants at ACSH & Mekele hospitals, 2017

Multiplicity of pregnancy				
Singleton	56(24.0)	177(76)	233(98.7)	0.711
Multiple	1(16.6)	2(83.4)	3(1.3)	
Mode of delivery				
Vaginal delivery	28(15.6)	151(84.4)	179(75.8)	0.0001
Cesarean delivery	29(50.9)	28(49.1)	57(24.2)	
Episiotomy				
Yes	14(15.7)	75(84.3)	89(37.7)	0.020
No	43(29.3)	104(70.7)	147(62.3)	
Neonatal birth weight				
<3,999	47(21.7)	170(78.3)	217(91.9)	0.003
≥4,000	10(52.6)	9(47.4)	19(8.1)	

On the basis the variables found to be significant in the bivariate analysis, residence, educational status of women, estimated blood loss during delivery, and mode of delivery were significantly associated with immediate postpartum anemia in multiple logistic regression analysis, too. The women who came from rural areas are 66% less likely to develop postpartum anemia when compared to those who came from urban areas (AOR=0.34 and CI=0.118, 0.998). Mothers who were unable to read and write were 14.4 times more likely to have postpartum anemia when compared to those who had formal education (AOR=14.4 and 95% CI=2.27, 91.14).

Participants delivered by cesarean section had 7.6 times more likely to develop postpartum anemia than those who delivered vaginally. (AOR=7.574 and CI=2.184, 26.267).

Table 4: Bivariate and multiple logistic regression analysis of factors Associated with immediate postpartum anemia in ACSH and Mekelle hospital, Tigray Region, 2017. (N=236)

Variables	Immediate postpartum hemoglobin		P value	Crude OR	Adjusted OR
	Yes (%)	No (%)	<5%	(95% CI)	(95% CI)
Residence					
Rural	21(18.1%)	95(81.9%) 0.05	0.52	(0.279,0.952)	0.34(0.118,0.998)
Urban	36(30%)	84(70%)			
Educational status					
Unable to read and write	16(61.5%)	10(38.5%) 0.005	6.59	(3.456,28.682)	14.4(2.27,91.14)
Above this status	41(19.5%)	169(80.6%)			
Mode of delivery					
Vaginal	28(15.6%)	151(84.4%)			
Cesarean	29(50.9%)	28(49.1%) 0.001	5.585	(2.894,10.780)	7.574(2.184,26.267)

Multiple logistics analysis was undertaken on those variable found to be significantly associated with immediate postpartum anemia. These variables were age, residence, educational, parity, ANC, mode of delivery, episiotomy, and birthweight. Besides the binary significant association, residence, education and mode of delivery were also found to be significantly associated on the logistic analysis: Women from rural areas were 66% less likely to develop postpartum anemia when compared to those who came from urban areas (AOR=0.34 and CI=0.118, 0.998). Mothers who were unable to read and write were 14.4 times more likely to have postpartum anemia when compared to those who have formal education (AOR=14.4 and 95% CI=2.27, 91.14). The mothers who were delivered by cesarean section were 7.6 times more likely to develop postpartum anemia than those who delivered vaginally (AOR=7.574 and CI=2.184, 26.267).

DISCUSSION

This study is a hospital-based study. The prevalence of anemia in the immediate postpartum period was 24.2%. This finding is in line with the study done in the largest university obstetric department in Germany on women delivering between 1993 and 2008 which showed that the prevalence of immediate postpartum anemia was 22%13. also it is in line with studies done in Raleigh, North Carolina in 2002 showed prevalence of 19.1 %[6]. This finding was lower when compared with the study done in Spain which is published in 2016 which showed that the prevalence of postpartum anemia was 49.7%; But this study uses a cut of value of hemoglobin less than 11 g/dl and the study was done for a longer period of time in different ethnic background population that may explain the difference in the prevalence[16].

Area of residence had also significant association with postpartum anemia with mothers who came from rural areas were 66 times less likely to have postpartum anemia than who came from urban areas. The most likely explanation will be those mothers who came from rural areas to deliver in the studied hospitals have ether good medical seeking behavior or have come with a referral because of anticipated risks and probably given more attention during ANC and labor and delivery time.

Educational status of the mothers had also significant association with postpartum anemia with the odds of developing postpartum anemia is 14.4 for mothers who are unable to read and write when compared to mothers who have formal education. The possible explanation for this will be mothers who are unable to read and write have less medical seeking behavior and may not take the iron supplementation properly.

Mode of delivery had also significant association with postpartum anemia with mothers who deliver via cesarean section were 7.6 times more likely to have postpartum anemia than who deliver vaginally. This study is in line with a study done in Spain in 2016 which showed mode of delivery is one of the most important risk factors for postpartum anemia[16].

The results from this study shows that the prevalence of postpartum anemia is high and the prevalence after vaginal delivery was 11.9% which shows there is a significant number of women who have postpartum anemia after vaginal delivery which will be missed with the current protocol that we are using. Further research is recommended to extend the assessment to health centers and community level to ascertain the prevalence and associated factors to the development of postpartum anemia.

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PREGNANCY OUTCOMES IN GRAND MULTIPAROUS WOMEN: DOES PARITY MATTER? A COMPARATIVE STUDY

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ABSTRACT

BACKGROUND: Grand multiparity is still a common condition in developing countries. Although older literature showed the effect of grand multiparity on adverse pregnancy outcomes, recent reports fail to show clear evidence on the contribution of grand multiparity to adverse outcomes.

OBJECTIVE: This study aimed to compare maternal and perinatal outcomes in grand multiparous and low multiparous women in Southern Ethiopia.

METHODS: Comparative cross-sectional study design was employed from February to June 2018. Four hundred sixty-one (461) mothers were included in the study. Data were collected using structured interviewer-administered questionnaire and extracting from patient charts. Data were analyzed using STATA version 14. Descriptive and logistic regression analyses were computed. Statistically significant variables were declared at P-value less than 0.05.

RESULTS: A quarter (24.9%) (95% CI: 21.1%-29.1%) of the participants had at least one adverse perinatal outcome, while 39% (95% CI: 34.6%-43.5%) had adverse maternal outcomes. Anemia and cesarean delivery were the most frequently encountered maternal outcomes in grand and low multiparous women, respectively. Stillbirth was reported higher in grand multiparas. When adjusted for other socio-demographic and obstetric variables, parity did not show a statistically significant difference in both maternal and perinatal outcomes.

CONCLUSION AND RECOMMENDATIONS: Parity did not show a statistically significant difference in both adverse maternal and perinatal outcomes. Many adverse pregnancy outcomes were reported to be higher in grand multiparous women. Further longitudinal researches are needed to better elucidate this finding.

KEYWORDS: Maternal outcome, Perinatal outcome, Parity, South Ethiopia.

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INTRODUCTION

Maternal mortality remained a public health challenge in developing nations even after a transition from millennium development to sustainable development era. Between 1990 and 2015 increased total fertility rate and net shift of birth to older women has been noted[1].

The term "grand multipara" was first introduced in 1934 as "the dangerous multiparas", the author noted steadily increased maternal death when parity increases[2]. The International Federation of Gynecology and Obstetrics (FIGO) defines grand multiparity as five or more live births and stillbirths after the age of viability[3]. The prevalence of grand multiparity ranged from 0.4% in some states of India to 26.5% in the Gambia[4,5].

Grand multiparity is a known risk factor for uterine rupture6 and uterine atony, one of the most common cause for postpartum hemorrhage[7]. Globally, more than 3.2 million stillbirths occurred each year. One of the risk factors for these deaths was grand multiparity[8]. However, some experts agreed that grand multiparity should not be discouraged as long as the necessary perinatal care is provided[9]. In Sub-Saharan Africa, grand multiparity increased the odds of maternal mortality and morbidities[10]. On the other hand, a large-scale retrospective study in Turkey showed, parity was not associated with face presentation[11]. Lower odds of maternal death were noted among grand multiparous women in Mali[12]. One preliminary study in Poland showed a significant risk of poor progress of labor and emergency cesarean section among primiparas in contrast to multiparas[13].

In Ethiopia, the probability of death during infancy is much greater among children born to mothers of high parity and short birth interval[14]. A prospective study in northern Ethiopia reported a 20% decrease in birth weight among male neonates born to grand multiparas[15]. The effect of parity is not consistent across studies. In addition, sufficient studies are not available which compare pregnancy outcomes across parity groups in Ethiopia. Thus, we aimed to investigate and compare pregnancy outcomes in grand and low multiparous women in southern Ethiopia.

METHODS

Study setting and period

The study was conducted in Adare General Hospital (AGH) and Hawassa University Comprehensive Specialized Hospital (HUCSH) from February 1 to June 30, 2018. Hawassa is a city in Ethiopia, on the shores of Lake Hawassa in the Great Rift Valley. It is the capital city of Southern Nations Nationalities and Peoples regional state and located 273 kilometers from Addis Ababa. Based on the 2007 census conducted by the central statistical agency (CSA) of Ethiopia, this town has a total population of 157,879.

Study design and population

A comparative cross-sectional study design was employed to include multiparous women who gave birth in the study areas during the study period.

Eligibility criteria

All multiparas with a single fetus/neonate at a gestational age of ≥28 weeks were included in the study. Whereas, multiparas with twin gestation/delivery, mothers who were not able to respond were excluded from the study.

Sample size determination

The sample size was computed using the following assumptions: power of the study (1-β) to be 80%, 95% confidence interval (CI), the estimated unexposed-to-exposed ratio to be 2:1 and percent of outcome among non-exposed group & odds ratio of a previous study (16) to get final sample size of 471 (157 grand multiparas and 314 low multiparas).

Sampling procedure

Study subjects were identified during the time of admission to the labor ward. If eligible mothers were identified after delivery, registration books and patient charts, were checked for pre-partal conditions. The total average number of deliveries was estimated to be 762 per month in the two study hospitals. Proportional allocation of the sample size to each hospital. Thus, a sample of 255 (85 GM & 170 LM) and 216 (72 GM & 144 LM) were allocated to HUCSH and AGH respectively. Then, Starting from the day of data collection, two consecutive grand multiparas (GM) were interviewed and assessed for each low multiparous (LM) woman.

Study variables

The outcome/dependent variables were maternal and perinatal outcomes. Independent/exposure variables were socio-demographic variables (maternal age, residence, religion, ethnicity, marital status, education, income, and occupation), and antenatal profile and obstetric characteristics (parity, ANC visit, frequency of ANC visit, gestational age at first booking, past obstetric complications, past medical illness, previous mode of delivery, distance from health facility, contraceptive use and planned pregnancy).

Operational definitions

Low multiparity: ≥2-4 deliveries after 28 weeks of gestation.

Grand multiparity: ≥5 births after 28 weeks of gestation.

Maternal outcomes: at least one adverse obstetric outcomes of women like anemia, uterine rupture, admission to ICU, maternal death, diabetes mellitus, PROM, preterm labor, obstructed labor and oligohydramnios from admission to discharge from the hospital.

Perinatal outcomes: at least one adverse outcomes of the fetus/newborn (stillbirth, congenital malformation, macrosomia, low Apgar score, meconium aspiration syndrome and need for resuscitation) between 28 weeks of gestation and discharge from the hospital.

Data collection tools and procedures

Data were collected using structured interviewer-administered questionnaire and data extraction sheets from patient charts. The questionnaire, adapted from published works (9, 16, 17) was constructed within socio-demographic, obstetric and pregnancy outcome sections. Six diploma-holder and two BSc holder midwives were recruited as data collectors and supervisors, respectively. For mothers who had a normal delivery, data were collected 1-2 hours after delivery. Mothers who had cesarean or complicated vaginal delivery waited until they were fully awake to respond to the questions.

Data quality control and analysis

The investigator trained data collectors and supervisors for three days on the tool and data collection procedures. Pretest was done on 5% of the sample size in Yirgalem Hospital (a government affiliated hospital, 45 kilometers away from Hawassa). Finally, Amharic and Sidamic versions of the questionnaire were used to collect the data.

On each day of data collection, the supervisors and principal investigator checked the completeness of the data. Data were coded and entered to Epi-Data version 4.4.2.0 then exported to STATA version 14.0 for analysis. Univariable analysis and cross-tabulation of variables was done for the outcome and independent variables. Variables with a p-value at ≤0.25 (18) in the univariable analysis were included in the multivariable logistic regression analyses. Statistically significant variables were declared at P-value <0.05.

Ethical considerations

Institutional Review Board (IRB) of Hawassa University College of Medicine and Health Sciences approved this study [Ref. No: IRB/164/10]. Written consent was obtained from study participants. Confidentiality was also assured throughout the study.

RESULTS

Socio-demographic characteristics of study participants

In this study, 461 questionnaires were completed, yielding a response rate of 97.8%. The mean (±SD) age of the respondents was 31.8 (±4.38) and 27.0 (±4.05) years for grand multiparous and low multiparous women, respectively. The majority of respondents, 89.1% and 63.6% low multipara and grand multiparous women respectively, were in the age group of 21 to 34 years. More than half (51.59%) of the grand multiparous women reside in rural areas. [Table 1].

Table 1 Socio-demographic characteristics of respondents in HUCSH & AGH, Southern Ethiopia September 2018

Variables	Parity n (%)	
	Low multipara (304)	Grand multipara (157)
Maternal age		
≤20	13 (4.28)	0 (0.00)
21-34	271 (89.14)	100 (63.69)
>34	20 (6.58)	57 (36.31)
Place of residence		
Rural	63 (20.72)	81 (51.59)
Urban	241 (79.28)	76 (48.41)
Religion		
Protestant	177 (58.22)	90 (57.32)
Orthodox	79 (25.99)	18 (11.46)
Muslim	46 (15.13)	49 (31.21)
Others+	2 (0.66) 0 (0.00)	1 (0.64)
Ethnicity		
SNNP	197 (64.80)	96 (61.15)
Amhara	35 (11.51)	10 (6.37)
Oromo	69 (22.70)	50 (31.85)
Others†	3 (0.99)	1 (0.64)
Marital status		
Married	299 (98.36)	156 (99.36)
Others++	5 (1.64)	1 (0.64)
Mothers' education		
None	34 (11.18)	76 (48.41)
Read and write only	15 (4.93)	24 (15.29)
Primary	119 (39.14)	38 (24.20)
Secondary	67 (22.04)	9 (5.73)
College and above	69 (22.70)	10 (6.37)
Mothers' occupation		
House-wife	172 (56.58)	122 (77.71)
Gov't employee	72 (23.68)	8 (5.10)
self-employed	60 (19.74)	27 (17.20)
Income (Ethiopian Birr)		
Lower tertile	91 (29.93)	72 (45.86)
Middle tertile	96 (31.58)	55 (35.03)
Upper tertile	117 (38.49)	30 (19.11)
Husband education		
None	18 (5.92)	41 (26.11)
Read and write only	22 (7.24)	25 (15.92)
Primary	80 (26.32)	45 (28.66)
Secondary	72 (23.68)	23 (14.65)
College and above	112 (36.84)	23 (14.65)
Husband occupation		
Farmer	76 (25.00)	91 (57.96)
Gov't employee	111 (36.51)	27 (17.20)
Self-employed	117 (38.49)	39 (24.84)

+catholic; †Tigre++single, widowed & divorced

Obstetric profile of study participants

The mean (±SD) gestational age was 38.48 (±2.40) and 38.96 (±2.01) weeks for grand and low multiparas, respectively. Of the two-study group of participants, abortion, intrauterine fetal demise (IUFD) and risk of cesarean delivery were the most frequently encountered

conditions previously. The majority (92.7%) of participants in the low multipara group had ANC visits [Table 2].

Table 2 Obstetric profile of participants in HUCSH & AGH, Southern Ethiopia September 2018

Variables	Parity n (%)	
	Low multipara (304)	Grand multipara (157)
Past obstetric complications		
Yes	96 (31.58)	65 (41.40)
No	208 (68.42)	92 (58.60)
Type of complications		
Abortion	47 (48.96)	31 (47.69)
IUFD	24 (25.00)	25 (38.46)
Preterm delivery	2 (2.08)	2 (3.08)
Instrumental delivery	1 (1.04)	2 (3.08)
Cesarean section	26 (27.08)	8 (12.31)
Neonatal death	4 (4.17)	8 (12.13)
Others+	6 (6.25)	3 (4.63)
Previous medical illnesses		
Yes	16 (5.26)	17 (10.83)
No	288 (94.74)	140 (89.17)
ANC visit†		
Yes	282 (92.76)	124 (78.98)
No	22 (7.24)	33 (21.02)
GA at first booking		
≤16 weeks	100 (35.46)	34 (27.42)
>16 weeks	182 (64.54)	90 (72.58)
Number of ANC visit		
1-3	70 (24.82)	60 (48.39)
≥4	212 (75.18)	64 (51.61)
Place of last delivery		
Home	44 (14.47)	83 (52.87)
HI	260 (85.53)	74 (47.13)
Mode of delivery (before this birth)		
Vaginal	262 (86.18)	149 (94.90)
Cesarean section	42 (13.82)	8 (5.10)
Distance from the nearest health facility		
<15 min	39 (12.83)	21 (13.38)
15-30 min	72 (23.68)	24 (15.29)
>30 min	193 (63.49)	112 (71.34)
Contraceptive use		
Yes	211 (69.41)	91 (57.96)
No	93 (30.59)	66 (42.04)
Type of family planning		
Injectable	143 (67.77)	64 (70.33)
Implant	29 (13.74)	12 (13.19)
OCPs	33 (15.64)	8 (8.79)
IUCD	3 (1.42)	1 (1.10)
Natural method	3 (1.42)	6 (6.59)
Planned pregnancy		
Yes	266 (87.50)	65 (41.40)
No	38 (12.50)	92 (58.60)

+congenital malformation, ectopic pregnancy; †at least one; IUFD intra-uterine fetal demise; GA gestational age; HI health institution

Adverse pregnancy outcomes

The prevalence of adverse maternal outcomes was 39.0% (95% CI: 34.6%, 43.5%) [Table 3]. A higher proportion of mothers in the grand multiparous group develop maternal complications than low multiparas (45.2% vs 35.8%). Many complications were reported higher in the grand multiparous women, compared to low multiparas. However, cesarean delivery, induction/augmentation, prolonged pregnancy and CPD/obstructed labor were higher in low multiparous women. [Table 4].

The prevalence of adverse perinatal outcomes was 24.9% (95% CI: 21.1%, 29.1%) [Table 3]. More grand multiparas had perinatal complications than low multiparas (34.3% vs 20%). Stillbirth, low Apgar score and congenital malformations frequently occurred complications in grand multiparas. Nevertheless, meconium aspiration, need for resuscitation and macrosomia were higher in low multiparous women [Table 4].

Table 3 Pregnancy outcomes in low and grand multiparous women in HUCSH & AGH, Southern Ethiopia September 2018

Outcomes (n=461)	Parity n (%)		Total n (%)	P-value
	Low multipara	Grand multipara		
Adverse maternal outcome*				
Yes	109 (35.86)	71 (45.22)	180 (39.05)	0.05
No	195 (64.14)	86 (54.78)	281 (60.95)	
Adverse perinatal outcome **				
Yes	61 (20.07)	54 (34.39)	115 (24.95)	0.001
No	243 (79.93)	103 (65.61)	346 (75.05)	

*composite of all maternal outcomes; ** composite of all perinatal outcomes.

Table 4 Adverse pregnancy outcomes in HUCSH and AGH, 2018

Complications	LM n (%)	GM (%)	Total (%)
Antepartum outcomes			
Diabetes mellitus	2 (2.20)	0 (0)	2 (1.35)
PROM	10 (10.99)	9 (15.79)	19 (12.84)
Preterm labor	12 (13.19)	13 (22.81)	25 (16.89)
APH	5 (5.49)	11 (19.30)	16 (10.81)
Preeclampsia/gestational hypertension	18 (19.81)	13 (22.81)	31 (20.95)
Anemia	0 (0.00)	2 (3.51)	2 (1.35)
Posterm delivery	26 (28.57)	12 (21.04)	38 (25.68)
Oligohydramnios	8 (8.79)	8 (14.04)	16 (10.81)
Eclampsia	6 (6.59)	8(14.04)	14 (9.46)
Others*	3 (3.30)	3 (5.26)	6 (4.05)
Intrapartum outcomes			
Hypertensive disorders	2 (4.35)	3 (7.89)	5 (5.95)
Malpresentation	4 (4.40)	3 (5.26)	7 (4.73)
APH	1 (2.17)	1 (2.63)	2 (2.38)
Induction/augmentation	19 (41.30)	11 (28.95)	30 (35.71)
Cesarean delivery	45 (49.45)	19 (33.33)	64 (43.24)
Uterine rupture	1 (2.17)	5 (13.16)	6 (7.14)
PPH	6 (13.04)	7 (18.42)	13 (15.48)
Anemia	6 (13.04)	13 (34.21)	19 (22.62)
Blood transfusion	1 (2.17)	8 (21.05)	9 (10.71)
CPD/obstructed labor	7 (15.22)	4 (10.53)	11 (13.10)
Renal dysfunction	0 (0.00)	1 (10.53)	1 (1.19)
Maternal sepsis	1 (2.17)	1 (2.63)	2 (2.38)
Maternal death	0 (0.00	1 (2.63)	1 (1.19)
TAH	8 (17.39)	5 (13.19)	13 (15.48)
NRFS	4 (8.70)	7 (18.42)	11 (13.10)
Perinatal outcomes			
Stillborn	15 (24.59)	21 (38.89)	36 (31.30)
Early neonatal death	1 (1.64)	1 (1.85)	2 (1.74)
Congenital malformation	1 (1.64)	2 (3.70)	3 (2.61)
Meconium aspiration syndrome	6 (9.84)	2 (3.70)	8 (6.96)
Need for resuscitation	9 (14.75)	3 (5.56)	12 (10.43)
Admitted to neonatal ICU	24 (39.34)	20 (37.04)	44 (38.26)
Low Apgar score	22 (36.07)	28 (51.85)	50 (43.48)
Low birthweight	21 (34.43)	22 (40.74)	43 (37.39)
Macrosomia	14 (22.95)	4 (7.41)	18 (15.65)

All variables in the graph have multiple responses; APH antepartum hemorrhage; GM grand multipara; LM low multipara; PPH postpartum hemorrhage; CPD Cephalo-pelvic disproportion; NRFS non-reassuring fetal status; PROM premature rupture of membranes; TAH total abdominal hysterectomy; *others include urinary tract infections, cord prolapse, bladder rupture, and pancytopenia

Logistic regression for adverse pregnancy outcomes

When adjusted for other socio-demographic and obstetric factors, parity did not show a statistically significant difference in maternal outcomes (AOR: 0.74; 95% CI: 0.20, 2.63). Other variables (educational status, income, previous medical illnesses & mode of delivery, birth weight and Apgar score) showed a significant association [Table 5].

Similarly, parity was not found to be a statistically significant factor for adverse perinatal outcomes (AOR: 1.23; 95% CI: 0.70, 2.15). However, number of ANC visits and place of last delivery showed a significant association [Table 5].

Table 5 Association of parity and adverse pregnancy outcomes in HUCSH & AGH, 2018

Parity	Adverse maternal outcome	Adverse perinatal outcome		
	COR (95% CI)	AOR* (95% CI)	COR (95% CI)	AOR** (95% CI)
Grand multipara	1.47 (0.99, 2.18)	0.74 (0.20, 2.63)	2.08 (1.35,3.21)	1.23 (0.70, 2.15)
Low multipara	Reference	Reference	Reference	Reference

*adjusted for maternal age, place of residence, mothers' education, mothers occupation, income, husband education, husband occupation, total live birth, past obstetric complications, previous medical illnesses, number of prenatal visits, place of last delivery, mode of last delivery, distance from nearest health facility, contraceptive use, planned pregnancy, birth weight and Apgar score

**adjusted for place of residence, mothers' education, income, husband occupation, previous medical illnesses, number of prenatal visits, place of last delivery, mode of last delivery and newborn sex

DISCUSSION

To date, the association between grand multiparity and adverse pregnancy outcomes is not conclusive[9]. In this study, many complications were reported higher in grand multiparous women than low multiparas. On the other hand, cesarean delivery, obstructed labor, induction/augmentation, and macrosomia reported higher in the low multiparous group. The findings of the present study are similar with studies conducted in Tanzania, Uganda, Nigeria and Mali[12,16,19,20]. This finding was consistent with a study in Saudi women, except a higher cesarean delivery rate among grand multiparas in the previous study[9]. Another cohort study was in line with the present finding, where the risk of anemia was higher in grand multiparas21. Similarly, in Oman, low birth weight cases were higher in low parity women, but higher macrosomia cases were reported in women of high parity[22]. A similar comparative study in Saudi Arabia reported higher preterm delivery and cesarean section rates in grand multiparous women and PROM was higher and low multiparas[23]. The differences in incidences of obstetric complications could be explained by the epidemiologic characteristics of the complications to different study areas. Moreover, this study uses a composite of different complications. Many complications, which were reported higher in grand multiparous women, may indicate the need for meticulous care to these mothers during pregnancy and delivery.

In the current study, there was no statistically significant difference in pregnancy outcomes between grand multiparous and low multiparous women. This finding was consistent with different epidemiologic studies. A prospective study in Oman showed, absence of significant association in parity and diabetes[24]. Similarly, the absence of significant association noted between high parity and anemia in a cohort study[21]. Another study added the insignificant increase of maternal and neonatal complications in grand multiparous women[9]. As parity increases, a decline in risk of stillbirth was noted in rural Uganda[25].

Similarly, a retrospective analysis in Italy revealed the protective effect of number of previous pregnancies for unfavorable maternal outcomes[26]. A cohort study in Oman reported the protective effect of grand multiparity for low birth weight[22]. Similarly, a comparative prospective cohort study in Uganda concluded there was no difference in fetal outcomes among grand multiparas and low multiparous women[19]. A systematic review and meta-analysis also revealed grand multiparity was not associated with increased risk of pregnancy outcomes

(low birth weight and preterm delivery[27]. Moreover, a large-scale retrospective study in Turkey showed, parity was not associated with face presentation[11]. Lower odds of maternal death were noted among grand multiparous women in Mali[12].

On the contrary, grand multiparity was found to be significantly associated with complications during pregnancy, at delivery and poor fetal outcome[3,16,20]. Higher odds of placental abnormalities, perinatal mortality and high low birth weight were reported in Mali[12]. Additionally, a comparative study in Saudi Arabia reported a significant association between grand multiparity and pregnancy outcomes (cesarean delivery, fetal macrosomia, diabetes mellitus, and pregnancy-induced hypertension)[23]. Moreover, a significant association between grand multiparity and stillbirth was noted in one Nigerian finding[28]. Evidence from a cross-sectional study showed multiparity was associated with diabetes mellitus in Hispanic women[29]. A 37-year follow-up study in Israel showed the association of parity and mortality risk of mothers[30]. Similarly, grand multiparous women were at risk of death and uterine rupture in Cameroonian and Ethiopian studies,[31,32] respectively. Maternal anemia was also linked with grand multiparity in DR Congo[33].

In modern settings with favorable socioeconomic and prenatal accesses, lower incidences of adverse pregnancy outcomes can be anticipated in all parity groups[34]. Many large-scale recent works of the literature showed absence of significant difference in pregnancy outcomes between grand and low multiparous women. Likewise, this finding is in line with many recent literatures. However, old and some recent articles reported a significant difference in adverse outcomes for these groups. These differences might be due to differences in study design, sample size (under-power), possible confounders (adverse outcomes attributable to advanced maternal age)9 and other methodological issues. Furthermore, adverse outcomes in the previous studies might be attributed to low health service utilization of grand multiparas[17,35]. Additionally, accessible and quality antenatal care differences in study subjects could explain this. Thus, universal and meticulous prenatal care for all mothers and special care for high-risk groups may prevent adverse pregnancy outcomes.

This study has certain limitations. Due to the insufficient count of cases, it was not possible to examine each specific pregnancy outcome, separately with parity. Recall bias on previous obstetric characteristics was the limitation of this study. Moreover, other confounders like nutritional status and inter-pregnancy/birth interval were not considered in this study. As institutional delivery is low in our setting, interpretation of this finding should be made cautiously.

CONCLUSION AND RECOMMENDATIONS

Even though they are not statistically significant, many adverse pregnancy outcomes were reported higher in grand multiparous women. When adjusted for other demographic and obstetric variables, parity did not show a statistically significant difference in both adverse maternal and perinatal outcomes. Classifying grand multiparous women as 'high-risk' might not be exclusively due to high parity. Giving attention to grand multiparous women would have a paramount effect on the prevention of adverse pregnancy complications. Furthermore, longitudinal studies are recommended to investigate pregnancy outcome differences in both group of women.

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FACTORS ASSOCIATED WITH NON-UTILIZATION OF LONG ACTING AND PERMANENT CONTRACEPTIVE METHODS AMONG MARRIED WOMEN OF REPRODUCTIVE AGE IN CHENCHA DISTRICT, SOUTHERN ETHIOPIA: A CASE-CONTROL STUDY

Andamlak Gizaw Alamdo [1], Mesfin Kote Debere [2], Zemedu Mehamed Tirfe [3]

ABSTRACT

BACKGROUND: In many developing countries like Ethiopia, access and the utilization of long acting and permanent contraceptive methods (LAPCMs) is very low and it also difficult to find them from many reproductive health programs. The aim of this study was to assess factors associated with non-utilization of long-acting and permanent contraceptive methods among married women in the reproductive age (15-49 years).

METHODS: A community based unmatched case-control study was conducted in Chencha District, Southern Ethiopia from November 01 to December 30, 2015. Cases were those women who used contraceptive methods other than LAPCMs and women who were not using contraceptive methods. Controls were women who used LAPCMs in their lifetime. Study participants were selected by simple random sampling technique and records were reviewed and then by tracing their address, the selected samples were interviewed. We analyzed data using SPSS version 20.0 and logistic regression models to identify associated factors.

RESULTS: We enrolled 328 women: Factors such as Partner's lower level of education (p=0.003), less number of alive children (p= 0.04, preference to have children in the future (p=0.042), husband's approval to LAPCMs (p=0.002), not informed to use contraception (p= 0.006), started using contraceptives during campaign (p= 0.021) and discussion with health professionals (p= 0.039) were predictors of non-utilization of LAPCMs.

CONCLUSION: Non-utilization of LAPCMs in the district is associated with knowledge about LAPCMs, quality of health service. Interventions should focus on couple's knowledge, training of service providers in quality care, and the rights of clients, informed choice to contraceptive methods

KEY WORDS: LAPCMs, Non-utilization, Married women, Reproductive Age, Ethiopia

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INTRODUCTION

Most maternal morbidity and mortality in developing world are the result of unintended pregnancy[1,2] and more than half of all pregnancies are unintended or mistimed[1]. Globally, the total number of maternal deaths dropped from 523 000 in 1990 to 358 000 in 2008. About 99% (355,000) of the maternal deaths occurred in the developing countries. Of which 87% (313,000) of these deaths occurred in Sub Saharan Africa and South Asia[1].

High rates of infant, child and maternal mortality can be averted by using modern contraceptive methods[1,3]. Access to contraceptive methods, particularly long acting and permanent contraceptive methods (LAPCMs) would benefit women to have a safe pregnancy and protect them from complications of pregnancy[4]. Long-acting and permanent contraceptives are better contraceptives based on effectiveness, length of effectiveness, reversibility, the importance of a rapid and predictable return of fertility after stopping a method if the user decides to get pregnant[3]. However, LAPCMs are not readily available for use in most of the developing world and also LAPCMs are not included in many of the reproductive health programs of these counties[4].

Ethiopia has a total fertility rate (TFR) of 4.6 children per women and has a high unmet need for family planning (22%). One of the strategies to improve such problems is improving the accessibility of LAPCMs[2,5]. Most of the currently married women in Ethiopia are utilizing short-term contraceptive methods like Injectables and pills[2,6,7]. Injectables account for 23% of the total contraceptive use, followed by implants (8%), and IUCD (2%)[5].

Barriers to the use of LAPCMs are multifactorial and exist at the patient, provider, health system, and national levels6. Risk factors such as negative attitude to the methods, educational level, and knowledge on LAPCMs and perception on partner's support of LAPCMs use have been mentioned as the reasons not to use LAPCMs in Ethiopia[8,9].

Information on factors associated with the very low use of LAPCMs using strong study design is crucial for meeting the needs of women and ensuring safe and effective protection from unintended pregnancy and also to prevent maternal and newborn deaths[2,5,10].

Chencha district, which is found in Southern Ethiopia is one among some districts having a high unmet need for family planning for married women age 15-49 in the region and there is also high birth rate in the area[5]. The aim of this study was to assess factors associated with Non-utilization of long-acting contraceptive methods among married women of reproductive age in Chencha district, Southern Ethiopia.

METHOD

Study area and settings

A community based unmatched case-control study was conducted from November 01 to December 30, 2015 in Chencha district, Gamo-Gofa zone, in southern Ethiopia. According to the 2007 census result, the district has a population of 140,183 and of this 68,970 were males and 71, 213 were females [11]. The district is divided into 50 kebeles (the smallest current governmental administrative unit). Forty-five of them are rural and the rest 5 are urban kebeles.

Sampling

We determined a sample size of 332 currently married women aged 15–49 years using a two population proportion formula. We considered a similar study conducted in Tigray region in northern Ethiopia and used women who had less than two pregnancies as the main predictor of not utilizing LAPCMs7. The prevalence of women who had less than two pregnancies was 59.9% for women who were not utilizing LAPCMs and we assumed 95% confidence level, 80% power and case to control ratio was 1:1 for 151 cases and 151 controls, and adding 10% non-response rate. A total of 328 participants were finally recruited for the study.

Out of the district's 50 kebeles, we selected 13 randomly. First, we reviewed and then listed women of reproductive age from registration books in each kebele. Women of reproductive age were divided into women who were using contraceptive methods other than LAPCMs and women who were not using contraceptive methods and categorized as cases. Those women who have been using LAPCMs during or any time before were taken to controls. Study participants were selected by simple random sampling with proportional allocation to the population size.

Data collection

Using a structured questionnaire, which was adapted from similar studies, the data collectors interviewed the study participants. Questionnaires were first prepared in English then translated into the official language of the southern region (Amharic) by a language expert. To check whether the translation was consistent with the English version the questionnaire was back-translated into English by another language expert. Six trained health science diploma holders who were fluent in the local language and two supervisors were recruited to collect data. The data collectors were responsible for arranging the respondents, giving clarifications, reviewing records and interviewing the respondents and assisting in any difficulties they have during an interview of the questionnaires. The supervisors were responsible for leading the whole data collection process, to check the data for consistency, completeness and any irregularities. Correction measures were taken in the field on daily basis. To minimize the non-response rate we visited the houses repeatedly.

Data Processing and Analysis

The data was entered into EPI info version 3.5.1 and it was transferred into SPSS version 20.0 software for analysis. First, descriptive analyses were carried out for each of the variables.

Unconditional Logistic regression analysis was performed to examine the effect of each variable of interest in the low utilization of long-acting and permanent contraceptive methods. Hosmer and Lemeshow goodness of fit was used to see the model fit for the variables.

Bivariate analysis was done to see the association between the explanatory and outcome variables. To control the effect of possible confounders', variables found to be potential factors for low utilization of long-acting and permanent contraceptive methods was taken and included in the unconditional logistic regression model. A Logistic regression model was used to determine Odds ratio (OR) and 95% confidence interval (CI) for the different factors of non-utilization of LAPCMs. In the model, a backward stepwise analysis was employed. All variables were treated as categorical.

Ethical considerations

Ethical clearances for the proposed study was obtained from Arba Minch College of Health Sciences Institutional Research Ethics Review Committee. Permission from Chencha district health office was obtained. Since some of the interview questions involved on study participants private life, a written and verbal consent from all the participants was obtained and all participants signed on a consent form. The ethics committee that approved this study also approved the mode of consent. Confidentiality of the information was maintained throughout the study by excluding names as identification in the data. We assured all the information gathered during the course of the study was kept completely confidential. All the information that was delivered to us was coded for anonymity. Only the investigators have access to the data.

RESULTS

Sociodemographic and socioeconomic characteristics of married women

We interviewed 328 currently married women with a respondent rate of 98.7%. The median age of the respondents was 30 years (29 years for cases and 30 years for controls) and the inter-quartile range was 6 and 7 for cases and controls. Geographically, 133 (81.1%) cases and 142 (86.6%) controls were from rural areas. Concerning to occupation of the respondents, 50 (30.5% cases and 60 (36.6%) controls were housewife and 56 (34.1%) cases and 52 (31.7%) controls were merchant (Table1).

Table1: Socio-demographic factors associated with married women's non-utilization of LAPCMs in bivariable analysis, Chencha district, Southern Ethiopia, 2015

Variables		Cases(n=164)	Controls(n=164)	COR(95%CI)
Age	15-24	17(10.4%)	16(9.8%)	2.80(1.05-7.41)
	25-29	71(43.3%)	47(28.7%)	3.98(1.81-8.73)
	30-34	40(24.4%)	35(21.3%)	3.01(1.31-6.90)
	35-39	25(15.2%)	37(22.6%)	1.78(.75-4.20)
	40-49	11(6.7%)	29(17.7%)	1.00
Educational level of responden	Can't read and write	48(29.3%)	58(35.4%)	1.15(.53-2.49)
	Primary school	54(32.9%)	49(29.9%)	1.54(.71-3.32)
	Secondary& preparatory	47(28.7%)	36(22%)	1.82(.82-4.03)
	College & University	15(9.1%)	21(12.8%)	1.00
Educational level of partner	Can't read and write	31(18.9%)	39(23.8%)	1.49(.76-2.94)
	Primary school	62(37.8%)	38(23.2%)	3.06(1.63-5.76)
	Secondary& preparatory	46(28%)	40(24.4%)	2.16(1.13-4.11)
	College & University	25(7.6%)	47(28.7%)	1.00
Religion	Orthodox	98(59.8%)	101(61.6%)	0.89(.57-1.40)
	Protestant	66(40.2%)	61(37.2%)	0
	others	0	2(1.2%)	1.00
Monthly income	Less than 200	31(18.9%)	21(12.8%)	1.91(.82-4.43)
	200 up to 500	78(47.6%)	66(40.2%)	1.52(.75-3.11)
	500 up to 1000	22(13.4%)	31(18.9%)	0.91(.39-2.11)
	1000 up to 2000	16(9.8%)	24(14.6%)	0.86(.35-2.11)
	Greater than 2000	17(10.4%)	22(13.4%)	1.00

Reproductive health history of married women

The median age at marriage for cases was 21 years and for controls was 20 years. The median age at first birth was 21 for cases and 22 years for controls. The majority of cases (48.2%) and controls (61.0%) had more than two children born alive and around 20(12.2%) cases and 28(17.1%) of controls face abortion in their lifetime. Thirty-seven (22.6%) of cases and 38(67.7%) of controls had lost children in their lifetime. Over 86% of cases (86.6% and 111(33.8%) of controls noted they planned to have children in the future. The majority 93(56.7%) cases and 78(47.6%) controls preferred to have children after two years. One hundred forty-two (86.6% of cases' and 117(71.3%) of controls' husband want children in the future (Table 2).

Table 2: Reproductive health history related factors associated with married women's non-utilization of LAPCMs in bivariable analysis, Chencha district, Southern Ethiopia, 2015

Variables		Cases(n=164)	Controls(n=164)	COR(95%CI)
Number of live children	≤ 4	133(81.1%)	114(69.5%)	0.82(.73-.92)
	>4	27(16.5%)	50(30.5%)	1.00
Like to have children in the future	Yes	142(86.6%)	111(67.7%)	3.08(1.76-5.37)
	No	22(13.4%)	53(32.3%)	1.00
Number of children in the future	1	48(29.3%)	32(19.5%)	1.45(.75-2.81)
	2	60(36.6%)	48(29.3%)	1.21(.65-2.24)
	>2	33(20.1%)	32(19.5%)	1.00
When prefer to have children	Soon(< 1 year)	26(15.9%)	9(5.5%)	2.42(1.07-5.47)
	Within 2 years	23(14%)	25(15.2%)	0.77(.40-1.46)
	After 2 years	93(56.7%)	78(47.6%)	1.00

Contraceptive use related characteristics of married women

Over 99% of cases (99.4%) and all (100%) of controls knew at least a method of contraceptive. Injectable was the most known method of family planning among both cases (96.3%) and controls (94.5%), followed by implants (86.6%) for cases and (93.3%) for controls. Withdrawal method was the least known method among the cases (6.1%) and controls (6.1%) (Table 3).

Table 3: Contraceptive use related factors associated with married women's non-utilization of LAPCMs in bivariable analysis, Chencha district, Southern Ethiopia, 2015

Variables		Cases(n=164)	Controls(n=164)	COR(95%CI)
Information about LAPCMs	Yes	150(91.5%)	158(96.3%)	0.40(.15-1.08)
Heard about	No	14(8.5%)	6(3.7%)	1.00
	Implant	154(93.9%)	161(98.2%)	3.48(.94-12.9)
	IUCD	132(80.5%)	139(84.8%)	1.34(.75-2.39)
	Tubal ligation	40(24.4%)	49(29.9%)	1.32(.81-2.15)
	Vasectomy	28(17.1%)	21(12.8%)	1.00
Discussion with husband	Yes	111(67.7%)	146(89%)	0.25(.14-.47)
	No	50(30.5%)	17(10.4%)	1.00
Husband attitude to LAPCMs	Approves	80(48.8%)	133(81.1%)	0.18(.07-.44)
	Opposes	57(34.8%)	23(14%)	0.75(.28-1.99)
	Don't know	23(14%)	7(4.3%)	1.00
Main decider about LAPCMs	Both decide together	76(46.3%)	113(68.9%)	1.29(.62-2.68)
	Husband	38(23.2%)	8(4.9%)	9.37(3.40-25.8)
	Self	32(19.5%)	17(10.4%)	3.62(.48-8.83)
	Health profession	13(7.9%)	25(15.2%)	1.00
Not based on informed choice	Yes	79(48.2%)	57(34.8%)	1.81(1.16-2.83)
	No	81(49.4%)	106(64.6%)	1.00
Start using Contraceptive methods	Yes	38(23.2%)	61(37.2%)	.52(.32-.85)
during a campaign	No	121(73.8%)	102(62.2%)	1.00
Discussion with health professionals	Yes	131(79.9%)	157(95.7%)	0.15(.06-.37)
	No	30(18.3%)	6(3.7%)	1.00

Note: variables with an asterisk (*) are the candidate for the multivariable model (P-≤0.2)

Concerning ever use of family planning in their lifetime, the majority of cases (70.1%) used Injectable followed by oral contraceptive pills (32.3%). The majority of controls used Implants (68.3%) followed by Injectable (51.2%).

Currently, over three quarter (75.6%) of cases or their partner and 92.1% of controls or their partner were using at least a family planning method. The dominant family planning method in the district was Injectable (61.6%) for cases and implants (63.4%) for controls. For those study subjects who were not using contraception; the main reason noted was to have more children, 13.4% of cases and 2.4% of controls. Fear of side effects was cited next by, 3.0% of cases and 1.8% of controls. Little pregnancy risk and husband disapproval were the least suggested reasons for not using family planning method from both cases and controls. To plan child spacing, 98 (59.8%) of cases and controls use family planning and 15.2% of cases and 32.3% of controls use family planning for limiting their number of children. Nearly ninety (89.0%) of controls and 67.7% of cases discussed LAPCMs at least once with their husband. Concerning to decision to use family planning; 38(23.2%) of cases and 7(4.3%) of controls; a decision is made by their husband.

Thirty-eight (23.2%) of cases and 61(37.2%) of controls started family planning, while family planning campaign was undergone in the district. About half (48.8%) of cases and 81.1% of control's husband approved their use

of family planning whereas; one third (35.4%) of cases and 14.0% of controls opposed. Ninety-six (58.5%) of cases and 142(86.6%) of controls' husband knew whether their partners are using family planning.

Majority of cases (64.0%) and controls (81.7%) discussed with health professionals more frequently and (11.0% - cases) and (8.5% - controls) discuss at least twice and (5.5%- cases) and (6.7%- controls) discussed with health professionals at least once in their lifetime about LAPCMs. More than sixty-eight (68.3%) of cases and 90.2% of controls were told what to do if they develop side effects while they are using family planning methods. One hundred one (61.6%) of cases and 88.4% of controls were told exactly which method to use. Nearly half (48.2%) of cases and one third (34.8%) of controls started using contraceptive methods without informed choice. Health professionals were the most reported to pressurize/ persuade respondents to start using contraceptives without informed choice for 47.0% of cases and 32.3% controls.

All variables that were significantly associated with non-utilization of LAPCMs at 5% level of significance by bivariate analysis, were retained for multivariable analysis. The backward stepwise regression was employed and after adjustment, seven variables remained significantly associated with not utilizing LAPCMs. (Table 4).

Table 4: Predictors of non- utilization of LAPCMs in Chencha district, Southern Ethiopia, 2015

Variables		Cases (n=164)	Controls (n=164)	COR (95%CI)	AOR (95%CI)
Age	15-24	17	16	2.80(1.05-7.41)	2.22(.46-10.7)
	25-29	71	47	3.98(1.81-8.73)	3.75(.94-14.9)
	30-34	40	35	3.01(1.31-6.90)	2.85(.74-10.8)
	35-39	25	37	1.78(.75-4.20)	1.39(.37-5.10)
	40-49	11	29	1.00	
Educational level of partner	Can't read and write	31	39	1.49(.76-2.94)	1.34(.52-3.45)
	Primary school	62	38	3.06(1.63-5.76)	3.10(1.4-6.50)
	Secondary and Preparatory	46	40	2.16(1.13-4.11)	1.83(.86-3.89)
	College and University	25	47	1.00	
Number of alive children	≤ 4	133	114	0.82(.73-.92)	2.4(1.04-5.67)
	>4	27	50	1.00	
Like to have children in the future	Yes	142	111	3.08(1.76-5.37)	2.20(1.03-4.69)
	No	22	53	1.00	
Discussion with husband	Yes	111	146	0.25(.14-.47)	0.85(.27-2.66)
	No	50	17	1.00	
Husband attitude to LAPCMs	Approves	80	133	0.18(.07-.44)	0.12(.03-.48)
	Opposes	57	23	0.75(.28-1.99)	0.45(.13-1.56)
	Don't know	23	7	1.00	
Not informed choice to use contraceptives	Yes	79	57	1.81(1.16-2.83)	2.47(1.30-4.71)
	No	81	106	1.00	
Start using contraceptives during the campaign	Yes	38	61	0.52(.32-.85)	0.45(.23-.88)
	No	121	102	1.00	
Discussion with health professionals	Yes	131	157	0.15(.06-.37)	0.31(.10-.94)
	No	30	6	1.00	

Note: variables with an asterisk (*) are statistically significant at p ≤ 0.05

DISCUSSION

Our study identified sociodemographic, reproductive health history and contraceptive use related factors associated with non-utilization of LAPCMs among married women in Chencha district, Southern Ethiopia. The first factor was related to the educational level of married women's partners.

Both women's and their husband's educational status were the significant factors that affect the utilization of Modern contraception and LAPCMS[10,12]. In this study, a significant association was observed with partners' educational level. Unlike partners who attained college and university level education, those women whose partners with primary level education were more likely to not utilize LAPCMS (AOR=3.1, 95%CI 1.4-6.50). Our finding is comparable with a study that was conducted in Wolayita town, Southern Ethiopia, women who attained a higher level of education were 2.8 times more intended to utilize LAPCMs than women with no education[8].

Moreover, different contraceptive use related factors were related with non-utilization of LAPCMs. Discussion with health providers on family planning use was not associated with non-utilization of LAPCMs. It was revealed that women who discussed with health professionals about LAPCMs had significantly lower odds of not utilizing LAPCMs compared to women who did not discuss (AOR = 0.31, 95% C.I 0.10- 0.94). This might be from understanding the importance of LAPCMs use for ensuring safe and effective protection from unintended pregnancy and also to prevent maternal and newborn deaths.

The result of this study showed that partner's disapproval has a strong relation non-utilization of LAPCMS. The odds of husband approval to LAPCMs use for cases were 88% smaller than the odds for the same expose among controls. A consistent finding was reported from two other studies which were done in Nigeria and Ghana[3,14]. Contraceptive use encourages promiscuity or it affects partner's authority as head of the household was the reported reasons from these two studies. Married women who were not informed to use contraception were more than twice (AOR= 2.47, 1.30-4.71) likely to not utilize LAPCMs than those were informed about LAPCMs. This finding is almost similar to the report from Ethiopian Demographic and Health Survey (EDHS) i.e. Less than half of (46%) current users of contraceptive methods were informed about the method they used[5].

This study revealed that about 23.2% of married women who were not ever user of LAPCMs and 37.2% ever users of LAPCMs started contraceptive use while a campaign is undergone in their district. A significant difference was observed between the two groups regarding initiation of contraceptive during a campaign. The odds of contraceptive use during a campaign for cases were 48% smaller than the odds for the same expose among controls. This shows the significantly large number of LAPCMs users started the methods during a campaign.

CONCLUSIONS

The result of this study indicates that knowledge about LAPCMs, especially for long-acting reversible contraceptive methods (LARC) is high, and health professionals are the main source of family planning information. Despite this, factors such as educational level of partner, number of live children, future children preference, husband approval to use contraception, not informed choice to contraception use, starting contraceptive methods during campaign and discussion with health professionals about LAPCMs were the most contributing factors for non-utilization of LAPCMs in the district.

In order to enhance the utilization of LAPCMs as a bold step towards the improvement of reproductive service utilization and subsequently decreasing maternal and child mortality: we recommend first, by educating and motivating the public in the district, concerted efforts should be made to increase the utilization of LAPCMs, especially long-acting permanent contraceptive methods. Second, Policies directed towards improving LAPCMs utilization need to consider raising the levels of formal education. Third, training of service providers in quality care, especially about counseling about family planning, the rights of clients, informed the choice of contraceptive methods is very crucial.

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COMPETING INTEREST

Authors declared they have no conflict of interest.

AUTHORS' CONTRIBUTIONS

AG participated in the coordination of the study, performed the statistical analyses and drafted the manuscript. MK and ZM participated in the design of the study and helped to draft the manuscript. All authors read and approved the final manuscript.

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UTERUS DIDELPHYS WITH TERM PREGNANCY DIAGNOSED IN LABOR AS A CAUSE OF DYSTOCIA: CASE REPORT

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ABSTRACT

Uterus didelphys is a rare mullerian anomally associated with fertility and obstetrical complications. Term pregnancy in uterus didelphys with fetal survival is seldom reported. We report here a rare case of intrapartum diagnosed uterine didelphys associated with dystocia that gave birth to a viable baby by cesarean section.

KEYWORDS: uterus didelphys, term pregnancy, labor, dystocia

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INTRODUCTION

Uterus didelphys (double uterus) is a developmental abnormality that results from the failure of fusion of the Mullerian ducts leading to separate uterine cavities and 2 cervices [1]. It is a rare anomaly accounting for 5% of all uterine anomalies[1,2,3].

The clinical presentation is often asymptomatic and diagnosis is usually made for the 1st time during evaluation for reproductive failure or during pregnancy/ delivery[2]. It is associated with complications including dysmenorrhoea, recurrent pregnancy loss, preterm labor, cervical incompetence, malpresentation, and high cesarean section[3,5].

Thorough vaginal examination and confirmatory imaging studies including ultrasonography and MRI are important in diagnosing uterus didelphys. Treatment is surgical and reserved only for those with recurrent pregnancy loss1,6. Term pregnancy in uterus didelphys with fetal survival is seldom reported. We report here a case of uterine didelphys with a term pregnancy in the right hemi-uterus diagnosed in labor as a cause of dystocia that gave birth to an alive baby by cesarean section.

CASE PRESENTATION

A 30 years old Ethiopian primigravid lady presented to the labor ward of Karamara Hospital with pushing down pain of 20 hours and leakage of fluid per vaginum of 28 hrs. She was appreciating fetal kick. There were no urinary complaints. She didn't know her LMP. She was unbooked but had smooth pregnancy course.

She was married for 5 years and did not conceive for four years before the current pregnancy. She didn't seek medical help for her failure to conceive. Her menstrual history was unremarkable. She reported no medical illnesses.

On admission physical assessment, vital signs were stable. The uterus was 36wks sized, markedly dextrorotated. Fetus in longitudinal lie and cephalic presentation. She had two uterine contractions in 10minutes. Fetal heart beat was 146; cervix was 5cm dilated; vertex presentation, membrane ruptured.

Laboratory test results were: haematocrit: 33%, Blood group/RH, B posiitive, Random Blood Sugar = 96gm/ dl; serologic tests for syphilis, HIV and Hepatitis B were negative.

After 4hours of admission, the parturient was evaluated by an obstetrician for arrest of cervical dilatation despite adequate contractions. Speculum and digital vaginal examinations revealed two vaginal orifices with longitudinal vaginal septum extending to the vaginal outlet with two distinct cervical orifices. Right cervix was 5cm dilated.

Ultrasound was done with a clinical suspicion of mullerian anomaly (double uterus) and it revealed a singleton viable intrauterine pregnancy of 37+2 wks, cephalic presentation, reassuring biophysical profile, fundal placenta and estimated fetal weight 2.6kg normal fetal morphology. There was pear shaped, well outlined, hypoechoic mass measuring 10cm x 8cm x 3.4 cm which looks to be attached with the left lateral boarder of the pregnant uterus. Intra-abdominal viscera were normal looking. The US diagnosis was uterus didelphys with pregnancy in right hemi-uterus with possible differential diagnosis of non communicating rudimentary horn.

The patient was counselled on the possible diagnosis of soft tissue dystocia secondary to uterus didelphyis and informed consent was obtained for caesarean delivery. Under spinal anaesthesia Pfannenstiel incision was made. The intraoperative findings were: an intact, term sized gravid uterus with well formed lower uterine segment; an enlarged left sided 2nd uterus with no communication with the gravid uterus on the right side (Figure 1).

* The non-pregnant left hemi uterus is located adjacent

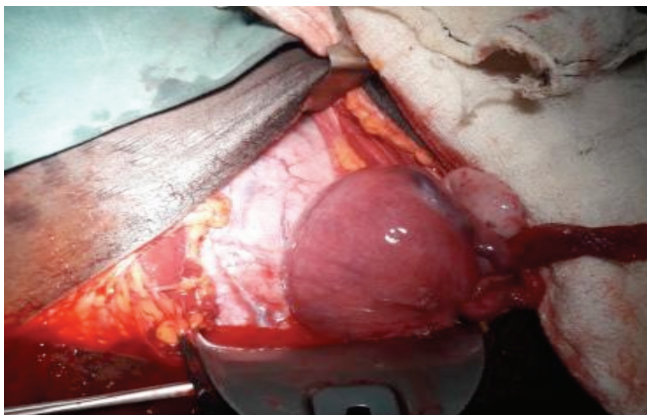

Figure 1: the anatomic relationship of the two hemi-uteri after opening the abdomen

to the lower uterine segment of the gravid uterus on the right. Note that the left ovary and fallopian tube attached with the left hemi-uterus and distended lower

uterine segment of the right hemi-uterus

A lower uterine segment transverse incision was made on the right hemi-uterus to deliver an alive neonate of weight 2.8kg with APGAR scores of 7 and 9 in the 1st and 5th minutes respectively. After repair of uterine wound, further examination showed an apparently two isthmi felt merging with the body of each of the two uteri and bilaterally normal looking tubes and ovaries each attached with the ipsilateral hemi-uterus (Figure 2).

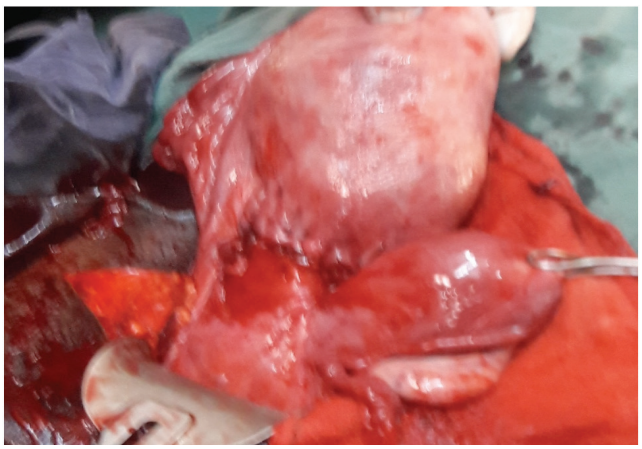

Figure 2: The appearance of the two uteri after repair of the uterine incision

* note single ovary and fallopian tube is attached with each of the ipsilateral hemi-uterus

Manual exploration of the abdominal cavity revealed that both kidneys were found at their normal location. Both mother neonate had smooth post operative course and were discharged on the 3rd post operative day. The mother was appointed for further work up and information was given for possible preconceptional visit before future pregnancy.

DISCUSSION

The uterus is derived from the paired mullerian ducts. Formation and differentiation of the mullerian ducts into the female reproductive tract depend on the completion of 3 phases of development: organogenesis, fusion, and septal resorption[7]. The process in which the lower segment of the paired mullerian ducts fuses to form the uterus, cervix, and upper vagina is termed lateral fusion. Failure of lateral fusion results in bicornuate or didelphys uterus7. Each hemiuterus is associated with 1 fallopian tube and ovary.

The reported Incidence of uterus didelphys varies from 0.03% to 0.5%1,3,8. Longitudinal septum is observed in 75% of the patients9 which was also evident in our case. Although not seen in our case, 20% of the patients with uterus didelphys have associated urinary tract anomalies [3, 10].

Most Patients with uterus didelphys are asymptomatic with the vast majority being recognized during pregnancy or as a result of recurrent pregnancy loss[4,5]. According to Jones & Jones, 1/3rd of patients with double uterus had reproductive problems[6]. The usual presenting symptoms in non pregnant women are dysmenorrhoea, dyspareunia, and infertility[4,5,10].

Pregnancy in a uterus didelphys is uncommon; the incidence varies from 1 in 1500 to 1 in 142000 pregnancies worldwide[10]. But pregnancies reaching viability and better postnatal survival were more common in uterus didelphys compared to other fusion anomalies of the uterus (bicornuate, septate or arcuate)[1,2,3]. It is however associated with obstetric complications particularly in the 3rd trimester. Pooled analyses of obstetric complications associated with Uterus didelphys reported spontaneous abortion in 32%, preterm birth in 28%. Fetal survival was in the range of 41 – 64%[1,6]. Other complications reported were cervical incompetence, prelabor rupture of membranes, Intrauterine growth restriction[3,5,7]. Poor reproductive outcome is presumed to be due to diminished uterine volume and decreased blood flow to each hemiuterus[7].

Labor and delivery complications (soft tissue dystocia) associated with uterus didelphys were well illustrated in our case that had prolonged labor with unengaged head. This could be explained by the soft tissue resistance imposed by the longitudinal septum on fetal descent and the mechanical effect of the nongravid uterus located near the pelvic brim adjacent to the lower uterine segment of the gravid uterus. Additionally abnormal fetal lies have been associated with uterus didelphys[5,7,10]. Hence Cesarean delivery rates in such patients are higher than the general obstetric population[7,12]. Yet some cases of successful vaginal deliveries have also been reported[12].

The diagnosis of uterus didelphys is suspected from genital examination where a longitudinal vaginal septum and/or two cervical orifices may be appreciated. But it remains a challenge especially pre-pregnancy as it usually is asymptomatic and affects young women where thorough pelvic examination is not possible or

contraindicated. Our case emphasizes the importance of meticulous pelvic examination in evaluation of women with labor abnormalities for possible soft tissue dystocia associated with mullerian anomalies. This will help in choosing the appropriate diagnostic study and make rational decision on mode of delivery.

Imaging studies including 2-D/3-D sonography, sonohysterography, hysterosalpingo -graphy, and magnetic resonant imaging are crucial in diagnosing uterus didelphys[1,7,9,12]. Differentiation among the duplication mulllerian problems is important as it has management implications. Two cervices must be documented to confirm uterus didelphys[1]. Three-dimensional (3-D) sonography is more accurate than 2-D because it provides uterine images from virtually any angle[9]. MRI has a reported accuracy of 100% and is usually used for difficult cases, as it has the added benefit of evaluating both internal and external appearance of the uterus[1,7,9]. Moreover, MRI is preferred in the evaluation of other anomalies possibly associated with uterus didelphys[9].

Early diagnosis is important to prevent and manage adverse obstetrical complications associated with uterus didelphys. These include hormonal support (progesterone supplementation) for recurrent pregnancy loss; cerclage for cervical incompetence and planned delivery (CD) in those with obstructive anomalies. A pre-pregnancy diagnosis of the anomaly could have been made in our case if she had visited a health facility for her infertility lasting for 4 years or if she attended antenatal care during her pregnancy. Nonetheless, unlike a similar report in the literature a catastrophe of fetal death and postpartum haemorrhage was averted in our case because of early diagnosis made in labor[13].

The definitive management of uterus didelphys is surgical correction (Strassmann's metroplasty). It is indicated only for those patients with sever dyspareunia and recurrent pregnancy loss[1,6].

CONCLUSIONS

Term pregnancy in a uterus didelphys with fetal survival is rarely reported. Uterus didelphys should be considered in the intraparum evaluation of women with suspected soft tissue dystocia. Early diagnosis and differentiation from other duplication mullerian anomalies are important to plan appropriate Individualized obstetric care. Timely interventions will avert adverse obstetrical outcomes.

ABBREVIATIONS

CS: Cesarean Section, MRI: Magnetic Resonance Imaging

DECLARATIONS

Ethics approval and consent to participate

Ethical approval for writing this case report was obtained from the health research ethics committee of the Regional Health Bureau.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Competing interests

The authors declare that they have no any competing interests.

Author's Contribution

Both WG and MB were directly involved in the evaluation and management of the case. MB collected clinical data and WG was responsible for the inception and write up of the case report.

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SPONTANEOUS HETEROTOPIC PREGNANCY: A CASE REPORT

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ABSTRACT

INTRODUCTION:

Heterotopic pregnancy refers to the presence of simultaneous pregnancies at two or more different implantation sites; commonly both intrauterine and extrauterine gestation. It is a rare and life-threatening condition which is difficult to diagnose and easily missed. We report an extremely rare case of heterotopic pregnancy after natural conception with cardiac activity noted on sonography in both the intrauterine and the ectopic pregnancy.

CASE PRESENTATION

A 38 years old gravida 2 para 1 mother diagnosed with heterotopic pregnancy despite lack of any notable risk factors at a gestational age of 11weeks and 6 days. Trans-vaginal ultrasound showed alive intrauterine pregnancy and right adnexal ectopic pregnancy with a heartbeat. She underwent exploratory laparotomy and right salpingectomy was done and discharged home with a stable clinical condition; and had uneventful antenatal visits. She delivered by emergency C- section at 39 weeks & 3 days gestation for an indication of non-reassuring fetal heart rate pattern.

CONCLUSION:

This un-common case demonstrates the possibility of occurrence of natural heterotopic pregnancy and clinical detection helped for a good maternal and fetal outcome.

Keywords: Ectopic pregnancy; Heterotopic pregnancy, Spontaneous

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INTRODUCTION

Heterotopic pregnancy was first reported in 1708 by Duverney as an incidental finding of intrauterine pregnancy while doing an autopsy of a patient who died due to ruptured ectopic pregnancy. Heterotopic pregnancy refers to the presence of simultaneous pregnancies at two or more different implantation sites and commonly the coexistence of intrauterine pregnancy (IUP) and extrauterine gestation[1]. The incidence in the general population is estimated to be about 1 in 30,000, while becoming commoner with assisted reproductive technique a rate as high as 1 in 2600 -3900 pregnancies[2]. The fallopian tube is the site of the vast majority of the ectopic implantation in heterotopic pregnancies, but the cervix or abdomen can also be involved[3].

Risk factors are any event that can lead to scarring of the fallopian tube can increase the risk of an ectopic pregnancy include pelvic inflammatory disease (PID), tubo-ovarian abscess (TOA), previous ectopic pregnancies, or previous surgery[4]. Heterotopic pregnancy is thought to occur because of multiple ovulation events[5]. Therefore, individuals who have undergone assisted reproduction therapies are at an increased risk of heterotopic pregnancy[6].

Individuals often present with four common symptoms: abdominal mass, abdominal pain, peritoneal irritation, and enlarged uterus, although early symptoms can also be similar to those seen in acute appendicitis, ovarian cyst rupture, or ovarian torsion[7].

It can be a life-threatening condition and can be easily missed with the diagnosis being overlooked. Diagnosis is challenging, as it is often difficult to identify both the IUP and extra uterine pregnancy. Ultrasound often leads to the suspected presence of the associated ectopic pregnancy, but is not confirmatory[8,10]. A common pitfall noted in previous reports is ceasing the workup after identification of an IUP in women with abdominal pain9. Approximately 70% of heterotopic pregnancies are diagnosed between 5 to 8 weeks, 20% are diagnosed between weeks 9 and 10, and the remaining 10% are diagnosed at or beyond the 11th week[10]. Due to the rarity of heterotopic pregnancy, there is little agreement regarding the optimal surgical management[11]. Treatment of heterotopic pregnancy should be as minimally invasive as possible to preserve the developing IUP. Laparoscopy or laparotomy can be performed, with slight modifications such as avoiding excessive manipulation of the uterus[12]. Non-surgical forms of treatment are available such injection of potassium chloride to selectively reduce the extrauterine gestation has been used[13]. We present a rare case of spontaneous heterotopic pregnancy with live intrauterine gestation and ruptured right adnexal gestation.

CASE PRESENTATION

A 38 years old gravida 2 para1 mother amenorrhoeic for the last three months presented to the emergency OPD with complaints of lower cramping abdominal pain which is more pronounced on the right side and intermittent vomiting of the ingested matter of four days duration and mild epigastric abdominal pain. Otherwise, she has no other complaints and notable risk factors.

Physical examination revealed stable vital signs (blood pressure 110/70 mmHg, pulse 100 bpm, temperature 36.1° C, respirations 18/minute, oxygen saturation 97% with atmosphere air); pink conjunctiva, mild rebound, and diffuse abdominal tenderness and guarding. There was no palpable mass or sign of fluid collection on abdominal palpation. Cervix was closed and there was no bulging of cul-de-sac, cervical motion tenderness and blood on examining finger.

Hematocrit was 34.9% and transvaginal ultrasound showed a simultaneous alive (positive cardiac activities) IUP with CRL=11 weeks+1day and right adnexal ectopic pregnancy with CRL=11 wks+3days (Fig 1).

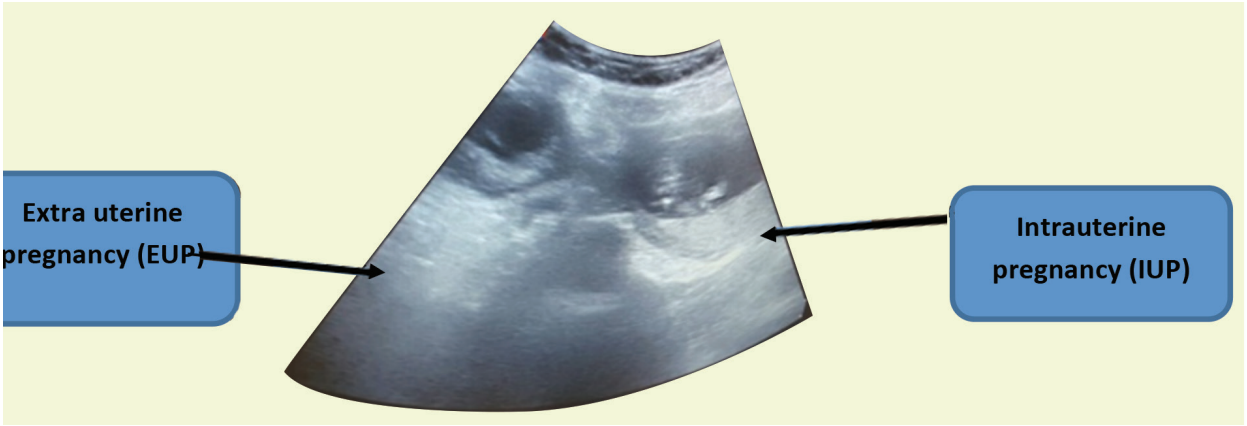

Figure 1- transviginal ultrasound showing both intra and extra uterine pregnancy

Exploratory laparotomy was done after four hours of first evaluation and cross-matched blood prepared and consented for the above procedure and possible right salpingectomy. The intraoperative findings were a 6X6 cm right ampullary gestational sack with active bleeding through the fimbrial opening (fig. 2) and there was healthy looking left tube and both ovaries. There was 14 weeks size intact gravid uterus. About 500 ml of hemoperitoneum was sucked out. Right salpingectomy was done. Throughout the procedure, uterine manipulation was minimized.

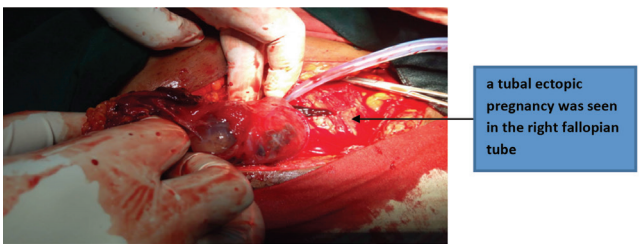

Figure 2.ectopic pregnancy was seen in the right fallopian tube (arrowhead).

Her vital signs were stable throughout the hospital stay and her post-operative hemoglobin was 10.2g/dL. She was discharged with stable vital signs and intact intrauterine pregnancy, with cardiac activity. Histopathology confirmed ectopic pregnancy (fig 3). She had uneventful antenatal care and she gave birth at 39 weeks 3 days gestation via an emergency cesarean section for non-reassuring fetal heart rate. The male newborn was alive weighing 3.2kg with APGAR score of 8 and 9 at first and fifth minute, respectively. The mother and her baby were discharged with stable conditions and had uneventful postnatal visits.

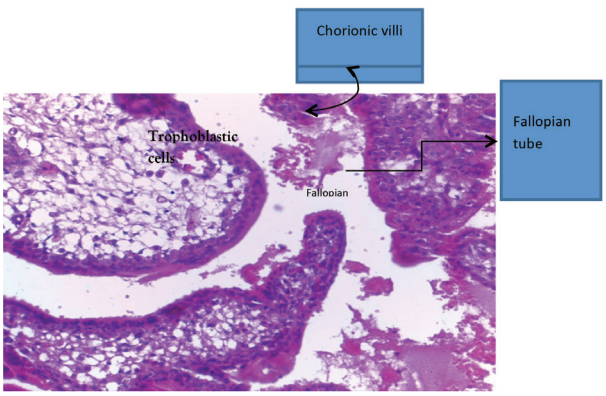

Figure 3.Histopathology picture showing chorionic villi with trophoblastic cells in the wall of the fallopian tube

DISCUSSION

This case represents a spontaneous heterotopic pregnancy in a 38-year-old patient with no obvious previous risk factors identified. Making an early diagnosis of heterotopic pregnancy may not be easy in our context where first trimester and emergency room pelvic ultrasonography are not routinely performed.

Pelvic ultrasonography confirms the diagnosis when an extrauterine gestational sac is seen. It has been shown that transvaginal pelvic ultrasonography makes a correct diagnosis in 88.9% of cases[14].

The treatment options of heterotopic pregnancy can be surgical, medical or expectant depending on the case scenarios. Out of 217 cases of heterotopic pregnancies reported in the literature, 90.8% were managed surgically[15]. The procedure usually consists of salpingectomy via laparotomy or laparoscopy depending on the patient's hemodynamic state at the time of diagnosis. Heterotopic pregnancy can be managed medically under the following conditions: early and accurate diagnosis of the extra-uterine gestational sac and absence of symptoms but our case didn't fulfill the criteria for medical management. Several modalities have been reported with success: ultrasound-guided vaginal aspiration or in situ injection of methotrexate, potassium chloride or hyperosmolar glucose[16]. Expectant management of the ectopic pregnancy can be considered if it is not developing. The maternal outcome is measured through the following parameters: post-operative morbidity, complications of surgery and anesthesia, anemia, future fertility, and death. All these can be avoided by early diagnosis and medical or expectant management[15]. Our patient did well and discharged on the sixth postoperative day. Three main measures were implemented to preserve the intra-uterine pregnancy: shortest time under general anesthesia, proper handling of the uterus during surgery and supplementation with progesterone. The progesterone was given to make the uterus quiescent or less irritable and to prevent threatened abortion. A Cochrane Review of seven trial involving 696 participants who is at risk of threaten abortion suggest that progestogens are probably effective in the prevention of threatened miscarriage[17]. A literature review found a survival rate of about 70% for the intra-uterine fetus[14]. In our case, the intrauterine fetus was born alive at term. Surgical management of tubal pregnancy allowed the viable IUP to develop to term on our case.

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