Ethiopian Journal of Reproductive Health (EJRH)

October, 2018

www.esog-eth.org

www.ejrh.org

Ethiopian Society of Obstetricians and Gynecologists (ESOG)

Tel.: +251 115 506 068/069 Fax: +251 115 506 070
P.O. Box: 8731
Addis Ababa, Ethiopia
esogeth@gmail.com
newsletter@esog.org.et
www.esog-eth.org

Address:
Head Office:
Ras Desta Damtew Avenue
Tsehafi Tízaz Teferawork Keda Building (Near Ghion Hotel)
East Wing, 2nd Floor, Room no 7
ESOG Project Office:
Kirkos District/ Kazanchis
Nigist Towers, 3rd floor

Ethiopian Journal of Reproductive Health (EJRH)
October, 2018

Table of Contents PAGE

GENDER DIFFERENCE IN INTENTION TO HAVE A CHILD AND ITS PREDICTORS AMONG HIGH SCHOOL ADOLESCENTS IN HAWASSA CITY, SOUTHERN ETHIOPIA: USING A THEORY OF PLANNED BEHAVIOR MODEL

Ribka Dinku, MPH/RH[1], Tizta Tilahun, MPH[2], Tesfalem Teshome, MSc/AHN[3], Tefera Belachew, PhD[2]

ABSTRACT

BACKGROUND: Adolescent pregnancy is a public health concern worldwide. In developing world, one-third to one-half of women becomes mothers within 19 years of age. In Ethiopia, teenage pregnancies and deliveries is common, which has been associated with consequences including school dropout, high infant and maternal mortality and morbidity.

OBJECTIVE: To determine gender difference in intention to have a child and its predictors among high school adolescents in Hawassa City, Southern Ethiopia from February to March 2015.

METHODS: A comparative cross-sectional study was conducted in selected high schools of Hawassa City. Eight hundred sixteen adolescents were enrolled in the study using stratified sampling technique. Data were collected by using self-administered questionnaire. The collected data were entered and analyzed using Epi-data version 3.1 and statistical package for social science version 20 statistical software respectively. Multivariable linear regression model was used to compare intention to have a child by gender and other predictors.

RESULT: Eight hundred seven adolescents participated in the study making the response rate of 98.8%. More than half of the respondents 470(58.5%) were in the age category of 15-17 years and 403(49.9%) of them were female. The proportion of adolescents who had desire to have a child before 20 years of age was 56(6.9%). Attitude (β=0.165, p<0.001), subjective norm (β= 0.408, p<0.001) and perceived behavioral control (β=0.168, p<<0.001) were significantly associated with intention to have a child. Being female (β= 0.0.021, p< 0.048), age group of 18-19 years (β= 0.0.041, p=0.021) and having low school performance (β=0.064, p=0.038) increases the intention. While in grade 12th adolescent students (β=- 0.034, p=0.03) and for those having good knowledge about family planning, pregnancy and related complications (β=-0.109, p=0.002) the intention to have a child decreases significantly.

CONCLUSION: There was a gender difference in intention to have a child. Females had more intention than males. The theory of planned behavior variables was found to be significant predictors of intention to have a child. While working to control adolescent pregnancy, focus should also be given to their referents and changing their perception of on the understanding of their controlling ability.

KEY WORDS: Adolescent Pregnancy, Intention to have a Child, a theory of planned behavior mode, Southern Ethiopia

(Ethiopian Journal of Reproductive Health; 2018; 10; 4: 1-9

1 *Department of Midwifery, Hawassa College of Health Sciences, Hawassa, Ethiopia*

2 *College of Public Health and Medical Sciences, Human Nutrition Unit, Jimma University, Jimma, Ethiopia*

3 *Department of Public Health, Hawassa College of Health Sciences, Hawassa, Ethiopiaz*

INTRODUCTION

Adolescent between 10-19 years of age accounted for 1.2 billion of the world's population and nearly 90% of them live in the developing countries1. Adolescent population in Ethiopia was estimated to be 24% of the total population2. Adolescence represents a key stage in development and a critical opportunity for ensuring successful transition to adulthood. Poor sexual and reproductive health outcomes can often be traced to adolescence, when most people become sexually active3. During adolescence, many young people begin to experiment with new roles and one important area of exploration is sexual activity, which involves a risk-taking behavior4. Educational achievement, life skills and decision-making around sexual behavior and childbearing have profound effects on the lives of adolescents as well as their families, communities and society5.

Adolescent pregnancy is among a major public health concern. Globally, about 16 million adolescent girls aged 15-19 give birth each year accounting for 11% of all births worldwide and almost 95% of these births occur in developing countries. Data from 51 developing countries showed that almost 10% of girls were mothers by age 16 years, with the highest rates in sub-Saharan Africa and South-Central and South-Eastern Asia6. In Ethiopia, a nationally representative Demographic and Health Survey (DHS) report revealed that 12 % of adolescent girls aged 15-19 years have already started childbearing, 10 % have had a live birth, and 2 % are pregnant with their first child. While only 1 %of adolescent girls aged 15 have started childbearing, 34% of women either are mothers or are pregnant with their first child by age 19 years. Among regions of Ethiopia, the percentage of adolescent girls' age 15-19 years who have begun childbearing varies from 3 % in Addis Ababa, 8 % in SNNPR to 21 % in Gambela7. Studies conducted among schoolgirls also indicated the teenage pregnancy of 7.7% in Arbaminch town8 and 18.4% in Huruta Town of Arsi Zone 9. Based on the finding of the studies conducted among women reproductive age group, 10.4% from Aysaita district of Afar region, 43.7% from Bench Maji zone of Southern Region and 56.9 from Arsi Zone of South-East Ethiopia were pregnant before the age of twenty10-12. Adolescents are at the increased risk to die during pregnancy or childbirth; they are also exposed to unsafe abortions, for increased child mortality and to give birth low birth weight babies who are at risk of malnutrition and poor development6, 13-15.

Despite the fact that 96% of births or pregnancies among women with age below 20 years were wanted either of at pregnancy, birth or later time in Ethiopia7, little is known about its predictor factors employing the scientifically sound modeling techniques and gender difference in intention to have a child is not also adequately studied in Ethiopian context. Most of the available studies focused on females but males are also a part of development process and share their own role for the occurrences of pregnancy. This study was therefore conducted with the objective of determining the difference of adolescent boys and girls in intention of having a child and the potential associated factors.

METHODS AND MATERIALS

Study Design and Setting:

An institution based comparative cross-sectional study design was used in the study. The data were collected from February to March 2015 in all high schools providing grade 9 to 12 academic program in Hawassa City. The city is a capital city of Southern Nations, Nationalities, and People Region (SNNPR) of Ethiopia located 273 km away from the national capital city Addis Ababa. In the City, there were 54,677 adolescents of which, 29,227 were females and 25,450 were males.

As per the report of Hawassa City Administration Education Bureau, there were 19 functional secondary schools categorized in to three types of namely; Government (4), Private (13) and Missionary (2)

schools based on their ownership. The schools were serving 18, 709 students (10,197 males and 8,512 females).of whom 16,724 students were adolescents (8,917 males and 7,807 females) with the age group of 10-19 years.

Population Studied, Sample Size and Sampling Procedure:

All adolescent students who were attending Secondary and Preparatory Schools (grade 9 to 12) in Hawassa City Administration during the academic year 2014/2015 were included in the study. The sample size was determined using two-population proportion formula employing open-epi statistical software by taking 50% (P1) for predicted intention value for females and 10% difference in predicted value of intention towards having a child was assumed 40% (P2). for males, with 95% confidence interval (CI), 80% power and 10% non-response with one to one female to male ratio. Accordingly, the calculated optimal sample size for the study was 816 (408 males and 408 females). The sample size was distributed for each school, grade level and classes in the school by using sex and grade stratified sampling procedure considering probability proportional to size techniques. To select the study participants from each class simple random sampling technique was employed using the registration document of the school.

Data Collection and Quality Control

The construction of the questionnaire for the study was according to the guidelines for the construction of theory of planned behavior questionnaire (16). Elicitation study was conducted with 25 students and 75% of the beliefs raised by the participants were included in the questioner. Other questions were adapted from EDHS 2005 tools and other behavioral researches. The format for the questionnaire consists of 107 items separated into eight domains. The first four domains were ascertained the behavioral intention, direct measure of attitude, subjective norms, and perceived behavioral control. The next three domains were focused on the indirect measures of attitude, subjective norms, and perceived behavioral control and the final section covers the socio-demographic information of the study subjects. Most of the questions were prepared based on a Likert Scale with scale ranging from one (strongly disagree) to five (strongly agree) where respondents were asked to indicate how strongly they agree or disagree. The questionnaire was first prepared in English, translated into the local language, Amharic, and back translated into English by a different language expert. The final questionnaire was pre-tested on 5% of the actual sample size and necessary corrections were made. Before the data collection, two-days training was given to the data collectors and supervisors. Supervisors and the principal investigator monitored the data collection process on a daily basis. Double data entry was done using Epi-data version 3.1. Data were analyzed by SPSS version 20. Descriptive statistics was computed for all variables according to their type. To assess the relationship among TPB (Theory of Planned Behavior) component and other selected variables partial Pearson's correlation and independent sample t-test was used. Multivariable linear regressions were used to compare intention to have child by sex and other predictor variables.

Ethical Considerations

Ethical clearance for the study was obtained from the Institutional Ethical Review Board of Jimma University. The nature of the study was fully explained to the study subjects and their parents if their age is below 18 years. After explaining the detail nature of the study, verbal informed consent was taken from each of the participants before the data collection. For those having their age below 18 years, written assent with the detail of information about the nature of the study were sent to parents for their approval one day prior to the actual data collection.

RESULT AND DISCUSSIONS

From 816 adolescents participated in the study, 807 of them properly filled and returned the questioner making the response rate of 98.8%. The majority of the respondents 470 (58.3%) were in the age category of 15-17 years. Four hundred four (50.1%) study subjects were males and 742 (92.0%) were unmarried. The proportion of students whose religion were Protestant, and Orthodox accounted for 426 (52.7%) and 317(39.4%) respectively. Two hundred ninety-nine (37.0%), were from grade 9, and 484(60.0%) were reported medium level as their school performance (Table 1).

Table 1: Socio demographic Characteristics of high school Adolescents (n=807) in Hawassa City from February to March 2015

Variable	Category	MaleNo (%)	Female No (%)	Total No (%)
Sex		404(50.1)	403(49.9)	807(100)
Age	12-15	36(4.5)	24(2.9)	60(7.4)
	15-17	207(25.7)	263(32.6)	470(58.3)
	18-19	161(19.9)	116(14.4)	277(34.3)
Marital status	Married	20(2.5)	25(3.1)	45(5.6)
	Unmarried	371(46)	371(46)	742(92.0)
	Others	13(1.6)	7(0.8)	20(2.4)
Religion	Protestant	215(26.6)	211(26.1)	426(52.7)
	Orthodox	153(19.0)	165(20.4)	317(39.4)
	Muslim	19(2.4)	20(2.5)	39(4.9)
	Others	17(2.1)	7(0.9)	24(3.0)
Grade	Grade 9	144(17.8)	155(19.2)	299(37.0)
	Grade 10	136(16.9)	109(13.5)	245(30.4)
	Grade 11	59(7.3)	74(9.2)	133(16.5)
	Grade 12	65(8.05)	65(8.05)	130(16.1)
School performance	High level	125(15.5)	61(7.5)	186(23.0)
	Medium level	218(27)	266(33)	484(60.0)
	Low level	61(7.5)	76(9.5)	137(17.0)
Current place of residence	Hawassa city	374(46.3)	377(46.7)	751(93.0)
	Out of Hawassa city	30(3.7)	26(3.3)	56(7.0)

Among female study subjects, nearly half 180(44.7%) have good knowledge about family planning methods, pregnancy and its complication as measured by scoring above the mean values for a serious of eleven questions targeted for knowledge assessment. While for male study subjects, having good knowledge accounted for 228(56.4%). Among the female adolescent students 20 (5.0%) had personal experience of pregnancy and 19(4.8%) personal experience of miscarriage, abortion or stillbirth. Male adolescent

students were also asked about their experience regarding the occurrence of pregnancy and the related complication in their sexual partner if any. Accordingly, 45(11.1%) of them reported their previous experience of pregnancy in their sexual partners while 41(10.1) reported the occurrence of miscarriage, abortion or stillbirth in their sexual partners. About 112(13.9%) study subjects had a family history of having a child before 20 years and very few 44(5.5%) of the study subjects, had lost their family member because of pregnancy related complication (Table 2).

Table 2: Reproductive Health Knowledge and related Personal, Partner and Family History among high school Adolescents (N=807) in Hawassa City from February to March 2015

Variable		Male No (%)	FemaleNo (%)	Total No (%)
Knowledge on family planning, pregnancy	Good	228(56.4)	180(44.7)	408 (50.6)
and its complication	Poor	176(43.6)	223(55.3)	399(49.4)
Having personal experience of pregnancy	Yes		20(5.0)	20(5.0)
previously (For females only)	No		380(95.0)	380(95.0)
Having previous experience of pregnancy in	Yes	45(11.1)		45(11.1)
your sexual partners (For males only)	No	359(88.9)		359(88.9)
Having personal experience of miscarriage,	Yes		19(4.8)	19(4.8)
abortion or still birth (For females only)	No		381(95.2)	381(95.2)
Having previous experience of miscarriage,	Yes	41(10.1)		41(10.1)
abortion or still birth in your sexual	No	363(89.9)		363(89.9)
partners (For males only)				
Having family member who gave birth	Yes	64(7.9)	48(6.0)	112(13.9)
to a child before 20 years of age	No	340(42.1)	355(44.0)	695(86.1)
Having history of losing family member	Yes	23(2.9)	21(2.6)	44(5.5)
below 20 years of age due to complications	No	381(47.2)	382(47.3)	763(94.5)
of pregnancy				

The proportion of adolescents who had desire to have a child before 20 years of age was 56(6.9%). Partial correlation among variables of TPB and other variables including knowledge about family planning, pregnancy and related complications, and previous experience were undertaken. Accordingly, all TPB components correlated significantly and positively with behavioral intention. Subjective norm ($r=0.485$, $p<0.25$) demonstrated the highest correlation followed by perceived behavioral control ($r=0.343$, $p<0.25$) and attitude ($r=-0.250$, $p<0.25$). Previous experience ($r=-0.032$, $p<0.25$) and knowledge about family planning, All factors including the direct measures of the model, the indirect measure of the model and those external to the model, which had significant association with the intention to have a child, were entered in to multiple linear regression models at a time. According to the standardized beta coefficient in the multiple regression model, from the direct measure of the model, attitude towards having a child ($\beta=0.165$, $p<0.001$), supportive subjective norm towards having a child ($\beta= 0.408$, $p<0.001$) and perceived behavioral control that indicate their perception of having a decision making power over having a child ($\beta=0.168$, $p<<0.001$) were

pregnancy and related complications, (r= -0.255, p<0.25) were significantly and negatively correlated with behavioral intention (Table 3).

Table 3: Partial Correlation between Theory of Planned Behavior Model Components and Other Important Variables among high school Adolescents in Hawassa City from February to March 2015

Variables	1	2	3	4	5	6
Intention	-	0.250*	0.485*	0.343*	-0.032	-0.255
Attitude		-	-0.157	-0.114	0.033	0.194*
Subjective Norm	-	-	-	0.482*	-0.107	-0.118
Perceived Behavioral Control	-	-	-	-	-0.166	-0.107
Previous Experience	-	-	-	-	-	0.109
Knowledge about FP, pregnancy and its complications	-	-	-	-	-	-

Significant less than 0.001 *

significantly associated with intention to have a child. Subjective norm demonstrated the highest potential predictor followed by perceived behavioral control and attitude. From the indirect measures of the model, outcome evaluation (β=0.151, p<0.001), normative belief (β=0.256, p<0.001), motivation to comply (β=0.081, p=0.03) and perceived control (β=0.098, p=0.003) were significantly associated with the intention to have a child. From factors external to the model sex, being female increase the intention to have a child (β= 0.0.021, p< 0.048). Being in the age group of 18-19 years (β= 0.0.041, p=0.021) and having low performance in school (β =0.064, p=0.038) increases the intention. The intension to have a child decreases among grade 12th adolescent students (β=- 0.034, p=0.03) and as the knowledge about family planning, pregnancy and related complications increases the intention to have a child will be decreased by (β=-0.109, p=0.002) (Table 4). The present study further found out that, the direct predictors of theory of planned behavior explained 30.5% of the variability in intention to have a child and when the direct predictors combined with the external variables of the model together, they explained 31.6% of the variability in intention to have a child.

This study applied an extended version of the TPB framework to explain the intended and actual desire of having a child among high school adolescents. The direct variables and variables that are external to the model explained 31.6% of the variance in intentions to have a child before 20 years of age. This result is in line with study conducted among female adolescent in Ethiopia, which showed that the theory explained 29% of the variance in their intention to use contraceptives17. As per the finding of another study conducted among Tanzanian teachers using TPB, the theory also explained 30% of the variance18.

The result of this study indicated that adolescent students' intention to have a child was primarily related to subjective norms and their perceived behavioral control. While attitude has less weight, it was still a significant predictor of the adolescent students' intention to have a child. This finding further showed that adolescents' intention to have a child depend on how they perceived the significant others thinking of them if they have a child before their age of 20 as normative actions and their perceived easy or difficulty associated with having a child before their 20 years of age. The founder of the theory pointed out that, the relative importance of attitude, subjective norms

Table 4: Multiple Linear Regression Analysis of Theory of Planned Behavior Model Components and Other Important Variables among high school Adolescents in Hawassa City from February to March 2015

Model	Standardized coefficients B	t	Sig
Predictors of the intention to have a child from direct measures Constant		11.44	<0.001
Attitude towards having a child	0.165	5.574	<0.001
Subjective norms towards having a child	0.408	12.195	<0.001
Perceived Behavioral Control	0.168	5.043	<0.001
Predictors of the intention to have a child from measures Constant	11.568	000	
Behavioral belief	-0.042	-1.224	0.221
Outcome evaluation	0.151	4.461	<0.001
Normative belief	0.256	6.615	<0.001
Motivation to comply	0.081	2.168	0.03
Control belief	0.064	1.794	0.073
Perceived behavioral control	0.098	2.966	0.003
Predictors of the intention to have a child from external variables			
Constant		5.937	000
Sex (Female)	0.021	2.701	0.048
Age (18-19)	0.041	3.240	0.021
Grade (12th Grade)	-0.034	1.029	0.03
Class (low level)	0.064	2.076	0.038
Knowledge (good)	-0.100	3.117	0.002

and perceived behavioral control in the prediction of intention is expected to vary across behavior and situation[16].

Among the salient beliefs, the study group had strongly favorable outcome evaluation to have a child and perceive normative belief pressure positively. The finding of the study is consistent with a study conducted in South Africa where the intention of teenagers to have a child is more dependent on their positive and negative expectations of the outcomes of the behavior (intention to have a child). Their belief in the ability to exert control over their own behavior is also an important contributing factor for the intention19.

Being female and age group of 18-19 years have significant association with intention to have a child during the period of adolescence. The finding goes in line with the finding of similar study conducted in Island that examined the intention to have a child with respect to age. The study found out that practical considerations associated with teen motherhood were most often identified by the oldest teens with the age of 18–19 years (20).

As the grade of the participants was advancing to 12th the intention to have a child showed reduction. When the finding is compared with study conducted in Ethiopia, where a strong inverse relationship between early childbearing and women's education were also evident; teenagers with less education were much more likely to have started childbearing than those having a better-educated7, 21. Having low performance in school was found to increase the adolescent students' intention to have a child. This could be related with the fact that, students with low school performance may assume that engaging in marriage and having a child could help them to settle in family business without risking their life for economic struggle, which is among the common practices in rural Ethiopian community.

CONCLUSION AND RECOMMENDATION

The study revealed nearly one-tenth of the respondents had an intention to have a child before their age of 20 years. It was further found out that, the direct variables of the model and variables that are external to the model explained 31.6% of the variance in intentions to have a child before 20 years of age. Among the TPB components, subjective norm is the highest potential predictor followed by perceived behavioral control and the attitude. Among factors that are external to the model sex, age, grade and school performance had association with intention to have a child. When comparing the behavioral intention to have a child between sex categories, females had more intention than males. When working on programs targeting for controlling adolescent pregnancy, attention should be paid on their referents such as partner, other family member, friends and religious leader. Focus should also be given to change the perception of adolescents on the understanding of their controlling ability, which could also have paramount benefit in reducing their intention to have a child.

FUNDING STATEMENT

Jimma University College of Public Health and Medical Sciences funded this research

COMPETING INTEREST

The authors declare that there is no conflict of interest regarding the publication of this paper

ACKNOWLEDGMENT

We would like to thank Jimma University for funding the research. Our grateful thanks also go to all of the participants of this study, the data collectors and the supervisors. Finally, we extend our thanks to Fikrte Geremew, Tirsit Mehari, Zewdie Birhanu and Bezawit Temesgen for their technical support during the conduct of the study.

CORRESPONDING AUTHOR:

Tesfalem Teshome, MSc
Department of Public Health, Hawassa College of Health Sciences, Hawassa, Ethiopia
E-mail: tesfabemnet2005@gmail.com

REFERENCES

1. United Nation International Children Emergency Fund (UNICEF). State of the world's children as adolescent - An age of opportunity. 2011. http://www.unicef.org/media/files/SOWC
2. United Nation International Children Emergency Fund (UNICEF). Unite for children in Ethiopia. 2014. http://www.unicef.org/infobycountry/ethiopia_statistics.
3. International Federation of Obstetricians and Gynecologists. Adolescent Sexual and Reproductive Health. Draft Final Report, 2009.
4. African Population and Health Research Center. Protecting in-School adolescents from HIV/ AIDS, STIs and unwanted Pregnancy: Evidence-based lessons for programs and policy, 2009.
5. World Health Organization, Guidelines for preventing early pregnancy and poor reproductive outcomes among adolescents in developing countries, WHO, 2011. http://www.who.int/about/licensing/copyright_form/en/index.html
6. WHO. MPS NOTES: Adolescent pregnancy. WHO, 2008; 1 (1). http://www.who.int/maternal_child_adolescent/mpsnnotes_2_lr.pdf
7. Central Statistical Agency [Ethiopia] and ICF International. Ethiopia Demographic and Health Survey 2011. Addis Ababa, Ethiopia and Calverton, Maryland, USA: Central Statistical Agency and ICF International, 2012.
8. Samuel Mathewos, Aleme Mekuria. Teenage Pregnancy and Its Associated Factors among School Adolescents of Arba Minch Town, Southern Ethiopia. Ethiop J Health Sci. 2017; 28(3): 287. doi:http://dx.doi.org/10.4314/ejhs.v28i3.6
9. Nigatu DT (2017) Determinants of Sexual Debut among High School Girl Students in Arsi Zone, Huruta Town, Ethiopia. Epidemiology (Sunnyvale) 7: 308. doi:10.4172/2161-1165.1000308
10. Abdella M, Abraha A, Gebre A, Surender Reddy PMagnitude and Associated Factors for Home Delivery among Women Who Gave Birth in Last 12 Months in Ayssaita, Afar, Ethiopia-2016. A community Based Cross Sectional Study. Glob J Fertil Res 2017; 2(1): 030-039.
11. Niguse Tadele and Tafesse Lamaro. Utilization of institutional delivery service and associated factors in Bench Maji Zone, Southwest Ethiopia: community based, cross sectional study. BMC Health Services Research 2017; 17:101
12. Mulumebet Abera1, Abebe G/mariam1, Tefera Belachew. Predictors of safe delivery service utilization in Arsi Zone, South-east Ethiopia. Ethiop J Health Sci. 2011; 21
13. World Health Organization. Maternal mortality in 2000: Estimates developed by WHO, UNICEF, and UNFPA. WHO, 2004.
14. World Health Organization. The World health report 2005: Make every mother and child count. WHO, 2005.
15. World Health Organization. Pregnant adolescents: Delivering on global promises of hope. WHO, 2006.
16. Ajzen I. The theory of planned behavior .Organizational behavior and human decision process. 1991; 50 (2):179-211. doi:10.1016/0749-5978(91)90020-T
17. Fekadu Z and Kraft P. predicting intended contraception in sample of Ethiopian female adolescent: the validity of the theory of planned behavior. Psychology and health.2001;16:207-222
18. D.C Kakoko, A.N.Astrom, Lugoe W.L, et al. Predicting intended use of voluntary HIV counseling and testing services among Tanzanian Teachers using the theory of planned behavior. Social Sciene and Medicine. 2006; 63:991-999.
19. Kanku T, Mash R. Attitudes, perceptions and understanding amongst teenagers regarding teenage pregnancy, sexuality and contraception in Taung. SA Fam Pract 2010; 52 (6).
20. Cynthia Rosengard, Lealah Pollock, Sherry Weitzen, Ann Meers and Maureen G. Phipps. Concepts of the Advantages and Disadvantages of Teenage Childbearing among Pregnant Adolescents: A Qualitative Analysis. Pediatrics 2006; 118: 503. DOI: 10.1542/peds.2005-3058. www.pediatrics.org/cgi/doi/10.1542/peds.2005-3058
21. Wubegzier Mekonnen Ayele. DHS Working Papers; Differentials of Early Teenage Pregnancy in Ethiopia 2000 and 2005. USAID, 2013.

MENSTRUAL HYGIENE MANAGEMENT PRACTICES AND ASSOCIATED FACTORS AMONG URBAN AND RURAL ADOLESCENTS IN BAHIR DAR CITY ADMINISTRATION, NORTHWEST ETHIOPIA

Muluken Azage, BSc., MPH., PhD.[1], *Tadese Ejigu, BSc., MPH., PhD.*[1], *Yeshalem Mulugeta, BSc., MPH., PhD*[1]

ABSTRACT

BACKGROUND: Menstrual hygiene management (MHM) practice varies greatly from country to country, and within the countries. Ethiopia has adopted youth friendly reproductive health and sexual health services to improve the health of young people including adolescents. Credible evidence on MHM practice at community level after adoption of youth friendly service is limited.

OBJECTIVE: The aim of the study was to assess MHM practice among adolescent girls in urban and rural areas.

METHODS: A community based comparative cross-sectional study design was employed in urban and rural kebeles of Bahir Dar city administration. Multi-stage stratified random sampling technique was used to select the study participants. Data were entered in to SPSS version 16. Descriptive statistics were used to describe data. Multivariable logistic regression analysis was used to identify the predictors of good menstrual hygiene practice.

RESULTS: Safe MHM practice was 24.5% and did not show significant variation between urban and rural adolescent girls. However, significantly higher numbers of adolescent girls in the urban area used sanitary pads than the rural adolescent girls. Being older, attending formal education and educational status of participants' mother were factors associated with safe MHM practice.

KEYWORDS: menstrual, hygiene, practice, adolescent, girls, Ethiopia

(Ethiopian Journal of Reproductive Health; 2018; 10; 4: 10-20)

1 *School of Public Health, College of Medicine and Health Sciences, Bahir Dar University*

INTRODUCTION

Adolescence is the period of transition from childhood to adulthood which is characterized by major physiological, psychological and social changes1. Menstruation is one of the most important changes occurring among girls during the adolescent years of age2-4. Menstruation requires proper menstrual hygiene management practice which is essential for women and girls to protect from infections that are related to improper practice of menstrual hygiene, participate in society with dignity and comfort5.

Studies revealed that proper menstrual hygienic management practices during menstruation such as use of sanitary pads and frequent washing of the genital area are essential for the mental and physical well-being of women and adolescent girls5. Hygiene related practices of women and adolescent girls including disposal of used menstrual management materials are also considerable importance as it had health impacts in terms of increasing vulnerability to infection(5). Poor hygienic practice of adolescents during menstruation predisposed them to reproductive tract infection, urinary tract infection and bad odor6, 7.

Menstrual hygiene management is practiced differently in accordance with cultural, social, educational and economic status of the community8. Adolescent girls in developing countries often receive minimal instruction on menstrual hygiene management because menstruation is seen as a taboo by many communities, which makes it extremely difficult for adolescent girls to acquire necessary information and support from parents and school teachers6, 9. There is gross lack of information on menstrual preparedness and management among adolescent girls10. As a result their experience has been confusing, frightening, and shame-inducing and can result in stress, fear and embarrassment, and social exclusion during menstruation11.

Poor family support, lack of support from teachers, lack of access to sanitary products, and limited economic resources to purchase sanitary products, inadequate water and sanitation facilities at school and lack of a clean and private space were mentioned as prominent challenges for menstrual hygiene management12-14.

Studies in other countries have shown that a significant difference in proportion of menstrual problems and practices in rural and urban adolescent girls was documented15-17. Studies conducted in Ethiopia so far have been conducted in school adolescent girls18-21 which are insufficient to describe the status of menstrual hygiene management practice and its associated factors among out of school adolescent girls. In Ethiopia, there is cross-sociocultural diversity and multi-dimensional cultures and taboos which have an effect on proper menstrual hygiene management practices. Moreover, youth friendly reproductive and sexual health service has adopted and implemented in health facilities to access and make it friendly youths including adolescents. Thus, community-based studies in different areas can provide inclusive evidence on menstrual hygiene management practice to identify the gaps and strengthen the existing strategies on reproductive and sexual health. Therefore, this study was designed to assess menstrual hygiene management practice among adolescent girls in urban and rural areas of Bahir Dar city administration, northwest Ethiopia.

METHOD AND MATERIALS

Study design: A community based comparative cross-sectional study design was conducted to determine menstrual hygiene management practices and associated factors among urban and rural adolescents in Bahir Dar city Administration, Northwest Ethiopia.

Study setting and population

The study was conducted from February 5 to 25, 2015 in Bahir Dar city administration, Amhara National Regional State. Bahir Dar city is the part of

the city administration which is located at 565 km in Northwest direction of Addis Ababa, Ethiopia. The city administration has nine urban kebeles and nine rural kebeles for administrative purposes. Based on 2007 national census, the estimated population of city administration in 2015 is 297,775, of which 156, 515 are females and 40,028 were adolescent girls (10-19 years) (18). All adolescent girls in the study area during the study period were the study population.

Sample size determination and sampling procedure: The required sample size was calculated using two population proportion formula by considering the following assumptions: a 95% confidence level (1.96), 80% power, two comparison groups [urban (n1) to rural (n2)population ratio1:2], 50% proportion of safe menstrual hygiene management practice among urban adolescent girls since there was no previous study, 40% practice of safe menstrual hygiene among rural adolescent girls to detect 10 % difference between urban and rural adolescent girls and design effect 2. The final sample size was 1010 adolescent girls (337 for urban and 673 for rural) by including 10% non-response rate.

Multi-stage stratified sampling technique was used to select adolescent girls in urban and rural kebeles of Bahir-Dar city administration. First, three kebeles from each stratum (urban and rural areas) were randomly selected. Proportion to size allocation was made to determine the required sample size from each selected kebeles. Adolescent girls were selected using systematic random sampling technique.

Study variables: Menstrual hygiene management practice was the outcome variable whereas socio-demographic variables (Age, age at menarche, marital status, residence, educational status, maternal education) were the explanatory variables. Menstrual hygiene management indicators were developed from previous study using three composite item questions which had yes or no response (use of menstruation pad, frequency of washing genitalia and way of disposing used menstruation pad). Menstrual hygiene management practice was categorized into 'safe' or 'unsafe' menstrual hygiene management practice. If adolescent girls used menstruation pad, wash their genitalia two or more times per day and disposed of used menstruation pad in to latrine, their menstrual management hygiene practice was classified as 'safe' otherwise 'unsafe'.

Data collection tool: Data were collected using structured interviewer administered questionnaire. The questionnaire comprises of socio-demographic variables of the study participants and parents of participants, knowledge on menstruation and menstrual hygiene management practices. The questionnaire was developed in English then translated in to Amharic (local language) then back to English to check consistency. Five diploma nurses and two BSc nurses were recruited as data collectors and supervisors during the data collection process.

Data quality assurance: Data collectors and supervisors were trained on the purpose of the study, data collection technique and tool for two days. The questionnaire was pre-tested on 5% of the sample size in kebeles where the main study was not undertaken and the necessary amendments were done accordingly. The filed questionnaires were reviewed daily by principal investigator for ensuring completeness of questions. Incomplete questionnaires were discarded from the analysis.

Data analysis: Data were entered and analyzed using SPSS statistical package version 21.0. Descriptive statistics were used to describe data. Bivariate and multivariable logistic regressions were used to identify predictors of safe menstrual hygiene management. The Hosmer-lemeshow test was checked to assess the model fitted to conduct logistic regression. A p-value < 0.2 was considered to retain variables for multivariable logistic regression model. Backward stepwise logistic regression model was used during multivariable logistic

regression to control confounding effect. Crude and Adjusted odds ratios with 95% confidence intervals were calculated for each of independent variables to measure the strength of the association between outcome and independent variables. A p-value < 0.05 was considered as level of significance.

Ethical considerations: The study was approved by ethical review committee of College of Medicine and Health Sciences, Bahir-Dar University. Letter of permission was taken from respective administration. Those participants whose age is <18 years and >=18 years provided assent and informed verbal consent respectively. Verbal informed consent was also obtained from the parents of those participants whose age is <18 years before data collection.Privacy and confidentiality were maintained throughout the study period by excluding personal identifiers during data collection.

RESULTS

A total 1010 adolescent girls, 336 from urban and 670 from rural, participated in the study with a response rate of 99.6%. The mean age (+SD) of urban and rural adolescent girls was comparable (17.29 (+1.40) Vs 17.27 (+1.43) years respectively). Almost all participants in urban and rural adolescent girls were from Amhara ethnic group (97.0% vs 99.6% respectively). The majority of urban (92.2%) and rural (93.4%) adolescent girls were Orthodox Christian followers. Above three-fourth of urban (94.1%) and 76.3% of rural adolescent girls were attend primary education. Above two third of urban (68.4%) and rural (70.9%) adolescent girls were single. Regarding to their mother's education status, 61.8% of urban and 72.3% of rural mothers of adolescent girls were unable to read and write whereas only, 7(2.1%) urban and 24(3.6%) rural mothers of adolescent girls attended college and above. One hundred ninety-eight (58.9%) urban and 323(48.2%) rural adolescent girls had pain during menses. Above one fourth (26.3%) of urban and18.4% of rural adolescent girls could not attend formal education during menses (Table 1).

Table1: Socio-demographic characteristics of respondents in Bahir Dar City Administration, 2015

Variables		Urban n=336(%)	Rural n=670(%)	Total
Age in years				
	15-17	176(52.4)	330(49.3)	506(50.3)
	18-19	160(47.6)	340(50.7)	500(49.7)
Education status				
	Unable to read and write	14(4.1)	125(18.6)	139(13.8)
	Able to read and write	6(1.8)	34(5.1)	40(4.0)
	Primary	145(43.2)	315(47.0)	460(45.7)
	Secondary	139(41.4)	170(25.4)	309(30.7)
	College and above	32(9.5)	26(3.9)	58(5.8)
Marital status				
	Single	255(75.9)	458(68.4)	713(70.9)
	Married	77(22.9)	195(29.1)	272(27.0)
	Divorced	4(1.2)	17(2.5)	21(2.1)
Religion				
	Orthodox	310(92.2)	626(93.4)	936(93.0)
	Protestant	3(1.0)	1(0.2)	4(0.5)
	Catholic	23(6.8)	43(6.4)	66(6.5)
Ethnicity				
	Amhara	326(97.0)	667(99.6)	993(98.7)
	Others*	10(3)	3(0.4)	13 (1.3)
Education status of mothers				
	Unable to read and write	243(72.3)	414(61.8)	657(65.3)
	Able to read and write	31(9.2)	109(16.3)	140(13.9)
	Primary	29(8.7)	76(11.3)	105(10.4)
	Secondary and above	33(7.7)	71(10.6)	101(10.4)
Living with older sister/relative				
	Yes	155(46.1)	228(34.0)	383(38.1)
	No	181(53.9)	442(66.0)	623(61.9)
Attending formal education				
	Yes	213(63.4)	272(40.6)	485(48.2)
	No	123(36.6)	398(59.4)	521(51.8)
Do you have pain during menses?				
	Yes	198(58.9)	323(48.2)	521(51.8)
	No	138(41.1)	347(51.8)	485(48.2)
School absenteeism due to menses				
	Yes	83(26.3)	94(18.4)	177(21.4)
	No	233(73.7)	417(81.6)	650(78.6)

*Agew, Tegire

Menstrual hygiene management practice of adolescent girls

Almost one-third (29.5%) of urban and 21.9% of rural adolescent girls did safe menstrual hygiene practices. Two hundred twenty-two (76.3%) urban and 230 (49.4%) rural adolescent girls used menstruation pad during menstruation. Three hundred twenty-five (96.7%) urban and 655(97.8%) rural adolescent girls washed their genitalia during menstruation. One hundred forty-eight (45.5%) urban and 260(39.7%) rural adolescent girls used soap to clean their genitalia during menstruation. One hundred ten 110(33.8%) urban and 113(17.2%) rural adolescent girls washed their genitalia four or more times per day. Forty-five (15.5%) urban and 207 (44.4%) rural adolescent girls reuse cloth that they used during menstruation. One hundred eighteen (48.0%) urban and 179 (69.1%) rural adolescents discard used menstruation pad/cloth into latrine (Table 2).

Table 2: Menstrual Hygiene Management Practice among Adolescents in Bahir Dar City Administration, 2015

Variables		Urban n=336(%)	Rural n=670(%)	Total	
Thinking menses needs special care	Yes	325 (96.7)		642 (95.8)	967 (92.5)
	No	11 (3.3)		28 (4.2)	39 (7.5)
Use menstruation pad/cloth during menses	Yes	291(86.6)		466(69.5)	757(75.3)
	No	45(13.4)		204(30.5)	249(24.7)
Type of menstruation pad/cloth (n=757)	Menstruation pad		222(76.3)	230(49.4)	452(59.7)
	New cloth	36(12.4)		74(15.9)	110(14.5)
	Old cloth	33(11.3)		162(34.8)	195(25.8)
Do you wash the vagina during menses?	Yes	325(96.7)		655(97.8)	980(97.4)
	No	11(1.1)		15(2.2)	26(2.6)
What do you use to wash it? (n=980)	Water only	177(54.5)		395(60.3)	572(58.4)
	Water and soap		148(45.5)	260(39.7)	408(41.6)
Frequency of washing (n=980)	Once	14(4.3)		32(4.9)	46(4.7)
	Two times	78(24.0)		243(37.1)	321(32.8)
	Three times	123(37.6)		267(40.8)	390(39.8)
	Four and above times		110(33.8)	113(17.2)	223(22.7)
Where do you put your menstruation pad/cloth?(n=757)					
I reuse it		45(15.5)	207(44.4)	252(33.3)	
I dispose it		246(84.5)	259(55.6)	505(66.7)	
Where did you put if you dispose used menstruation pad/cloth (n=505)					
In latrine		118(48.0)	179(69.1)	297(58.8)	
I disposed in the compound		5(2.0)	10(3.9)	15(3.0)	
Dispose together with solid wastes		123(50.0)	70(27.0)	193(38.2)	
Menstrual hygiene	Safe*	99(29.5)		147(21.9)	246(24.5)
	Unsafe	237(70.5)		523(78.1)	760(75.5)

*If adolescent girls used menstruation pad, wash their genitalia two or more times per day and disposed of used menstruation pad in to latrine, their menstrual management hygiene practice

Factors associated with safe menstrual hygiene practice

In bivariable logistic regression place of residence, age, educational status, maternal education, being a student, marital status, age of menarche and perception of adolescent girls on menses needs special care showed statistically significant association with safe menstrual hygiene management practice (Table 3).

Table 3: Factors Associated with Menstrual Hygiene Management Practice of Adolescent Girls in Bahir Dar City Administration, 2015

Variables		Menstrual hygiene practice			
		Safe	Unsafe	COR (95%CI)	AOR (95%CI)
Place of residence	Urban	99	237	1.48(1.1,2.0)	
	Rural	147	523	1.00	
Age					
	15-17 years	107	399	1.00	1.00
	18-19 years	139	361	1.43(1.0,1.9)	1.46(1.1,1.9)
Educational status					
	No formal education	16	163	1.00	1.00
	Primary	101	359	2.86(1.6,5.0)	5.01(2.5,9.7)
	Secondary	106	203	5.32(3.0,9.3)	8.53(4.4,16.4)
	College and above	23	35	6.69(3.2,13.9)	6.96(3.1,15.4)
Thinking menses needs special care					
	Yes	243	724	4.02(1.2,13.1)	3.21(1.1,10.9)
	No	3	36	1.00	1.00
Education status of mothers					
	Cannot read and write	143	514	1.00	1.00
	Can read and write	31	109	1.02(0.6,1.5)	3.14(1.7,5.5)
	Primary	36	69	1.87(1.2,2.9)	3.29(1.9,5.5)
	Secondary and above	36	68	1.90(1.2,2.9)	3.62(2.1,6.0)
Being a student during survey					
	Yes	144	341	1.73(1.2,2.3) 1.00	1.80(1.2,2.5)
	No	102	419	1.00	1.00
Marital status					
	Married	51	221	1.56(1.1,2.2)	
	Single/divorced	189	524	1.00	
Age of menarche					
	11-13years	198	642	0.94(0.6,1.4)	
	14-15years	15	17	2.70(1.2,5.9)	
	16-18years	33	101	1.00	

In the multivariable logistic regression analysis age had associations with menstrual hygiene practice, adolescent girls whose age is >18years of age were 1.4 times more likely to have safe menstrual hygiene management practice than their counter parts [AOR=1.46,95% CI: (1.1, 1.9)]. Educational status of adolescent girls and their mothers had associations with their menstrual hygienic practice. Adolescent girls attended primary education were 5 times [AOR=5.01, 95% CI: (2.5, 9.7)], those attended secondary education were 8.5 times [AOR=8.53, 95% CI: (4.4, 7.89, 16.4)] and those attend college and above were 6.9 times [AOR=6.96, 95% CI: (3.1, 15.4)] more likely to have safe menstrual hygiene management practice than those who had no formal education. Adolescents whose mother was able to read and write were 3 times more likely to have safe menstrual hygiene management practice [AOR=3.14, 95% CI: (1.7, 5.5)] than those mothers who could not able to read and write. Mothers of adolescent girls who attended primary education [AOR=3.29, 95% CI: (1.9, 5.5)] and secondary and above [AOR=3.62, 95% CI: (2.1, 6.0)] were 3.2 times and 3.6 times, respectively, more likely to have safe menstrual hygiene management practice than those mothers who could not able to read and write. Being a student currently and adolescents who believe menses needs special care were factors associated with safe menstrual hygiene practice. Adolescents who are a student currently were 1.8 times and those who believe menses needs special care were 3.2 times more likely to have safe menstrual hygiene management practice than their counterparts [AOR=1.80, 95% CI: (1.2, 2.5)] and [AOR=3.21, 95% CI: (1.1, 10.9)] respectively (Table 3).

DISCUSSION

The magnitude of safe menstrual hygiene management practice (considering use of menstruation pad, frequency of washing genitalia and way of disposing the used menstruation pad) among the study participants was only 24.5 % (95%CI: 21.8, 27.1%).This study showed safe menstrual hygiene management practice did not show statistically significant differences among urban and rural adolescent girls [29.5 %, (95% CI: 24.6, 34.4) Vs21.9 %,(95% CI: (18.8, 25.1)]. The possible explanation for this difference might be related to the composite variables that we used to measure safe menstrual hygiene practice. For instance, more urban (66.0%) compared to rural adolescents (34.4.0 %) used menstruation pad whereas proper disposal of used menstruation pad (disposal into latrine) was higher in rural (69.0%) area than urban (48.0%). However, disposal together with solid wastes was lower in rural area (27.0%) than urban area (50.0%). The reason that urban adolescents in the study area are more likely to dispose used menstruation pad together with solid wastes might be due to the convenient of disposal methods. In urban adolescents are living in houses which have water flushed toilet which is not compatible and convenient to dispose used menstruation pad into sewer system due to blockage of the sewerage system unlike the rural adolescent girls lived in a house with latrine that is convenient for receiving and disposing of used menstruation pad.

Among all participants, 75.3% of them used any absorbent material of which 44.9% (95%CI: 41.9%, 48.0%) were using menstruation pad. The overall use of menstruation pad in this study is higher than the study done in Northeast Ethiopia (35.4%)19 and lower than the community based studies done in India which found in the range between 49% to 70.0%20 -22; however, it is consistent with a systematic review and meta-analysis study done in India which found 45%(38% to 52%)23. The different results between community-based studies might be related to time gap between the studies, the cultural and economic difference in the study areas.

School absenteeism was documented among adolescent in low income countries during menstruation due to

several reasons. Almost one-fourth of urban and one-fifth of rural adolescent girls were unable to attend formal education during menses in the study. This finding is consistent with systematic review and meta-analysis done in India16. However, it is lower than studies done in Kenya9, 22 and Bangladesh23 where 41% of girls post-menarche reported usually missing school during menstruation. The different might be duet to variation in the study participants. In this study the participants were adolescent from the community whereas the study participants conducted in Kenya and Bangladesh were school adolescent girls.

This study revealed that menstruation pad utilization had shown a significant variation in urban and rural adolescent girls with 66.1% (95% CI: 61.0%, 71.2%) Vs 34.3% (95% CI 30.7%, 37.9%) respectively. This result is in line with a systematic study in India which revealed that sanitary pads were highly utilized in urban (pooled magnitude was 67%; 95%CI; 57% to 76%) areas than rural areas (pooled magnitude was 32%; 95%CI; 25% to 38%)23. The different on menstruation pad use between urban and rural adolescent girls might be due to the fact that urban adolescent girls and their mothers have more awareness of reproductive health related issues, have better access for menstruation pad and parental/family communication about menstruation and its hygienic management than the rural adolescent girls.

This study also revealed that adolescent girls in urban (96.7%) and rural (97.8%) areas had no significant variations of washing their genital area during menses; however, there were variation in using soap and frequency of washing between rural and urban participants; from adolescent girls who wash their genital area during menses; more urban than rural adolescents use soap to clean their genitalia (45.5% Vs 39.7%) and frequency of washing at least four times was higher in urban than rural(33.8%Vs 17.2% respectively). The difference might be due to the level of awareness on the benefit of using soap as the urban adolescent girls might have a higher tendency to talk about menstruation and its management with their parents compared to rural girls; and they might also wash their genitalia more frequently as they might have enough time compared to rural adolescent girls since these girls might spend much of their time in agricultural activities). In addition, the urban adolescent girls might also have a better access for water to wash their genitalia more frequently.

Age and educational status of adolescent girls in this study were the predictors of safe menstrual hygiene management practice. Adolescent girls with age 18 years and above had higher safe menstrual hygiene management practice than adolescent girls with age less than 18 years. The possible explanation might be due to prior awareness at school since if their age is beyond 18, they are highly likely to attend primary education than those whose age is <18 years which might bring a difference in awareness on menstruation and its management. In addition, those who are older than 18 years might also have a better experience regarding menarche and menstruation management compared to their counter parts. This is also supported by the current study as those adolescent girls attended formal educational had higher safe menstrual management practice than those who had no formal education. This finding is consistent with previous studies in West Bengal24. The possible explanation might be that educated adolescent girls had a chance of prior exposure about awareness on menstruation and proper menstrual hygiene management practice through their educational curriculum and/or informal communication between themselves and their teachers. Educational status of parents was an important predictor for menstrual hygienic management practice25. In this study educational status of the mothers was one of the predictors of safe menstrual hygiene management practice of adolescent girls which is consistent with

other studies in Ethiopia19, Nigeria26, Lebanon27, and India28. The possible reason could be that educated mothers might have awareness on practice of menstrual hygiene, could have open discussion with their daughters about menses and more likely provide sanitary pad for their daughters to clean their genitalia during menstruation.

Even though using well trained female data collectors to address the sensitive issue about menstrual hygiene, community based and comparative nature of among urban and rural could be the strengths of this study; the possibility of unavoidable social desirability bias and lack of qualitative component for triangulation could be taken as the limitation.

CONCLUSIONS

Safe menstrual management practice was low (24.5%) in the study area and did not show significant variation between in urban and rural adolescent girls. However, significantly higher numbers of adolescent girls in the urban area were using menstruation pad or sanitary pads as compared to the rural adolescent girls. Being older, attending formal education and educational status of the mother of the participants revealed significant positive association with safe menstrual management practice. Therefore, adolescent girls should be educated about safe menstrual hygiene management using different approaches in in and out-school areas giving emphasis for teenagers, further consolidating the contents.

FUNDING

Bahir Dar University covered only the transportation and per-diem cost of data collectors and supervisors during the data collection process.

AUTHORS' CONTRIBUTIONS

All authors (MA, TE and YM) were involved in the conception, design of the research project proposal; analysis, interpretation, report writing and approval of the final manuscript.

ACKNOWLEDGEMENTS

The authors would like to thank Bahir Dar Universities for covering the transportation and perdiem cost of data collectors and supervisors during the data collection process of the study. They also sincerely thank the study participants for their participation and the data collectors and supervisors for their unreserved effort to realize this study.

CORRESPONDING AUTHOR:

Muluken Azage, BSc., MSc., PhD.
School of Public Health, College of Medicine and Health Sciences, Bahir Dar University
Email: mulukenag@yahoo.com

REFERENCES

1. UNICEF. The State of the World's Children 2011, Executive Summary: Adolescence an Age of Opportunity. New York: UNICEF. 2011.
2. Jones LL, Griffiths PL, Norris SA, Pettifor JM, Cameron N. Age at menarche and the evidence for a positive secular trend in urban South Africa. Am J Hum Biol. 2009;21(1):130-2. Epub 2008/10/24.
3. Prentice S, Fulford AJ, Jarjou LM, Goldberg GR, Prentice A. Evidence for a downward secular trend in age of menarche in a rural Gambian population. Ann Hum Biol. 2010;37(5):717-21. Epub 2010/05/15.
4. Anderson SE, Must A. Interpreting the continued decline in the average age at menarche: results from two nationally representative surveys of U.S. girls studied 10 years apart. J Pediatr. 2005;147(6):753-60. Epub 2005/12/17.
5. Sommer M, Sahin M. Overcoming the taboo: advancing the global agenda for menstrual hygiene management for schoolgirls. Am J Public Health. 2013;103(9):1556-9. Epub 2013/07/20.
6. Garg R, Goyal S, Gupta S. India moves towards menstrual hygiene: subsidized sanitary napkins for rural adolescent girls-issues and challenges. Matern Child Health J. 2012;16(4):767-74. Epub 2011/04/21.
7. Balamurugan SS, Bendigeri N. Community-based study of reproductive tract infections among women of the reproductive age group in the urban health training centre area in hubli, karnataka. Indian J Community Med. 2012;37(1):34-8. Epub 2012/04/25.
8. Kumar A, Srivastava K. Cultural and social practices regarding menstruation among adolescent girls. Soc Work Public Health. 2011;26(6):594-604. Epub 2011/09/22.
9. McMahon SA, Winch PJ, Caruso BA, Obure AF, Ogutu EA, Ochari IA, et al. 'The girl with her period is the one to hang her head' Reflections on menstrual management among schoolgirls in rural Kenya. BMC Int Health Hum Rights. 2011;11:7. Epub 2011/06/18.
10. Chandra-Mouli V, Patel SV. Mapping the knowledge and understanding of menarche, menstrual hygiene and menstrual health among adolescent girls in low- and middle-income countries. Reprod Health. 2017;14(1):30. Epub 2017/03/03.
11. Sommer M. Ideologies of sexuality, menstruation and risk: girls' experiences of puberty and schooling in northern Tanzania. Cult Health Sex. 2009;11(4):383-98. Epub 2009/03/28.
12. Hennegan J, Dolan C, Steinfield L, Montgomery P. A qualitative understanding of the effects of reusable sanitary pads and puberty education: implications for future research and practice. Reprod Health. 2017;14(1):78. Epub 2017/06/29.
13. Kuhlmann AS, Henry K, Wall LL. Menstrual Hygiene Management in Resource-Poor Countries. Obstet Gynecol Surv. 2017;72(6):356-76. Epub 2017/07/01.
14. Shah SP, Nair R, Shah PP, Modi DK, Desai SA, Desai L. Improving quality of life with new menstrual hygiene practices among adolescent tribal girls in rural Gujarat, India. Reprod Health Matters. 2013;21(41):205-13. Epub 2013/05/21.
15. Thakre SB, Thakre SS, Ughade S, Thakre AD. Urban-rural differences in menstrual problems and practices of girl students in Nagpur, India. Indian Pediatr. 2012;49(9):733-6. Epub 2012/06/26.
16. van Eijk AM, Sivakami M, Thakkar MB, Bauman A, Laserson KF, Coates S, et al. Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis. BMJ Open. 2016;6(3):e010290. Epub 2016/03/05.
17. Mishra SK, Dasgupta D, Ray S. A study on the relationship of sociocultural characteristics, menstrual hygiene practices and gynaecological problems among adolescent girls in Eastern India. Int J Adolesc Med Health. 2016. Epub 2016/03/02.
18. Tegegne TK, Sisay MM. Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia. BMC Public Health. 2014;14:1118. Epub 2014/10/31.
19. Zegeye DT, Megabiaw B, Mulu A. Age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. BMC Womens Health. 2009;9:29. Epub 2009/10/07.
20. Upashe SP, Tekelab T, Mekonnen J. Assessment of knowledge and practice of menstrual hygiene among high school girls in Western Ethiopia. BMC Womens Health. 2015;15:84. Epub 2015/10/16.
21. Gultie T, Hailu D, Workineh Y. Age of menarche and knowledge about menstrual hygiene management among adolescent school girls in Amhara province, Ethiopia: implication to health care workers & school teachers. PLoS ONE. 2014;9(9):e108644. Epub 2014/10/01.
22. Mason L, Nyothach E, Alexander K, Odhiambo FO, Eleveld A, Vulule J, et al. 'We keep it secret so no one should know'–a qualitative study to explore young schoolgirls attitudes and experiences with menstruation in rural western Kenya. PLoS ONE. 2013;8(11).
23. Alam MU, Luby SP, Halder AK, Islam K, Opel A, Shoab AK, et al. Menstrual hygiene management among Bangladeshi adolescent schoolgirls and risk factors affecting school absence: results from a cross-sectional survey. BMJ Open. 2017;7(7):2016-015508.

PREVALENCE OF SURGICAL SITE INFECTION AND ASSOCIATED FACTORS AMONG MOTHERS AFTER CESAREAN DELIVERY IN ZEWDITU MEMORIAL HOSPITAL

Misganaw Worku Gelaw, MD,[1], Ahmed Abdella, MD, MSc (PHDC)[1]*

ABSTRACT

BACKGROUND: Cesarean delivery is the most common major operation carried out in obstetrics; constituting about 15% of all deliveries worldwide. Surgical site infections (SSIs) are among the most common infectious complications after cesarean delivery; which increase maternal morbidity and mortality, hospital stay and the cost of treatment. Hence, the aim of this study was to determine the prevalence of SSIs and associated factors among mothers after cesarean delivery.

METHODS: Institution based cross-sectional study was conducted in Zewditu Memorial Hospital from December, 2017 to April, 2018. A semi-structure questionnaire was used to collect data. Wound site was examined on the 3rd postoperative day and 1st postnatal visit. On the 14th and 30th postoperative day, each participant was contacted through telephone for any signs of wound infection. Bivariate and multivariate logistic regression analysis were done to identify the association between predictors and SSIs. A level of P<0.05 was considered statistically significant.

RESULTS: A total of 474 pregnant women were included in this study. The prevalence of SSIs was 8.4%. About 95% of SSIs were developed within two weeks after caesarean section and 70% of them were developed after discharge from the hospital. In this study, SSIs were significantly associated with; contaminated wound (AOR=5.64; ; 95%CI, 2.45-10.60; p=0.028), multiple vaginal examination (AOR=5.24; 95%CI, 10.5 -36.2; p=0.001), rupture of membrane more than 12 hours (AOR=7.84; 95%CI, 4.25 -12.34; p=0.002), labor more than 12 hours (AOR=3.57; 95%CI, 1.92 -9.42; p=0.023) and anemia (AOR=16.34 ; 95%CI, 12.9 -30.4; p =0.024).

CONCLUSION: In this study post-cesarean SSI was found to be high; and contaminated wound, multiple vaginal examination, rupture of membrane (>12 hours), prolonged labor (>12 hours) and anemia were significant predictors of SSIs.

KEYWORDS: Cesarean section, Postpartum, Surgical site infection

(Ethiopian Journal of Reproductive Health; 2018; 10; 4: 21-32)

1 *Department of Obstetrics and Gynecology, College of Medicine and Health Sciences, Addis Ababa University, Addis Ababa, Ethiopia*

INTRODUCTION

Caesarean section (CS) is a surgical procedure where a baby is delivered by cutting through the front wall of the abdomen to open the uterus. It's the most common major operation carried out in obstetrics; constituting about 15% of all deliveries worldwide; with regions of Latin America being the highest (29.2%), and Africa being the lowest (3.5%)1.

Though surgery is an essential component in health care, infections and complications after surgery significantly accounts for maternal morbidity and mortality. Surgical site infections (SSIs) are those infections which are confined to the incisions and involving structures adjacent to the wounds that were exposed during operation2. It was previously defined operationally as infection involving the abdominal incision or the uterus3, 4. But recently it's been defined as infection occurring within 30 days after a surgical operation (or within one year if an implant is left in place after the procedure) and affecting either the incision or deep tissue at the operation site5, 6.
SSIs in obstetrics accounts for the second most common cause of maternal mortality next to postpartum hemorrhage7. They are one of the most common causes of hospital acquired infections; accounting for 14-16% of the inpatient infections8 and 20-25% of all nosocomial infections worldwide9. Women undergoing cesarean delivery have a 5 to 20-fold greater chance of getting an infection compared with women who give birth vaginally. These infections can be in the organs within the pelvis, around the surgical incision and sometimes the urine10. In addition, maternal morbidity related to infections after cesarean section is eight-fold higher than after vaginal delivery11.

In developing countries, despite the increasing number of surgical patients, surgical care given to the patients is poor. In Sub-Saharan Africa, surgical cases are responsible for approximately 6-12% of all pediatric hospital admissions. However, due to poor surgical care, there is a significant number of death and disability associated with post-operative complications7. In Ethiopia, previous studies reported a 14.8-59% prevalence of hospital acquired infections12-15; and SSIs were indicated as the commonest cause of nosocomial infection in Obstetrics and Gynecology than in general surgical wards16.

Despite improvements in operating room practices, instrument sterilization methods, better surgical technique and the best efforts of infection prevention strategies, surgical site infections remain a major cause of hospital-acquired infections and rates are increasing globally even in hospitals with most modern facilities and standard protocols of preoperative preparation and antibiotic prophylaxis17. SSIs have been responsible for the increasing cost; morbidity and mortality related to surgical operations and continued to be a major problem worldwide18.

In spite of the availability of antibiotics, SSIs are still responsible for much morbidity and far reaching socioeconomic consequences for both patients as well as health care systems especially in developing countries like Ethiopia. A better understanding of SSI predictors might improve infection control by reducing clinical effects. Hence, the aim of this study was to determine the prevalence of SSIs and possible predisposing factors among mothers who delivered by cesarean section in Zewditu Memorial Hospital.

MATERIALS AND METHODS

Study area and design: Institution based cross-sectional study was conducted in Zewditu Memorial Hospital, Addis Ababa, Ethiopia from December 10, 2017 to April 8, 2018. Source population was all pregnant women attending obstetric service in ZMH. Study population included all pregnant women who were prepared for CS at ZMH.

Sample size determination: The desired sample size was determined using single population proportion formula:

$N = \frac{Z^2 pq}{d^2}$ Where:

N = Desired sample size

Z = 1.96 for 95% confidence level

p = Prevalence of SSI

q = 1-p

d = Degree of precision expected = 0.03

From the study conducted in Obstetric wards of Jimma University Specialized Hospital (Demisew et al., 2011), the prevalence of SSI (p) was found to be 11.4%. Using these data and considering a non-response rate of 10%, the desired sample size was, N = 474.

Sampling technique and procedure: The study participants were selected by systematic random sampling. Currently, about 400-500 deliveries are attended each month in ZMH; of which an average of 30% mothers give birth by CS. Taking 150 CS deliveries per month and considering 4 months of data collection, a total of 600 CS deliveries were used to calculate the sampling interval. Thus, by dividing the total population by the sample size (600/474=1.27), the sampling interval was found to be 1; which is every pregnant woman who gave birth by CS during the study.

Inclusion/exclusion criteria: All pregnant women who were prepared for CS at ZMH and willing to participate in the study were included. Those who had CS from other health facilities and referred to ZMH; and died within the first week of the operation were excluded from the study.

Data collection: Data was collected using semi-structured questionnaire from the participants and their charts by the surgeon/resident and interns in charge of the patient who were briefed on the CDC criteria how to diagnose SSIs. Each participant who had CS were followed for 30 days for development of SSI. Further chart review and wound site evaluation was done on the 3rd post operation day; and the day of discharge for additional data. During their 1st postnatal visit (1 week after discharge), the wound was examined by the resident/intern in charge. Each participant was asked for any signs of wound infection via telephone (two telephone numbers were taken from each participant for easy contact) on the 14th and 30th postoperative day; and advised to come for evaluation if SSI was suspected. Those participants who missed their postnatal visit were also contacted through telephone.

Data processing and analysis: After data collection, each questionnaire was checked for serial completion of the data until the 30th day of the operation. The data was analyzed using SPSS version 21.0. A bivariate logistic regression analysis was done to select the variables to be entered into the final logistic multivariable analysis. Significant explanatory variables were entered into multivariate logistic regression analysis model and association between the independent variables and SSI were assessed using AOR. P-value < 0.05 were considered statistically significance.

Ethical consideration: The study was started after getting approval and ethically cleared by the Ethical and Review Committee of the Department of Obstetrics and Gynecology. Permission was also obtained from ZMH medical director office. The objective of the study was explained to the study participants and asked if they were willing to participate. Interview and data collection were started after verbal informed consent was obtained from those who were willing to participate in the study. Confidentiality of responses was maintained throughout the study process.

Operational definitions:

CDC classification of Surgical Site Infections4:

Superficial SSI: - infection which involves only skin and subcutaneous tissue of the incision and at least one of: -

1. Purulent drainage with or without laboratory confirmation,
2. Organism isolated from superficial incision,
3. Presence of sign and symptoms of infection at the site,
4. Diagnosis of SSI by physician/surgeon where Stitch abscess, Infection of an episiotomy are not included.

Deep Incisional SSI: - infection involving deep soft tissues (e.g., facial and muscle layers) of the incision and at least one of:

1. Purulent drainage from the deep incision,
2. A deep incision spontaneously dehisces or is deliberately opened by a surgeon when the patient has at least one of the following signs or Symptoms: Fever (>38°C), localized pain, or tenderness, unless site is culture-negative, An abscess or other evidence of infection involving the deep incision,
3. Diagnosis of a deep incisional SSI by a surgeon or attending physician

Infection that involves both superficial and deep incision sites are reported as deep incisional SSI and an organ/space SSI that drains through the incision as a deep incisional SSI.

Organ/Space SSI: - infection which involves any part of the anatomy (e.g., organs or spaces), other than the incision, which was opened or manipulated during an operation and at least one of the following:

1. Purulent drainage from a drain that is placed through a stab wound into the Organ/ space,
2. Organisms isolated from an aseptically obtained culture of fluid or tissue in the organ/space,
3. An abscess or other evidence of infection involving the organ/space that is found on direct examination, during re-operation, or by histopathology or radiologic examination,
4. Diagnosis of an organ/space SSI by a surgeon or attending physician

Clean-Contaminated wound: An operative wound in which the respiratory, alimentary, genital, or urinary tracts are entered under controlled conditions and without unusual contamination. Specifically, operations involving the biliary tract, appendix, vagina, and oropharynx are included in this category, provided no evidence of infection or major break in technique is encountered.

Contaminated wound: Open, fresh, accidental wounds. In addition, operations with major breaks in sterile technique (e.g., open cardiac massage) or gross spillage from the gastrointestinal tract, and incisions in which acute, no purulent inflammation is encountered are included in this category.

RESULTS

A total of 1901 deliveries were performed during the study period; of which CS delivery constitutes about 563(29.6%). Among CS deliveries, a total of 474 mothers were enrolled and followed for 30 days (Figure 1). The mean age of the study participants was 27.23 (±4) years and majority of them were in the age range of 20-35 years (n=428, 90.3%) (Table 1).

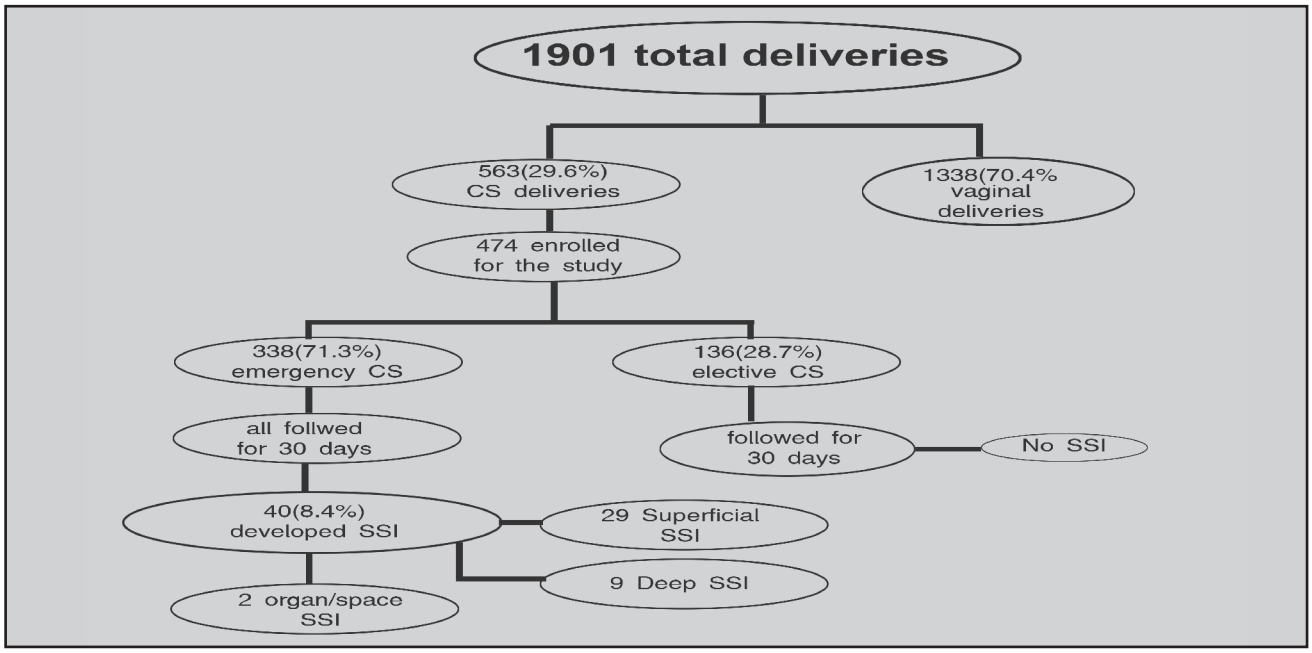


Figure1: Patient recruitement and follwup chart, ZMH, 2017/18.

Table 1: Socio-demographic characteristics of the study participants, ZMH, 2017/18.

Characteristic	Category	Frequency (N=474)	Percentage (%)
Age	< 20	10	2.1
	20-35	428	90.3
	> 35	36	7.6
Place of residence	Addis Ababa	458	96.6
	Out of Addis Ababa	16	3.4
Religion	Orthodox	233	49.2
	Protestant	152	32.1
	Muslim	85	17.8
	Others	4	0.8
Marital status	Married	460	97.0
	Single	10	2.1
	others	4	0.9
Educational status	Tertiary education	56	11.8
	Secondary education	194	40.9
	Primary education	171	36.1
	Read and write	49	10.3
	Illiterate	4	0.8
Ethnicity	Amhara	202	46.6
	Oromo	102	21.5
	Tigre	53	11.2
	Gurage	101	21.3
	Others	16	3.4
Monthly family income in Birr	≤ 2000	10	2.1
	2001-4000	180	38.0
	> 4000	284	59.9
Occupation	Student	28	5.9
	House wife	168	35.4
	Daily laborer	22	4.6
	Merchant	91	19.2
	Government employee	68	14.3
	Private employee	97	20.5

308(65%) of the participants were multipara and 143(30.2%) were premiparous. Almost all of them (n=473, 99.8%) had ANC follow-up with Health Centers and ZMH as the commonest sites. 113 (23.8%) participants had associated comorbidity; the leading being hypertension (n=64, 13.5%) followed by anemia (n=24, 5.1%) (Table 2).

Table 2: Obstetric and medical characteristics of the study participants, ZMH, 2017/18

Variable	Category	Frequency (N=474)	Percentage (%)
Parity	Premiparous	143	30.2
	Multipara	308	65.0
	Grand multipara	23	4.8
ANC	Yes	473	99.8
	No	1	0.2
Place of ANC	ZMH	187	39.5
	Health center	215	45.4
	Other sites	71	15.1
Co-morbidity	Yes	113	23.8
	No	361	76.2
Diabetes mellitus	Yes	14	3.0
	No	460	97.0
Hypertension	Yes	64	13.5
	No	410	86.5
HIV status	Yes	15	3.2
	No	459	96.8
Anemia	Yes	24	5.1
	No	450	94.9

Emergency CS constituted 338(71.3%) of CS operations and most of the operations (n=411, 86.7%) were operated at term pregnancy. For 308(65%) of the study participants, CS was done after they had established labor and about 312(65.7%) mothers had membrane rupture prior to CS. Majority of the operations (n=277, 58.4%) took more than 30 minutes; the mean operation time being 31 minutes (range; 20-70 minutes). Fetal distress, previous CS, dystocia and malpresentations were the top four indications for operation. About 220(46.4%) of operations were operated by junior (2nd year) residents. Multiple doses of prophylactic antibiotics were given for all of the study participants and spinal anesthesia were administered for 410(86.5%) of the study participants. Most had transverse abdominal incisions (n=442, 93.2%) (Table 3).

Table 3: Operation related characteristics of the study participants, ZMH, 2017/18

Variable	Category	Frequency (N=474)	Percentage (%)
Type of CS	Emergency	338	71.3
	Elective	136	28.7
Gestational age during CS	Preterm	26	5.5
	Term	411	86.7
	Post term	37	7.8
Labor status/ duration	No labor	166	35
	≤ 12 hours	134	28.3
	>12 hours	174	36.7
Rupture of membrane (ROM) before CS and duration	No ROM	161	34.0
	≤ 12 hours	219	46.2
	> 12 hours	94	19.8
History of previous CS	Yes	82	7.3
	No	292	92.7
Duration of operation	< 30min	197	41.6
	≥ 30	277	58.4
Indication for CS	Fetal distress	150	31.6
	Previous CS	82	17.3
	Dystocia	74	15.6
	Malpresentations	57	12.0
	Other indications	111	23.5
Type of anesthesia	Spinal	410	86.5
	General	64	13.5
Level of surgeon	Junior (R2)	220	46.4
	Senior (R3/R4/Consultant)	254	53.6
Type of abdominal incision	Transverse	442	93.2
	Midline subumblical	32	6.8
Type of prophylactic antibiotics given	Ampicillin	237	50.0
	Ceftriaxone	237	50.0
Time antibiotics given	Preoperatively	470	99.2
	Intraoperative	4	0.8
SSI status	No SSI	40	8.4
	SSI	434	91.6
Type of SSI	Superficial	29	72.5
	Deep	9	22.5
	Organ/space	2	5.0

The prevalence of SSI following cesarean section was 8.4% (n=40); majority of which (n=29, 72.5%) were superficial SSIs. Two patients developed organ/ space infections with complete wound dehiscence; admitted, re-operated and treated with broad spectrum antibiotics (Table 3). All SSIs were developed among mothers who had emergency CS. Only one SSI was developed among mothers who had CS before onset of labor and rupture of membranes. Majority of SSIs (n=28, 70%) were diagnosed after discharge within 8-14 days of operation while 10(25%) mothers were In this study; contaminated wound at the time of surgery, more than 3 vaginal examination, membrane rupture more than 12 hours, labor more than 12 hours and anemia were found to be independent predictors for development of SSIs (Table 6).

Table 4. Preoperative factors associated with SSI in the study participants, ZMH, 2017/18

Variable	Category	SSI status Yes, n (%)	No, n (%)	COR (95%CI)	P-value
Comorbidity	Yes	19 (16.8)	94 (83.2)	3.27 (1.67-6.25)	0.007
	No	21 (5.8)	340 (94.2)	1.00	
Anemia	Yes	8 (53.3)	7 (46.7)	14.29 (5.00-50.00)	0.006
	No	32 (7.0)	427 (93.0)	1.00	
HIV	Yes	5 (20.8)	19 (79.20	3.13 (1.10-9.10)	0.030
	No	35 (7.8)	415 (92.2)	1.00	
Duration of ROM	≤ 12 hours	9 (4.1)	210 (95.9)	1.00	0.004
	> 12 hours	30 (31.9)	64 (68.1)	10.94 (4.94-24.24)	
Duration of labor	≤ 12 hours	4 (3.0)	130 (97.0)	1.00	0.001
	> 12 hours	35 (20.1)	139 (79.9)	8.18 (2.83-23.66)	
Number of vaginal examination	≤ 3	9 (3.5)	250 (96.5)	1.00	0.000
	> 3	30 (51.7)	28 (48.3)	29.76 (12.83-69.01)	
Clinical chorioamnionitis	Yes	4 (30.8)	9 (69.2)	5.26 (1.54-16.67)	0.000
	No	36 (7.8)	425 (92.2)	1.00	
Presence of meconium	Yes	25 (22.9)	84 (77.1)	7.14 (3.45-14.29)	0.000
	No	15 (4.1)	350 (95.9)	1.00	
Place ANC	ZMH	4 (2.2)	183 (97.8)	1.00	
	Elsewhere	36 (12.5)	251 (87.5)	6.56 (2.29-18.76)	0.002
Indication for CS	Fetal distress	13 (8.7)	137 (91.3)	2.86 (1.16-7.07)	0.023
	Dystocia	19 (25.7)	55 (74.3)	10.41 (4.33-25.00)	0.002
	Other indications	8 (3.2)	241 (96.8)	1.00	

Table 5. Intraoperative factors associated with SSI in the study participants, ZMH, 2017/18

Variable	Category	SSI status Yes, n (%)	No, n (%)	COR (95%CI)	P-value
Wound class	Clean-contaminated	36 (7.8)	425 (92.2)	1.00	
	Contaminated	4 (30.8)	9 (69.2)	5.25 (1.54-17.88)	0.008
Type of skin incision	Vertical	7 (21.9)	25 (78.1)	3.47 (1.39-8.33)	0.004
	Transverse	33 (7.5)	409 (92.5)	1.00	
Type of anesthesia	Spinal	29 (7.3)	370 (92.7)	1.00	
	General	11 (14.7)	64 (85.3)	2.19 (1.04-4.63)	0.038
Prophylactic antibiotics	Ampicillin	12 (5.1)	225 (94.9)	1.00	
	Ceftriaxone	28 (11.8)	209 (88.2)	2.51 (1.25-5.07)	0.010
Duration of operation	≤ 30	6 (3.0)	191 (97.0)	1.00	
	> 30	34 (12.3)	243 (87.7)	4.45 (1.82-11.11)	0.000
Estimated blood loss	< 500	12 (2.8)	413 (97.2)	1.00	
	≥ 500	28 (57.1)	21 (29.9)	45.88 (20.50-102.7)	0.000
Level of surgeon	Junior (R2)	16 (7.3)	204 (92.7)	1.33 (0.69-2.57)	0.04
	Senior(R3/4, Consultant)	24 (9.4)	230 (90.6)	1.00	

(Unit of measurement for; Duration of operation = minutes, blood loss = ml)

Table 6: Independent factors associated with SSI in the study participants, ZMH, 2017/18

Variable Category	SSI status Yes, n (%)	No, n (%)	COR (95%CI)	AOR (95%CI)	P-value
Clean-contaminated wound	36 (7.8)	425 (92.2)	1.00	1.00	
Contaminated wound	4 (30.8)	9 (69.2)	5.25 (1.54-17.88)	5.64 (2.45-10.6)	0.028
No of vaginal exam. ≤ 3	9(3.5)	250 (96.5)	1.00	1.00	
No of vaginal exam. > 3	30 (51.7)	28 (48.3)	29.76 (12.83-69.01)	5.24 (8.46-16.20)	0.001
ROM ≤ 12 hours	9 (4.1)	210 (95.9)	1.00	1.00	
ROM > 12 hours	30 (31.9)	64 (68.1)	10.94 (4.94-24.24)	7.84 (4.25-12.34)	0.002
Labor ≤ 12 hours	4 (3.0)	130 (97.0)	1.00	1.00	
Labor > 12 hours	35 (20.1)	139 (79.9)	8.18 (2.83-23.66)	3.57 (1.92-9.42)	0.023
Anemia	8 (53.3)	7 (46.7)	14.29 (5.00-50.00)	16.34 (12.98-30.40)	0.024
No anemia	32 (7.0)	427 (93.0)	1.00	1.00	

DISCUSSION

The results of this study showed that the prevalence of surgical site infection after CS is common in ZMH (8.4%). This result is lower than the prevalence of SSI previously reported in Ethiopia; a study in Jimma University Specialized Hospital reported SSI prevalence of 11.4% after cesarean section, cesarean hysterectomy and destructive delivery19. Also, a study conducted in Tikur Anbessa Specialized Hospital found 14.8% wound infection among surgical patients operated for various conditions12. This could be explained by the sociodemographic difference and clinical recantation of the patients between the study areas.

The prevalence of SSI in this study was also lower than the studies done in; Kenya (22%), Cameroon (9.16%), Nigeria (9.1%), Tanzania (10.9%) and Nepal (12.6%)20, 21-24. However, the result of this study is within the range found in a systematic review of health care associated infections in Africa where the prevalence of SSI was noted to range from 2.5 to 30.9 %25, 26. In contrast, this study has higher value than the reported prevalence of post-cesarean SSI in USA (5.2%), Turkey (0.3%), and Italy (1.6%)27, 18, 28. As reported in many other studies, the prevalence of SSIs in developing countries is higher than in the developed countries. This could be explained by the standard of hygiene practiced in developed countries.

In this study the majority of patients had clean contaminated wounds; however, patients having contaminated wounds were more likely to develop SSIs (AOR=5.64). This is in line to previous studies which reported that patients with contaminated wounds had an increased risk of developing a SSI than those with clean contaminated wounds 29, 30, 12, 19.

Different studies showed that about two-third of all post caesarean infectious morbidity occurs after discharge31. Previous studies done in Nepal and Jimma, Ethiopia reported that, about 80-92% of SSIs were developed after emergency CS20, 21. In this study, all SSIs were developed after emergency CS and majority (n=28, 70%) of them were detected after discharge from the hospital. This may be explained by the short hospital stay after caesarean section. At ZMH, patients are routinely discharged on the third day after caesarean section.

Studies indicated that prolonged labor and rupture of membranes contribute to amniotic fluid colonization from the normal flora of the lower genital tract and lead to surgical wound and peritoneal cavity contamination4. In our study, mothers with duration of labor and rupture of membrane of more than 12 hours were about 3.57 and 7.84 times more likely to develop SSIs, respectively. Studies conducted in Kenya,

Tanzania, Nigeria, and USA reported more or less similar findings20, 22, 23, 28.

Once the membrane is ruptured, the amniotic fluid has an increased chance of being infected induced by multiple vaginal examination. Multiple vaginal examinations increase the chance of iatrogenic contamination during examination. A study conducted in Tanzania reported that, more SSIs were developed in patients with repeated vaginal examinations22. In this study, those women with four and above vaginal examination were more likely to have wound infection. Since ZMH is a referral hospital, there is a possibility of patients being referred late from other health facilities for caesarean delivery and thus increasing the risk of prolonged labor and multiple vaginal examination.
Among comorbid illnesses, anemia was found to be an independent predictor of SSI in this study; mothers who had anemia were about 16.34 times more likely to develop SSI. Studies from China, India and Nigeria reported similar findings32-34. In general, low hemoglobin concentration reduces the oxygen tension in the wound and increases the risk of wound infection by compromising the activity of macrophages and impeding wound healing progress.

Limitations of the study were failure to do culture and sensitivity tests to identify the commonest etiologies; and failure to assess some common risk factors of SSI like obesity and ASA score.

CONCLUSION

In this study, the prevalence of SSI was high being 8.4%. Majority of the SSIs (70%) were developed after discharge from the hospital and about 95% of the SSIs were developed within two weeks after caesarean section. Contaminated wound, anemia, prolonged labor, rupture of membranes (≥12 hours) and multiple vaginal examinations prior to cesarean section were found to be significant predictors of SSIs.

RECOMMONDATIONS:

1. Prolonged labor as an important causative factor of SSI, should be prevented through early intervention in cases where there is protracted progress of labor.
2. Minimizing early artificial rupture of membranes should be encouraged to decrease incidence of prolonged rupture of membranes
3. There should be a guideline on digital pelvic examination at teaching hospitals
4. Strengthen prophylaxis and treatment for anemia during ANC
5. Further studies are recommended to identify common pathogens with culture and sensitivity tests

ACKNOWLEDGMENT

We would like to give our gratitude to Residents/ Interns of Zewditu Memorial Hospital for collecting the necessary data and a special recognition to my colleague Mr. Abebaw Nigussie for all his support and encouragement. A special tribute goes to my wife for encouragement, emotional and financial support.

CORRESPONDENT AUTHOR:

Misganaw Worku Gelaw, MD
Department of Obstetrics and Gynecology, College of Medcine and Health Sciences, Addis Ababa University
Email: misgemd@gmail.com

REFERENCES

1. Betran AP, Merialdi M, Lauer J, Bing-shun W, Thomas J, Look PV & Wagner M. (2007). Rates of caesarean section: analysis of global, regional and national estimates. Paediatric and perinatal epidemiology, 21(2), 98-113.
2. Patherick ES, Dalton JE. Methods for identifying surgical wound infections after discharging from Hospital: a systematic review. BMC Infect 2006; 6:170-178.
3. Garner JS, Javis WR, Emori TG, Horan TC, Hughes JM. CDC definitions for nosocomial infections. Am J Infect Control 1988; 16:128-40.
4. Horan TC, Gaynes RP, Martone WJ, Tarvis WR, Emori TG. CDC definition of nosocomial surgical site infection: a modification of CDC definition of surgical wound infection. Infect control and hospital epidemiol, 1992; 13(10): 606-8.
5. Dahms RA, Johnson EM, Statz CL, Lee JT, Dunn DL and Beilman GJ. Third-generation cephalosporins and vancomycin as risk factors for postoperative vancomycin-resistant enterococcus infection. Arch Surg. 1998; 133:1343-6.
6. Bratzler DW. Strategies for the prevention of surgical site infections: Review of New Multi-specialty Society Guidelines. University of Oklahoma Health Sciences Center. 2012.
7. Morgan AJ, Horan TC, Pearson ML, Silver LC, Jarvis WR. Guideline for prevention of surgical site infection, 1999. Hospital Infection Control Practices Advisory Committee. Infect Control Hosp Epidemiol 1999; 20:250-278.
8. Skarzynska J, Cienciala A, Madry R, Barucha P, Kwasniak M, et al. Hospital infection in general surgery wards. Przegl Epidemiol 2000; 54:299-304.
9. Martens MG, Kolrud BL, Faro S, Maccato M, & Hammill H (1995). Development of wound infection or separation after cesarean delivery. Prospective evaluation of 2,431 cases. Journal of reproductive medicine, 171-5.
10. Smaill FM & Gyte GM (2010). Antibiotic prophylaxis versus no prophylaxis for preventing infection after cesarian section (Review). Retrieved from The Conchrane Library:
11. Ott WJ. Primary cesarean section: Factors related to postpartum infection. Obstet Gynecol 1981; 57:171– 6.
12. Mulat T. Wound infection in Tikur Anbessa hospital, surgical department. Ethiopian med J, 2005; 43(3): 167-174.
13. Kotiso B, Assefa A. Surgical wound infection in a teaching hospital in Ethiopia. East Afr J 1998; 75: 402-405.
14. Gedebou M, Habte-Gabr E, Kronvall G, Yoseph S (1988). Hospital acquired infections among obstetric and gynecological patients at Tikur Anbessa Hospital, Addis Ababa. J Hosp Infect. 11:50-59.
15. Habte-Gabr E, Gedebou M, Kronvall G (1988). Hospital-acquired infections among surgical patients in Tikur Anbessa Hospital, Addis Ababa, Ethiopia. Am J Infect Control. 16:7-13.
16. Daniel A, Zemanuel, Tesfahunegne. Hospital acquired surgical site and catheter related urinary tract infections among patients admitted in Mekele hospital, Mekele, Tigray, Ethiopia. AAU libraries electronic thesis and dissertation, April 23, 2008.
17. Berard F, Gordon J. Postoperative wound infections; The influence of ultraviolet infections of the operating room and of various other factors. Ann Surg 1964; 160:1-132.
18. Yalcin AN, Bakir Mi Bakici Z, Dokmetas I, Sabir N. Postoperative wound infection. J Hosp Infect 1995; 29:305-9.
19. Demisew A, Tefera B, Fitsum A. Surgical Site Infection Rate and Risk Factors among Obstetric Cases of Jimma University Specialized Hospital, Southwest Ethiopia. Ethiop J Health Sci. 2011; 21(2): 91-100.
20. Kabau Ddm. Incidence and determinants of surgical site infection after cesarean delivery at Kenyatta national hospital. [Thesis]. In press 2014.
21. Shrestha S, Shrestha R, Shrestha B, Dongol A. Incidence and risk factors of surgical site infection following cesarean section at Dhulikhel Hospital. Kathmandu Univ Med J 2014; 46:113-6.
22. Mpogoro FJ, Mshana SE, Mirambo MM, Kidenya BR, Gumodoka B, Imirzalioglu C. Incidence and predictors of surgical site infections following caesarean sections at Bugando Medical Centre, Mwanza, Tanzania. Antimicrob Resist Infect Control 2014; 3:25.
23. Jido TA, Garba ID. Surgical-site Infection following cesarean section in Kano, Nigeria. Ann Med Health Sci Res 2012; 2:33-36.
24. Essomba N, Avomo J, Esiene A, Banock L, Azeme A, Misse M, Essomba A. Prevalence of surgical site infections and evaluation of risk factors after surgery, case of three public hospitals in Cameroon. J Med Med Sci 2013; 4:241-6.
25. Allegranzi B, Bagheri Nejad S, Combescure C, Graafmans W, Attar H, Donaldson L and Pittet D. Burden of endemic health-care-associated infection in developing countries: systematic review and meta-analysis. Lancet. 2011; 377:228-41.

26. Bagheri Nejad S, Allegranzi B, Syed SB, Ellis B and Pittet D. Health-care associated infection in Africa: a systematic review. Bull World Health Organ. 2011; 89:757-65.
27. Wischnewski N, Kampf G, Gastmeier P, Schlingmann J, Schumacher M, Daschner F et al. Nosocomial wound infections; a prevalence study and analysis of risk factors. Int Surg 1998; 83:93-97.
28. Garner JS. The CDC hospital infection control practices advisory committee. Am J infect control 1993; 21: 160-2.
29. Doebbing BM. Control of infection in institutions. In: Wellace RB, editor. Public health preventive medicine 13th Ed. New Jersey, USA: Prentice Hall; 1992; 203-205.
30. Forrester JC. Wounds and their management. In: Cuschieri A, Giles GR, Mossa AR, editors. Essential surgical practice 3rd ed. Oxford (UK): Butter worth Heinemann; 1995; 177-200.
31. Mitchell DH, Swift G, Gilbert GL. Surgical wound infection surveillance, the importance of infections that develop after hospital discharge. Aust N Z J Surg 1999; 69:117-120.
32. Zhou M, Chen L. Study of high-risk factors of surgical site infection after cesarean section. Di Yi Jun Yi Da Xue Xue Bao 2005; 25:1075-8.
33. De D, Saxena S, Mehta G,Yadav R, Dutta R. Risk factor analysis and microbial etiology of surgical site infections following lower segment caesarean section. Int J Antibiot 2013; dio:10.1155/2013/283025.
34. Ezechi OC, Edet A, Akinlade H, Gab-Okafor CV, Herbertson E. Incidence and risk factors for caesarean wound infection in Lagos Nigeria. BMC Research Notes 2009; 2:186.

EXPERIENCES OF WOMEN WITH INFERTILITY AND THEIR TREATMENT SEEKING PRACTICES: A QUALITATIVE STUDY

Jenberu Meskelu, MD, MPH[1], Yemane Berhane, MD, MPH, PhD.[2]

ABSTRACT

BACKGROUND: Infertility imposes profound psychological and social impacts on those with the problem. The financial burden is also immense. The World Health Organization has labeled infertility as a disabling health problem. This study examines the experiences of women with infertility and their treatment seeking practices.

METHODS: We conducted a qualitative study with phenomenological approach. Data were collected using an in-depth interview and observations among eight purposively selected women who were being seen at Saint Paul Hospital Millennium Medical College (SPHMMC), Department of Gynecology and Obstetrics, infertility clinic from September 2015 to November 2015. The interviews were conducted by the investigator using a semi structured questionnaire discussion guide. The interviews were taped, then transcribed and translated into English. A bottom up approach was used to identify themes and sub themes.

RESULTS: Five themes and six sub themes were identified. Diverse negative emotional and psychological effects were reported. Both supportive and destructive changes were seen with relatives and friends. Treatments by in-laws and neighbors were largely negative. The women were constantly visiting different health facilities because of lack of definitive management. Religious activities were common.

CONCLUSION: Infertility deeply affects the life of infertile women with various emotional and social effects. The health system and health care providers should consider addressing managing the psychosocial aspects as well as providing advanced infertility treatment options. Further studies in exploring the life experiences are important preferably at community levels.

KEYWORDS: Infertility, experiences, treatment.

(Ethiopian Journal of Reproductive Health; 2018; 10; 4: 33-42)

1 *Department of Gynecology and Obstetrics, Sher Ethiopia, Ziway, Ethiopia*

2 *Addis Continental Institute of Public Health, Addis Ababa, Ethiopia*

INTRODUCTION

Infertility is defined by the World Health Organization as a failure to achieve a clinical pregnancy in childbearing age after 12 months or more of regular unprotected sexual intercourse1. Globally the magnitude is estimated to be 15% of married couples. The incidence varies between and within countries2.
It appears to be a neglected problem in many developing countries. It is not a killing disease and so is not given a priority among other compelling health problems. However, the negative psychosocial consequences of this problem are quite profound. Perceptions in the community about the causes and treatment of infertility are by large deficient and wrong.

A study done in West Ethiopia showed that the perceptions as to the causes and treatment are mistaken3. Infertility is a neglected health problem in many developing nations. The concern of these countries is more on ways of controlling the fertility potential of individuals as the rise in population size is challenging their economic status and the limited resources they have. They are working actively on promoting and expanding the use of contraceptive methods. The total fertility rate (TFR) of these countries is large. Whatever the TFR is, it would mean nothing for the infertile couples, because they are badly in need of at least one child or one more child in their home. Ignoring this problem definitely makes reproductive health services incomplete as family planning by definition addresses not only those who are fertile but also the other side of failing to attain this capacity.

Infertile couples go to many different places and persons seeking treatment for their problem. Studies done in Africa show that couples prefer to go to sites for treatment according to the perception they have as a possible cause of the infertility. These places and persons include spiritualists (churches), traditional healers, witchcrafts, and finally modern medicine (health facilities)4,5.

Individuals are also forced to go for extra marital sex as a test for fertility and remedy for their infertility even if the issue is not openly spoken. This may further complicate the problem by acquisition of STI's. Women are also known to be abused in seeking treatment from traditional healers and witchcrafts including forced sexual intercourse as part of the treatment, and a price to be paid to keep their problems secret4,5,6.

Understanding the health seeking behavior of couples with infertility will lead to identification of the perception of communities as to the causes of this problem and help in addressing the gaps prevailing in the community. It also helps to disseminate health information on the timely evaluation and treatment of individuals. Knowing the impacts of infertility will also help a lot in designing strategies to mitigate the negative consequences and help focus on the prevention of infertility as well as its impacts.
As to the knowledge of the investigator, there are no studies done in our country on the experiences of women with infertility and their health seeking behavior. This study tries to explore these issues among women coming with this problem to a teaching hospital in the capital Addis Ababa.

METHODOLOGY

Study setting: The study was conducted at SPHMMC, a teaching hospital in the capital Addis Ababa from September 2015 to November 2015. The department of Gynecology and Obstetrics has a specialized infertility clinic which is functional two days each week.

Study design: This was a qualitative study with a phenomenological study design using an in-depth interview with women diagnosed with infertility. The study assessed the lived experiences in their life due to this problem.

Study population: The study population comprised of individuals coming to the specialty clinic of infertility in the department of Gynecology and Obstetrics. Women coming to the infertility clinic for infertility treatment were the study subjects.

Sample size and Sampling: Sampling was determined by the level of saturation during data collection. Sampling was purposive. The duration of infertility was taken as a reason for the purposive sampling. The duration of the problem in women with infertility was assessed by the investigator. Women with longer duration of the problem on presentation were given the chance to participate. Inclusion criteria included fulfilling the operational definition for infertility for this study, willingness to participate in the study, and being able to give consent.

Data collection: Information was collected using an in-depth interview guide. The interview guide was developed based on the relevant areas necessary to address the study objective. The guide was used to lead the discussion. The issues addressed included when the woman and her partner came to know their inability to conceive, about the causes she believes/ knows for this problem, what she feels and did about the problem, and what was done for her. Changes she had in her relationships with her partner, her own and her partner's relatives, friends and in the community, were also addressed. The information also included the situation under which she came to know and decide coming to this hospital and her expectations from the hospital.

Open ended questions were used. Data were collected as an exit interview. This was done by the investigator in a separate office where auditory and visual privacies were attained. The timing of data collection was determined on the convenience of each study participant. Each interview took between 35 to 55 minutes. Data was collected after getting informed written consent from the study participants. Seven were interviewed in the hospital and one outside the hospital at her convenience.

The interviews were recorded by an audio recorder. Some responses and expressions were also noted and recorded manually in a note book. No one had an access to the audio taped interview except the investigator and once the interviews were transcribed, they were deleted. The transcriptions were given codes known only by the investigator. Data collection was continued till saturation of information was reached.
Data analysis: Data analysis was done concurrently with data collection. The interviews were transcribed into text by the investigator shortly after the interview and then translated to English by a translator. They were then analyzed by the principal investigator using thematic analysis by a bottom up method. The translations were read and reread by the investigator repeatedly and points identified in each interview. This was done by condensing the interviews into shorter phrases capturing the lived experiences of the participant. Categories were then identified. Once this was done, related categories were used to identify major themes and sub themes. This was done manually.

Ethical considerations: Participants were provided with an information sheet explaining the summary of the study. The participants read it and further explanations were given for their questions. The participants gave a written consent to participate in the study. Their right not to participate in the study or withdraw from the study including not responding to some of the questions if they participate were fully explained and respected. There was no payment for participating in the study.

Participants' names were not used during data analysis, and each participant was assigned a code which is known only by the investigator. Data were kept confidential and no one had an access except the principal investigator.

Ethical clearance was obtained from the IRB of Addis Continental Institute of Public Health/University of Gondar, and the IRB of SPHMMC.

OPERATIONAL DEFINITIONS

Infertility: the inability to conceive after twelve months or more of unprotected sexual intercourse. Unprotected sexual intercourse implies the use of no contraception.

Experience: events encountered in personal and social life in association with infertility.

Treatment: any action/measure taken to get a solution for the perceived problem of infertility.

RESULTS

Demographic description

Eight women were interviewed in this study. Their age was between 25 and 37 years. Seven of them were from Addis Ababa while one was from outside of Addis Ababa. One is divorced and the others are married. Two of the participants were Muslims while the rest were Christians. One of them was a graduate from a college, and the other seven learnt till grade 9-12. Four of them were housewives, one was employed in a private firm and the other three had their own small-scale businesses – shops.

Six had primary infertility while two women had secondary infertility.

The results are compiled under 5 major themes and six sub themes (Figure 1).

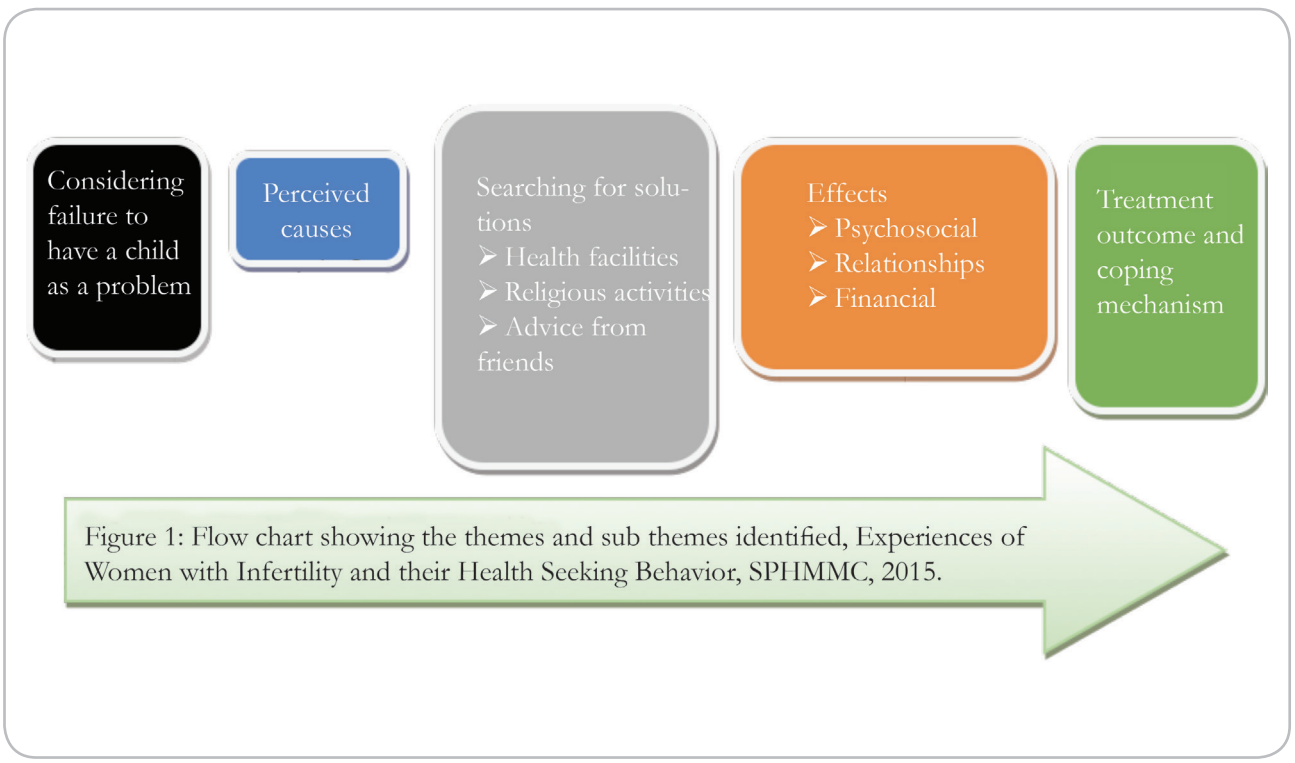


Figure 1: Flow chart showing the themes and sub themes identified, Experiences of Women with Infertility and their Health Seeking Behavior, SPHMMC, 2015.

1. Considering failure to have a baby as a problem

The participants responded that failure to have a child after marriage should be considered as a problem and some help should be sought within a period of less than 2 years. They have duration of failure to have a child ranging from 2 ½ years to 10 years. All started to go for treatment after one year but not beyond the second year. All, except one who is currently pregnant, are still seeking a solution since then, one of them for 10 years and another two for more than 5 years.

Regarding this issue P1 and P3 replied "it is preferable to go to health facilities at least after one year."

P7 and P8 said it should not be more than 2 years.

2. Causes of failure to have a child

Some of the participants mentioned age as an important factor as a cause of this problem explaining it as determinant factor if they do not get a solution to their problem.

P1 reported "as age increases, the problem also advances..... being late....age is determinant. I feel I may have passed my age of getting a child while working"

P2 stated that "the age [reproductive] of a woman is limited..... I heard a treatment called IVF. I wanted to make use of it with my age"

Anxiety as a possible cause of failure to have a child was mentioned by the participants.

P1 said " I had some stresses, for I was thinking on some issues..... I had anxiety..... I feel anxiety itself has some association with the womb i.e. by myself. I was very eager to have a baby after marriage..... when this did not happen after months, I started to be anxious....also in my work.....private.... I was being angry by it....and I thought that was the case."

P7 also said "it can be an internal pressure, there are effects arising from anxiety... anxiety can be the cause of this problem..... you have many problems inside."

The widely held belief in the participants is the use of contraceptives as a cause for this problem.

P2 replied "I assume that it is the medicine [injectable contraceptive] that caused my problem.... Also I heard that it makes a woman infertile. I also think – has this happened to me? But many doctors told me that it does not make so..... I do not know."

P3 said "when contraceptives are taken for long period pregnancy does not happen, it is not created..... the tablet, those that are buried..... they bring problems like this."

P4 remarked "taking injections before giving birth causes this problem."

Possible problems in the male were mentioned as causes by two of the participants.

P3 described that an STD a woman gets during pregnancy can be transmitted during intrauterine life resulting in infertility in the growing baby – as her mother had an STD while she was pregnant of her.

She described " my mother told me that ..... 'after conceiving you I had an STD'..... she was not treated by then. She gave birth to three... I have two after me..... what did she say..... 'that STD can be the reason for your problem' .....that is always my tension"

Abortion, single or repetitive, STD's, and pelvic infections were described by many as possible causes.

P5 said "The causes....as I understood, STD's, infections of the womb. If an STD is not treated early...".

Medications or treatments taken for a long time for any medical reason are also described as a cause.

P7 described "medicines taken for a long time.... Ah.....me for example.....what I think hurt me is.....do you know? I have taken anti-TB treatment for a long time.....and I think that is the reason..... I took the medication for more than one year"

None of them believed it can be a hereditary problem or due to God's wrath.

P7 said "I do not think it is hereditary, you know why? As I told you this [getting children] is a gift from God. God does not create a woman sterile.....people may think it is hereditary. I do not believe that."

P5 reported "my in-laws say such a thing [from God's wrath] but this does not happen because of God's wrath. God created me for He loves me..... heredity...you know? I have many relatives who have given birth to twins....they are three..... I have such relatives. What brings such a problem to me among them? I do not think so."

3. Searching for solutions

Health facilities

All the participants have gone to at least 3 or 4 different health facilities. Two have visited at least 10 facilities. The types of facilities include health centers, family planning clinics, private maternity centers, private clinics, private hospitals, and public hospitals. Some visited these through referrals and the majority by their own will and efforts to get solutions.

P7 explained "every place in Addis Ababa, known or said to be good with infertility services, I have been there."

Religious activities

Some of the Christians said that they pray a lot and frequently and go to churches for this purpose. They take "tsebel" to their house with a container and drink it for many days. There are special ceremonies and prayers in the Orthodox Christian church held for people with difficulty of getting a child, and some attend these events. Travelling to different churches outside of Addis Ababa and staying there for 1-2 days was also reported.

Muslims also tell other people and their friends to pray for them.

P7 stated "as I told you, I am an Orthodox Christian.....and I go to 'tsebels'....eeh.....there are things that the church orders for people who have no children.....there is a prayer.... And I participate in those prayers.....to your surprise, I came to you after such a ceremony [this morning]"

Advices from friends

Women talk about the problem with their friends and advices from friends include trying to be happy as much as possible because it is during this time that the woman's egg is going to be prepared, lying flat on the back after coitus, avoiding douching and bathes after coitus.

P1 said "And when I was asking advices from people.....they told me to try to be happy as much as possible. Have sex by that time and if you do that you will get pregnant .....and I tried that, it was not successful. Ah....and how I should make sex..... lying flat on the back after coitus, avoiding douching and bathes after coitus.....all these were when I was discussing with my friends... I tried all these, but....."

There is no reported purposeful visit to traditional healers. P3 had an unintentional visit to a traditional healer but abandoned it immediately, for she did not have the belief in what they were questioning her.

4. Distress due to the problem

Psychosocial consequences

These were quite diverse.

All the women were crying when expressing what they felt about the problem, and were speaking in slow and soft voices. I had to give them time to cry and get settled, always with some kind words. These feelings were shared almost by all women whether they had support from their partners, relatives and friends or not.

Social effects included:

- disrespect by husband and relatives
- divorce
- neglect by in-laws
- robbery
- lack of love

Anxiety was experienced by all participants.

They also have a feeling of jealousy when they see children of their friends.

> P1 also said "I do not have a bad feeling for they have children, but....you know....if I had my own also....it is seeing yourself, or else what is the most interesting thing in marriage? It is having a child...I lost the meaning of getting married. I mean it! Why did I have it if I am not able to give birth?"

Additionally, many other feelings were described by the participants including sense of inferiority and fear of divorce, being easily annoyed with emotional lability, depression, lack of sleep and appetite, feeling of being alone, avoiding meeting people, bad feeling of home, shopping without purpose, and low self-esteem.

Relationships: husband and relatives

All the women discussed the problem with their partners. In half the husbands were supportive while in the others they had a negative effect.

In the majority of women there are ill feelings from the relatives of their husbands, for there is no child in the marriage. These are expressed in two forms: directly to the woman and indirectly thorough her partner.

P8 stated "relatives of my husband say.....you [the husband] married an old woman...that is why she does not give birth.... But I am the 3rd for my parents and my elder sister gave birth recently." She continued "the respect he has for me before and now are not the same. He becomes angry at me easily.... he is not happy when he gives me money for household expense; of course, I have my own income. He is not happy in anything."

P6 also said "he always tells me that his relatives want to see a child. I get disturbed. They do not directly come and talk to me about the issue."

The women are aware of these facts from what they observe, the way their in-laws look at them and changes in talks. The major part of the dismay is explicitly, fully and clearly told to the husband and he is the one to tell the woman what has been said to him about her and the marriage. In some this goes to the extent of divorce and marrying another woman. This has created a profound emotional disturbance in the women.

In half of the women the relationships with relatives and their husbands were good and supportive.

P1 said "he makes me feel strong. He says ...it will happen, if not, it is possible to live without children. The main issue is the love between us..... He supports me a lot. It is me who gets annoyed, he is good. He was treating me well." She added "people ask.....my and his relatives advise us to go to a medical care."

P7 commented "his relatives were asking why we did not get a child. To your surprise, he has a very nice mother. It is his mother who is playing a major role to keep our marriage from divorce [she was crying]. Nobody from the relatives has treated me badly."

Relationships: friends, working areas and neighbors

Effects from neighbors, friends, working area and the relatives of the women are more direct. These express their good or bad feelings directly to the woman.

P4 stated "I have left my job.... because at the work area they ask me why I am not having a child and so on.... I hated it and left the job. I was working in a private organization.....my neighbors... they insult me, directly and indirectly."

Financial burden

There were some unpleasant feelings on household expenditures.

P5 explained "initially he was giving me money, but now....to speak the truth, I do not remember the time he gave me money....."

P8 said "he is not happy when he gives me money, but I also have my own income."

The financial expense for medical care has been immense.

P5 described "you go somewhere, you sell your gold, you sell something, you borrow from people.....you ask, you go...go...there is nothing."

5. Treatment outcomes and Coping mechanisms

One respondent is currently pregnant from treatment and said she is relieved a lot from the feelings of this problem. She was 3 months pregnant by the time of the interview. She was treated by a medication with ultrasound follow up and timed intercourse.

She said "what gives you happiness after marriage except having a baby? Oh, oh. God has given me what I loved, what I wanted."

The rest are still going to health facilities for different reasons.

Some know the treatment is not available for them here in Ethiopia.

P8 said "they told me the treatment is by .....[IVF] or surgery, but also said the tube can be closed again after surgery. I tried a lot, tried and tried, no change."

P5 said "your hospital, if you were able to go to the possible last alternative to help us-those to whom child bearing has been a problem."

Because of lack of successes in getting a child, despite a lot of efforts in investigation and treatment, women have different explanations and suggestions in accepting the problem substantiating that it is totally out of their control.

P5 said "God has His own reason not to give me a baby."

P7 stated "God gives babies. I am sure that I will have one in the future. May be the time is not now."

Three women said "Let my husband marry another woman and have a child, or let him bring a child from another woman and I will take care of the baby."

Interestingly no one talked about adoption.

DISCUSSION

Women have a good judgment of timing in considering failure to get a child as a health problem after an active trial. They responded a woman should be seen in not more than 2 years. This appears to be a very good health behavior so that problems can be identified early and early treatment options can be entertained.

The outcome of infertility treatment is greatly affected by the duration of the problem in addition to other factors. The problem seen is largely the lack of appropriate treatment which has resulted in repetitive and desperate measure of unnecessary visits even if the treatments for this problem are not widely available in the country. Some of the women were told about the unavailability of the treatment in the country, and are still going for help despite this information.

This shows the importance of improved and advanced treatment options to address the problem in the majority of women.

The emotional feelings identified in this study are profound and diverse. The psychological consequences in this study include anxiety, crying alone at home, lack of sleep, low self-esteem, depression, emotional lability, lack of sleep, loss of appetite, becoming easily upset, feeling of being alone, getting annoyed, and fear of divorce. These have also been described in other studies 4, 5, 7, 8.

Social effects include disrespect by husband and relatives, divorce, neglect by in-laws, being robbed of their property. These are similar in a study done at Oyo state in Nigeria4. Some supportive roles were offered by the relatives of the woman families especially from mothers and sisters. Some friends as well had such roles.

Health care providers should address these emotional disturbance s and problems in the evaluation of such women. Consultations with a psychologist or

psychiatrist should be considered to improve the quality of life of such women.

A huge gap is seen in the knowledge of the women as to the possible causes of infertility. Most of the mentioned reasons were not right or they do not have a direct association with the problem, except for STI's. The lack of appropriate knowledge will have its own impact in the prevention and treatment activities associated with the problem. Efforts need to be done to make people aware of the possible causes, so that preventive health behaviors can be practiced.
The above points demonstrate that infertility work up and treatment should include information, health education and counseling.

In contrast to other studies3, 5, 9, 10 infertility was not attributed to curse, an act of witchcraft or mystical power or as a punishment by God in this study. This may be because the respondents themselves were the victims of the problem and do not want to accept these as possible causes. It may as well be because of their relatively good status of education.

All women have been to many health facilities seeking for solutions. Some had attended religious ceremonies. There was no intentional visit to traditional healers. This is in contrast to other studies4, 5. This can be due to 'social desirability' or 'courtesy' bias as the issue raised is quite sensitive, and the investigator being the provider of the health care service for these women.
Interestingly none of them mentioned adoption as an alternative, probably that may degrade their womanhood in frankly revealing their inability to reproduce through the biological means. It has been shown by many studies that adoption is not accepted as a solution for infertility in many African communities4, 5, 6, 10.

Some of the women have explained their willingness for their husband to have a child from another woman, even a divorce for that and also to take care of the baby if he can bring one from outside with the marriage in place. This is not mentioned in other studies.

CONCLUSIONS

The knowledge as to the possible causes of infertility has a wide gap. Measures to improve the awareness of the community on the possible causes of infertility are important.

The psychological and social consequences of infertility are diverse and profound. Women are going to many health facilities for lack of definitive treatment. Advanced methods of treating infertility should be made available if
the problems associated with infertility are to be alleviated.

Health providers should address the emotional and psychological effects of infertility in the care they provide to these women. Further studies, preferably at the community level, are important to fully understand the wider consequences of the problem in society.

CORRESPONDING AUTHOR:

Jenberu Meskelu, MD, MPH
Department of Gynecology and Obstetrics, Sher Ethiopia, Ziway, Ethiopia
Email: birukeyuel123@gmail.com

REFERENCES

1. Zegers-Hochschild F, Adamson G.D, de Mouzon D, Ishihara O, Mansour R, Nygren K, Sullivan E, and van der Poel S. The International committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary on ART terminology, 2009. Hum Reprod 24:2683-2687.
2. Bull World Health Organ 2010; 88:881-882.
3. Kebede D, Tefera B and Sibhatu B. Infertility: Perceived Causes and Experiences in Rural Southwest Ethiopia. Ethiopia J Health Sci, 2007, 17(2); 91-97.
4. Sonja L.N, Akin T. A, Sally T and Xiaoyun L. The Impact of Infertility on Infertile men and Women in Ibadan, Oyo State, Nigeria: A qualitative study. Afr J Reprod Health 2009;13(3):85-89
5. Okonofua F.E, Harris D, Odebiyi A, Kane T and Snow R.C. The Social Meaning of Infertility in Southwest Nigeria. Health Transition Review 7, 1997,205-220
6. Moyo S and Muhwati I. Socio-Cultural perspectives on causes and Intervention Strategies of Male Infertility: a case Study of Mhondoro-Ngezi, Zimbabwe. Afr J Reprod Health 2013;17(2):89-101
7. S.J.Dyer and M. Patel. The economic impact of infertility on women in developing countries a systematic review. Facts Views Vis Obgyn. 2012; 4(2): 102–109.
8. Hasanpoor Azghdy SB, Simbar M, Vedadhir A. The social consequences of infertility among Iranian women: a qualitative study. Int J Fertil Steril. 2015; 8(4): 409-420.
9. Marida H, Ulla L, Oka O and Bruce W. The Problem of Infertility in high fertility populations: Meanings, Consequences and coping Mechanisms in two Nigerian Communities. Soc Sci Med. 2009 Jun; 68(11):2061-2068.
10. Tabong PT-N, Adongo PB (2013) Understanding the social meaning of Infertility and Child bearing: A qualitative Study of Perception of Child bearing and Childlessness in Northern Ghana. PLoS ONE.2013;8(1): e54429 doi 10.1371/journal.pone.0054429

ASSESSMENT OF DIETARY PRACTICE AND ASSOCIATED FACTORS AMONG PREGNANT MOTHER IN AMBO DISTRICT, WEST SHOA, OROMIA, ETHIOPIA, 2018

BekeleTolera, MPH[1], Samson Mideksa, PhD.[1], Nagasa Dida, MPH[1]

ABSTRACT

BACKGROUND: Poor maternal nutrition during pregnancy were associated with higher risk of having a preterm birth, low birth-weight, Intrauterine Growth Restrictions and facing with multiple threats to their own health and survival. There is no study conducted on assessment of dietary practices and associated factors during pregnancy in the study area.

OBJECTIVE: To assess the dietary practices and associated factors among pregnant mothers in Ambo district west Shoa Zone, Oromia region, Ethiopia.

METHODS: Community based cross sectional study supplemented with qualitative (FGD) was conducted from April, 9-19, 2018, by considering non-fasting season. Simple random sampling technique was utilized to select 10 kebeles out of 33 total kebeles. The study used SPSS windows of version 21.0. Multivariate logistic regression was used to determine factors associated with dietary practice and P-value of < 0.05 was used to declare statistical significance. Finally, 343 samples were allocated proportionally to each selected kebeles.

RESULTS: Out of 343 pregnant women 338 were interviewed yielding response rate of 98.5%. Only one fourth of pregnant women with 95% CI 22.5-32.0 had good dietary practices. Nutrition information, average monthly income, husband occupation and age of pregnant woman were independent factors for good dietary practice. Families with average monthly income greater than 4,000 birr (AOR= 15.50 at 95% CI 3.89-61.78), pregnant mothers whose age in the rage of 27-35 year (AOR: 0.425 with 95% CI of 0.193-0.938), pregnant mothers who had no nutrition information (AOR: 0.020 with 95% CI of 0.006, 0.069), and daily laborer husband of pregnant mothers (AOR: 0.058 with 95% CI, 0.005-0.718).

CONCLUSION: The prevalence of good dietary practice among respondents was very low. The factors associated with dietary practice were nutrition information, family monthly income, husband occupation and age of pregnant women. Thus, Ambo district health office should consider identified factors in their plan to reduce the prevalence of poor dietary practice. Particularly, health extension workers, and health workers have to give due attention by awareness creation of pregnant mothers. As well, it is recommended for further assessments on dietary practice to identify additional factors affecting dietary practices of pregnant mothers.

KEYWORDS: Dietary practice, pregnant women meal frequency, Ambo, Oromia, Ethiopia.

(Ethiopian Journal of Reproductive Health; 2018; 10; 4: 43-51)

1 *Department of Public Health, Medicine and Health Science College, Ambo University, Ambo Ethiopia*

INTRODUCTION

Healthy and balanced nutrition is fundamental for health and proper functioning of the body system throughout the life cycle of all human beings. Pregnancy is considered to be a stress test for life. This stressful condition primarily originates from the need for balanced nutrition during pregnancy to support growth and development of the fetus1.

Poor maternal nutrition during pregnancy were associated with higher risk of having a preterm birth, low birth-weight, Intrauterine Growth Restrictions and facing with multiple threats to their own health and survival2.

Balanced nutrition during pregnancy helps to improve birth outcomes and prevent the child from developing diseases such as heart disease and obesity later in life. Proper food and good nutrition are essential for survival, physical growth, mental development, performance and productivity, and health and wellbeing. However, the nutrition requirement varies with respect to age, gender, and pregnancy3.
Poor maternal nutrition and its complications is one of the direct causes of neonatal deaths resulted from preterm birth. It is responsible for 35% (3.1 million) of the world's death in a year and indirectly increases the chance of dying from infection worldwide4. Children of malnourished pregnant mothers are born with low birth weight, are disadvantaged from birth, fail to grow normally, and face a higher risk of having disease and premature death5, 6.

Seven percent of the global disease burden and at least a fifth of maternal deaths is the result of maternal malnutrition along with the increased probability of poor pregnancy outcomes 7. In South East Asia, South America and Africa countries, the region maternal under nutrition prevalence is as high as 35%8. Ethiopia prevalence of micro nutrient deficiency is severe public health concern. Particularly, anemia remained to be a challenge at national level and the Western Ethiopia is more than twenty nine percent9.

According to millennium development goal maternal nutrition during pregnancy is the target area to reduce maternal mortality and infant mortality. There had no study conducted in the study area about the assessment of pregnant mother's nutrition practices and associated factors. Hence the present study was conducted to determine prevalence of dietary practices and associated factors among pregnant mothers. These in turn provide relevant information about dietary practice for planning and intervention.

METHODS

The study was conducted in Ambo district west Shoa Zone, Oromia region, Ethiopia. It is found 114 km away from Addis Ababa. Ambo district have 33 kebeles and all kebeles are ruralwith total population of 137,806 in which 4,782 of them are pregnant women10.

Community based cross sectional study supplemented with qualitative (FGD) was conducted from April, 9-19, 2018, by considering non-fasting season. Simple random sampling technique was utilized to select 10 kebeles out of 33 total kebeles. Finally, 343 samples were allocated proportionally to each selected kebeles based on their total number of pregnant mothers.

Sample size required for this study was calculated by using OpenEpi version 2.3 with an assumption of 95% confidence interval, 0.05 margin of error and the proportion of good dietary practice in GutoGida District, East Wallaga of Oromia Region, Ethiopia with the outcome of 33.9%. Two FGD were conducted to explore associated factors with dietary practice. The FGD were conducted at health center with those mothers who came for ANC service by considering representation from all kebeles. The key informants who had been participated in FGD were pregnant mothers and the numbers of participant were 15.

Quality of data was assured through pre-testing the tool, training for data collectors and supervisors. From total expected sample size, 5% was pre-tested in A/ Doyyo kebeles to establish whether the tools could generate the information needed with precision and required time duration. After the pre-test conducted, adjustments were done accordingly to enhance reliability and validity of the tools.

Data were entered into Epidata and transported to SPSS windows of version 21.0 and analysis was done after data cleaning. Both descriptive and analytical statistics were used. Descriptive results have been presented using tables and graphs. Binary logistic regression analysis was used to identify associations between variables. Multivariate logistic regression analysis was done to control possible effects of confounders and to identify the predictor of the study variables. Association between the independent and dependent variables were assessed at p-value of 0.05.

Ethical permission was obtained from Ethical Review Committee of Public Health Department, Ambo University College of medical and health science. With supportive letter obtained from the department and communication was made with district health office. Verbal consent was obtained from the study participants after clarifying the aim of the study. The respondents had the right to respond fully or partially to the questionnaire. Confidentiality was maintained by omitting the name of the respondents and not discloses their personal information to others.

Inclusion and exclusion criteria

All pregnant women who had permanent resident of the study kebeles were participated in the study. Pregnant mothers who were too sick and did not cooperative to participate in the study were excluded.

Operational Definition

Practices: The observable actions of pregnant mothers that could affect her meal frequency per day.

Good dietary practices: Pregnant women who eat more than three meals per day.

Poor Dietary practices: Pregnant mothers who have not consumed additional meal per day than usual three meals during pregnancy.

RESULT

Out of 343 pregnant women 338 were interviewed for this study and yielding their response rate of 98.5%. The mean age of pregnant women was 27.31 years (+/- 5.622). From total study participants 183(54.1%) of the respondent were followers of orthodox, 123(36.4%) were protestant and 32(9.5%) were Waqefata. Among the study subjects 252(74.6%) of husband occupation were farmer, 26 (7.7%) were merchant, 23 (6.8%) were employed and 18(5.3%) were daily laborer. Regarding average monthly income of the family, more than half 184 (54.4%) got less than 2000 birr per month, 124(36.7%) of them got 2000-4000 birr per month and only 30(8.9%) had got monthly income greater than 4000 birr (Table 1).

Table 2: Socio-demographic characteristics of pregnant mothers in Ambo district west Shoa Zone, Oromia region, Ethiopia, April 2018

		Frequency	Percent (%)
Age (years)			
	18-26	162	47.9
	27-35	141	41.7
	>=36	35	10.4
Religion of respondents			
	Orthodox	183	54.1
	Protestant	123	36.4
	Waqeffata	32	9.5
Marital status			
	Married	319	94.4
	Other (single, widowed, divorced)	19	5.6
Husband Educational status			
	No formal education	78	23.1
	Can read and write	75	22.2
	Primary	84	24.9
	Secondary and above	82	25.7
Husband Occupation			
	Employed	23	6.8
	Merchant	26	7.7
	Daily laborer	18	5.3
	Farmer	252	74.6
Maternal Education			
	No formal education	126	37.3
	Can read and write	67	19.8
	Primary	97	28.7
	Secondary and above	48	14.2
Maternal Occupation			
	Attended to house chore	266	78.7
	Employed	13	3.8
	Merchant	26	7.7
	Daily laborer	33	9.8
Family size of Respondents			
	<= 2	75	22.2
	3-4	142	42.0
	>=5	121	35.8
Average monthly income (Ethiopian Birr)			
	<2000.00	124	36.7
	2000.00-4000.00	184	54.4
	>4000.00	30	8.9

Only 88(26%) of the respondents had habits of food aversion during this pregnancy. Forty-three participants (48.9%) were due to cultural belief/taboo and 45(51.1%) personal dislike. In addition, more than half 182(53.8%) of respondents had experienced food craving. Of which, 139 (76.4) had got the food they craved, but 43(23.6%) respondents had not get the food they craved. The factors that hinder pregnant mother from craved food were economic issue 18(41.9%) and availability issue 25(58.1%). Regarding meal skipping, only 57(16.9%) of respondents had habits of meal skipping. The factors which make them to skip their regular meal were poor economy 21(36.8%), personal dislike 16(28.1%), and fear of obesity 20(35.1%). Concerning meal frequency, 288 (85.2%) of respondents had history of three meals consumption and the rest 50(14.8%) consumed two meals within a day before the current pregnancy. However, 91 (26.9%) pregnant women had consumed additional meal per day than usual during this pregnancy (Table 2).

Table 3: Meal pattern of pregnant mothers, Ambo district west Shoa Zone, Oromia region, Ethiopia, April 2018

1Variable	Frequency	Percent (%)
1. Additional meal consumed		
No	247	73.1
Yes	91	26.9
2. Number of extra meals within a day		
Once	74	81.3
Twice	17	18.7
3 Reason of not having additional meal		
Lack of information	64	25.9
Poor economy	115	46.6
Considered as adequate	68	27.5
4. skipping meal		
No	281	83.1
Yes	57	16.9
5.Reason of meal skipping		
personal dislike	16	28.1
fear of obesity	20	35.1
poor economy	21	36.8
6.Fasting habits during pregnancy		
No	329	97.3
Yes	9	2.7
7. food avoided during pregnancy pregnant		
No	250	74.0
Yes	88	26.0
8.Reason of food avoidance		
Personal dislike/Aversion	45	51.1
Not allowed to pregnant/cultural taboo	43	48.9
9.Reason of cultural beliefs/taboo		
Will make baby big & labor difficulty	14	32.6
Will be plastered on fetal head	18	41.9
Evil eye	11	25.5
10. any food desire strongly(craving)		
No	156	46.2
Yes	182	53.8
11.reason to crave for these food items		
Color of food	19	10.4
Food odor	68	37.4
I do not know the reason	95	52.2
12.Did you get the food you crave		
No	43	23.6
Yes	139	76.4
13.The reason of not getting craved food		
Not affordable	18	41.9
Not available	25	58.1

To identify factors associated with dietary practices both binary and multivariate logistic regression models were used. Accordingly, factors that were associated with dietary practices of pregnant mothers under binary logistic regression were, age of pregnant women, educational status and occupation of husband, educational status of pregnant women, and average monthly income of the family, health and nutrition information, meal frequency before pregnancy and food cravings during pregnancy. The variables that showed significant association with dietary practice during pregnancy were adjusted for their confounders using multivariate logistic regression model.

Average monthly income of the family, age of pregnant

mothers, and occupation of husband and nutrition information became independent predictor for dietary practices. Categorization of monthly income and age was made based on the existing reference. Those who had an estimated family average monthly income of 2000.00 birr to 4000.00 were 2.5 times more likely good dietary practice than estimated family monthly income less than 2000.00 birr (AOR= 2.53 at 95% CI 1.16-5.50). Also, those who had an estimated average monthly income greater than 4000.00 birr were 15.5 times more likely good dietary practice than estimated family monthly income less than 2000.00 birr (AOR= 15.50 at 95% CI 3.89-61.78) which is summarized in the Table 3.

Table 4: Bivariate and Multivariate analysis of dietary practice and associated among pregnant mothers in Ambo district west Shoa Zone, Oromia region, Ethiopia, April 2018

Variable	Dietary Practice (having additional meal)		COR (95%CI)	AOR (95%CI)
	Yes	No		
Age				
18-26	109 (67.3%)	53(32.7%)	1	
27-35	111(78.7%)	30 (21.3)	0.556(.33, .94)	.43(.19, 0.94)**
>=36	26 (74.3%)	9 (25.7%)	.712(.312, 1.626	.27(.08, 0.89)**
Husband Educational status				
No formal education	53 (16.6%)	21(6.6%)	0.81 (.34, 1.95)	0.58(0.040, 8.40)
Can read and write	31(9.7%)	10 (3.1%)	.68 (.35, 1.33)	0.33(0.02, 5.4)
Primary	93 (29.2%)	25 (7.8%)	1.32(.65, 2.67)	0.37(0.026, 5.38)
Secondary	46 (14.4%)	24 (7.5%)	5.55(1.72, 17.92)	0.247(0.02, 3.31)
Collage and above	5 (1.6%)	11(3.4%)	1	
Husband Occupation				
Employed	5 (21.7%)	18 (78.3%)	1	
Merchant	10 (38.5%)	16 (61.5%)	.44(.13, 1.58)	1.00(.18, 5.48)
Daily laborer	17 (94.4%)	1 (5.6%)	.014(.001, .130)	.058(.01, .72) **
Farmer	196 (77.8%)	56 (22.2%)	081(.03, .23)	.32(.084, 1.179)
Maternal educational status				
No formal education	93 (73.8%)	33 (26.2%)	.36(0.11, 1.18)	13.97(.76, 26.33)
Can read and write	40 (80%)	10 (20%)	.250(.07, .94)	10.01(0.48, 209.35)
Primary	81(72.3%)	31(27.7%)	.383(.12, 1.28)	25.67(1.24, 528.925)
Secondary	26 (68.4%)	12 (31.6%)	.46(.123, 1.73)	5.36(0.31, 92.44)
Collage and above	6 (68.4%)	6 (31.6%)	1	
Family Size				
<=2	46 (61.3%)	29 (38.7%)	1	
3-4	105(73.9%)	37 (26.1%)	.559(.308, 1.015)	1.16(.39, 3.47)
>=5	95 (78.5%)	26 (21.5%)	.434(.230, .820)	.720(0.19, 2.81)
Average Monthly Income				
<2000.00	160 (87%)	24 (13%)	1	
2000.00-4000.00	79 (63.7%)	45 (36.3%)	3.797(2.161, 6.675	2.53(1.16, 5.50) **
>4000.00	7 (23.3%)	23 (76.7%)	21.91(8.48, 56.56	15.50(3.89,61.78) ***
Health information				
No	134 (59.8%)	90 (40.2%)	37.612(9.059, 156.152)	
Yes	112 (98.2%)	2 (1.8%)	1	
Nutrition information				
No	169(96.6%)	6 (3.4%)	.015(.004, 047)	.02(.006,.07) ***
Yes	78 (47.9%)	85 (52.1%)	1	
Meal frequency within a day before this pregnancy				
Two	45 (90%)	5 (10%)	1	
Three	201 (69.8%)	87(30.2%)	3.90(1.495,10.149)	1.57(0.73, 3.34)
Food craved				
Yes	122 (78.2%)	34 (21.8%)	1.678(1.027, 2.74)	1.52(0.72, 3.23)
No	124 (68.1%)	58 (31.9%)	1	

** indicate p-value <0.03 and *** indicate p-value <0.000

Accordingly, pregnant mothers whose age in the rage of 27-35 year were 57.5% less likely to had good dietary practices than those who were aged 18-26 years (AOR: 0.425 with 95%CI of 0.193-0.938). While those pregnant women whose age greater than or equals to 36 years during pregnancy had 27% less likely to had good dietary practice than those who were aged in the range of 18-26 years (AOR: 0.27 with 95% CI of 0.08-0.84).

Pregnant mothers who had no nutrition information had 0.020 less likely to had good dietary practices than those who had nutrition information (AOR: 0.020 with 95%CI of 0.006, 0.069). Finally, the study findings identified that employed husband of pregnant mothers had 94.2% less likely to have good dietary practices than daily laborer husband (AOR: 0.058 with 95%CI, 0.005-0.718).

There were different idea flows of FGD in qualitative study. To mention some, a woman of 33 years aged old said "... the amount and frequency of foods during pregnancy and before pregnancy in my house and nearby are not different which means I ate three times a day. Since I am engaged in agricultural activities, and the income what I had is low I am worried about foods sufficiency to my family members". In addition, discussants in the group noted that few pregnant women avoided some food groups from their regular meal.

DISCUSSION

Based on the general questions offered to the pregnant mothers to assess status of their dietary practice, only 26.9% with 95% CI of (22.5-32.0) had good dietary practice during pregnancy. This figure is almost similar (31.4%) or consistent with study conducted in Dale Woreda, Sidama zone, SNNPRS, Ethiopia. However, the current study is higher than the study conducted in Wando Gannet district, Southern Ethiopia 21.6% during pregnancy1, 11. Whereas, lower than the study conducted in Malaysia 74%, Pakistan 65.5%, Poland (47%), Ghana Accra (37.7%) and Guto Gida Ethiopia 33.9%. So this discrepancy may be due to socio demographic variation12-16. Accordingly, FGD report shows that, majority of pregnant women in the study area ate three meals and few of them ate two per day. This note describes majority of pregnant women did not eat additional meal than usual per day. So, the idea raised by discussant supports the quantitative result of the current study.

Average monthly income of the family, nutrition information, age of pregnant woman, and husband occupation were identified as important factors affecting dietary practice of pregnant mothers during pregnancy. The finding of this study identified that average monthly income of the family had strong statistical association ($p<0.000$) with dietary practice during pregnancy. Also, nutrition information had statistical association with dietary practice during pregnancy ($p<0.000$).

Similar findings had also been reported from a study done in Guto Gida Woreda, East Wollega Zone; Ethiopia identified that average monthly income and nutrition information had statistical association with dietary12, 17. Additionally, the current study indicated that age of pregnant mothers had statistical association with dietary practice. Similar study conducted in Nigeria revealed that age of pregnant mothers had statistical association. This implies that older women had better dietary practice during pregnancy compared with younger women. This may be due to older women are more experienced over time6.

The finding of this study also identified that pregnant woman husband's occupation had statistical association with dietary practice ($p<0.05$) during pregnancy. Even though husband occupation had statistically significant to dietary practices in the current study there was no reference which support or

contradict the results. So, it needs further assessment to identify husband occupation has association or not with dietary practice.

Strength

The strength of this study is mixed use of data collection to strengthen the quality of the study result.

CONCLUSION AND RECOMMENDATION

Based on the findings current study, it can be concluded that the prevalence of good dietary practice among pregnant women was very low. The pregnant mother found in the study area was suffered from poor dietary practice due to not having additional meal during pregnancy. According to the study result factors affecting dietary practice were nutrition information, average monthly income, women's husband occupation, and age of pregnant women.

Based on the identified gaps government body, specially Ambo district health office, health extension worker, and health workers due attention to maximize the prevalence of good dietary practice by awareness creation of pregnant mothers. Ambo University College of medicine and health science, department of public health also takes responsibility for further assessments on dietary practice to identify additional factors affecting dietary practices of pregnant mothers.

CORRESPONDING AUTHOR:

Bekele Tolera, MPH
Department of Public Health, Medicine and Health Science College, Ambo University, Ambo Ethiopia
E-mail: bekeletolera@gmail.com

REFERENCES

1. Kuche D PS, Debebe M. Ditary practice practice and associated factors among pregnant women in Wondo Genet district southern ethiopia. 2015;4(5).
2. Monchari RaR JB, Kisaka NA. Food beliefs and practices among the Kalenjin pregnant women in rural Uasin Gishu County, Kenya. Journal of Ethnobiology and Ethnomedicine. 2017.
3. Plećaš D PS, Vučinić OK. 2014;142(1-2). Nutrition in Pregnancy: Basic Principles and Recommendations. Srp Arh Celok Lek.142(1-2).
4. (WHO) WHO. Born Too SoonThe Global Action Report on Preterm Birth. WHO Library Cataloguing-in-Publication. 2012. 2012.
5. Zhang Y ZH, Perkins A, Wang Y, Sun aJ. Maternal Dietary Nutrient Intake and Its Association with Preterm Birth- Beijing, China. mdpi nutrients. 2017;9(221).
6. Mattew O OO, S. AO, L. AA. Dietary intake knowledge and reasons for food restriction during pregnancy among pregnant women attending primary health care centers in Ile-Ife, Nigeria. International Journal of Population Studie. 2016;2(1).
7. WHO. comprehensive implmentation plan on maternal, infent and young children nutrition. 2014.
8. Bhutta) WZA. Maternal Malnutrition Globally: Epidemiology and Links to Childhood Malnutrition. Global Child Health. 2008
9. Ejeta E, Alemnew B, Fikadu A, Fikadu M, Tesfaye L, Birhanu T. Prevalence of Anaemia in Pregnant Womens and Associated Risk Factors in Western Ethiopia
10. (Ambo) WH. Anual report of Ambo district Health office. 2018.
11. H. Y. prvalence of food aversion, crevings and pica diring pregnanacy and their association with nutritional status of pregnant women in Dale woreda, sidama zone, SNNPR, Ethiopia. International journal of nutrition and metabolism. 2014;7(1).
12. Gemeda D FB, W G, Habtamu F. Assessment of Nutritional Practices of Pregnant Mothers on Maternal Nutrition and Associated Factors in Guto Gida Woreda, East Wollega Zone, Ethiopia. STAR journal. 2013;2(3).
13. S M AM, M S, B N, M. H. Assessment of Nutritional Beliefs and Practices in Pregnant and Lactating Mothers in an Urban and Rural Area of Pakistan.
14. M.Sc KR, Martins SDR RM MS, FWACN LN, RM, BNSc, , Dathini HR R, BNSc, PGDE, Habu HR B, Fatima AAR R, BNSc, PGDE, et al. Knowledge and attitude of pregnant Women towardsdietary practices in Yerwa Clinic, MaiduguriMetropolitan Council; Borno State. Journal of Research in Nursing and Midwifery (JRNM) 2015;4(1). 2015;4(1)::12-9.
15. E. S. Nutritional behaviours of pregnant women in rural and urban environments, poland . Ann Agric Environ Med. 2015.
16. Manaf ZA JN, Mei LY, Yee NS, Yin CK, Teng LW. Nutritional Status and Nutritional Knowledge of Malay Pregnant Women in Selected Private Hospitals in Klang Valley. . Jurnal Sains Kesihatan Malaysia. 2014;12(2).
17. NB Z. . Food Taboos and Misconceptions Among Pregnant Women of Shashemene District, Ethiopia, Science Journal of Public Health 2012;3(3).

DETERMINANTS OF POSTNATAL CARE SERVICE UTILIZATION IN DIGA DISTRICT, EAST WOLLEGA ZONE, WESTER ETHIOPIA: CASE-CONTROL STUDY

Worku Dechassa Heyi[1], MPH, Makonnen Mamo Deshi[2], MPH, Motuma Getachew Erana[1], MPH

ABSTRACT

BACKGROUND: Postnatal care is one of the most important maternal health care intervention to prevent morbidity and mortality during the postnatal period.
Objective of the study: To assess determinants of postnatal care service utilization among mothers who were in the 6th week to 12months period after delivery in Diga district, 2017.

METHODS AND MATERIALS: A community based unmatched case-control study was conducted among 347 mothers (cases=115 and controls=232) who were in the 6th week to 12months after delivery during data collection period. A pretested questionnaire was used for data collection and data were analyzed using SPSS version 24 software. Bivariate analysis was conducted to examine the association between dependent and independent variables; Odds Ratios (ORs) and their 95% Confidence Intervals (CIs) were calculated. Then, multivariable logistic regression was used to control for possible confounders. p-value less than 0.05 were considered statistically significant.

RESULTS: In this study, 341 study subjects were interviewed 113 (98.26%) cases and 228(98.27%) controls with overall response rates of 341(98%). 107 (94.7%) of cases and 72(31.6%) of controls had ever heard about postnatal care service. Place of delivery (AOR: 4.5, 95%CI: (3.04, 6.72), having antenatal care before current delivery (AOR: 11, 95% CI: (1.76, 17.34), maternal knowledge about postnatal danger signs (AOR: 1.3, 95%CI: (1.02, 1.69), were found to be significantly associated with postnatal care service utilization.

CONCLUSION: Encouraging regular ANC follow up with institutional delivery along with integrated health education about postnatal care both during pregnancy and delivery will increase postnatal care service utilization.

KEYWORDS: Postnatal care, determinants postnatal care utilization, Diga District, East Wollega, Western Ethiopia.

(Ethiopian Journal of Reproductive Health; 2018; 10; 4: 52-61)

1 Medical and Health Sciences, Wollega University, Nekemte, Ethiopia
2 Diga District Health Office, East Wollega Zone, Diga, Ethiopia

INTRODUCTION

Postnatal period is the first six weeks after delivery and the return of the reproductive organs to their normal non-pregnant state. Postnatal care is a care provided to women and their babies within 42 days after delivery1. World Health Organization (WHO) recommends that after an uncomplicated vaginal birth in a health facility, healthy mothers and newborns should receive care in the facility for at least 24 hours after birth. If birth is at home, the first postnatal contact should be as early as possible within 24 hours of birth. At least three additional postnatal contacts are recommended for all mothers and newborns, on day 3 (48–72 hours), between days 7–14 after birth, and six weeks after birth. Whereas Federal Ministry of Health (FMoH) of Ethiopia recommends three PNC care visits within 24 hours, 3 days, 7 days and 6 weeks2. The health of mothers is mostly regarded as an indicator of the health of the society. Postnatal care utilization is regarded as one of the most important maternal health care services for the prevention of morbidity and mortality resulting from pregnancy and childbirth3. A large proportion of maternal and neonatal deaths occur within 48 hours after delivery. But most newborns and mothers do not receive postnatal care services from a skilled health care provider during this critical first few days after delivery. These first two days following delivery are critical for monitoring complications arising from the delivery4. However, according to the EDHS 2016 the national and Oromia region coverage of postnatal care service utilization within the first two days after delivery is only 16.5% and 9.0%, respectively.

Poor women in remote areas are the least likely to receive adequate postnatal care service. This is especially true for regions with low numbers of skilled health workers, such as sub-Saharan Africa and South Asia. This means that millions of births are not assisted by a midwife, a doctor or a trained provider. Factors that avoid women from receiving or seeking care during pregnancy and childbirth are poverty, distance, lack of information, inadequate services and cultural practices5. In developed countries, virtually all women and their infants receive postnatal care service, even though the nature and frequency of this care vary considerably6.

Despite the availability of the postnatal care service at all level, the mothers and their new babies are not receiving this life-saving service. This indicates that determinants of postnatal care service utilization still need strong due attention to be researched so as to improve its utilization and it also indicates that the available knowledge about the service utilization is insufficient. Evidence from local health facilities and Diga district health office shows that majority of mothers did not attend PNC service in the first three days and during the first two weeks after childbirth unless mothers or their newborn babies get sick7. Therefore, this study aimed to identify Socio-demographic, health institution and maternal related factors that contribute for low postnatal care service utilization among mothers who were in the 6th week to 12months period after delivery in Diga district., the results of this study could help to explore factors that deter PNC service utilization to suggest policies and interventions aimed at improving the PNC service utilization.

METHOD AND MATERIALS

Study Area and Period

This study was conducted in Diga district in East Wollega Zone, Oromia regional state, at a distance of 340Km from Addis Ababa. The district is administratively structured into 21 rural Kebeles and three urban kebeles. According to Central Statistical Agency, the projected population of the district for 2016G.C is 88474.The estimated number of women of childbearing age and under one-year children is 19,036 and 2770 respectively7. The health infrastructure of

the District comprises of four health centers and 24 functional health posts as well as 17 private primary clinic and 4 drug shops. All health centers provide postnatal care services. Health extension workers also provide postnatal care services at health post level. The study was conducted from October1-30, 2017.

Study Design

A Community based unmatched case-control study design was employed to assess determinants of postnatal care service utilization in Diga district, East Wollega Zone, Western Ethiopia.

Source Population

All women who were in the 6th week to 12months after delivery during data collection period and living in Diga District.

Study Population

The study participants were all randomly selected women who were in the 6th week to 12months after delivery during data collection period and living in seven selected kebeles of Diga district.

Cases: All women who were in the 6th week to 12months after delivery during data collection and living in selected kebeles and utilized postnatal care.
Controls: All women who were in the 6th week to 12months after delivery during data collection and living in selected kebeles of the district and did not utilize postnatal care.

Sample Size

A two-population proportion formula using Epi-info7 with the assumptions of; a 95% confidence level, 85% power, level of exposure to institutional delivery in the control group was 9% (9), an odds ratio of 3.6, the ratio of case to control of 1:2, an additional 10% non-response rate and design effect of 1.5. The calculated total sample size was 347 with the number of sampled cases (n=115) and sampled controls (n=232).

Sampling Technique

The study was conducted in seven selected kebeles (one urban and six rural). Six Kebeles from rural and one kebeles from urban were selected from the district by simple random sampling technique using lottery method. Prior to data collection, a census of the sampled seven Kebeles were conducted and listing of all households with women who gave birth in the past 12 months were made and a sample frame was prepared separately for those who attended PNC for their last delivery (case) and for those who did not attend PNC for their last delivery (control). The total sample size was allocated to each kebeles based on the proportional size of the study population. Finally, study subjects were selected by simple random sampling using random number generated by computer from the existing sampling frame of study participants.

Data Collection and Processing

Data was collected through interviewer-administered face to face interview by using a pre-tested structured questionnaire which was developed from similar studies. The questionnaire was prepared in English and translated into regional working language, Afaan Oromo. Data were collected by seven trained nurses and data collection process was supervised by four public health professionals. to give appropriate support during the data collection process. All completed questionnaires were reviewed by the principal investigators.

Data Analysis and Quality Management

Data were entered and cleaned using Epi-Info version 3.5.3 statistical software package and exported to SPSS Version 24 for analysis. Univariate and binary logistic regression was carried out to assess for an association between dependent and independent variables. All variables having a p-value <0.25 in the bivariate analysis were selected for the multivariable logistic regression to control for possible confounders.

Those variables having p-value <0.05 were taken as significant predictors. Crude and adjusted odd ratios with their 95% confidence were computed to show the association between dependent and independent variables.

Measurements

Postnatal care (PNC): -the care provided to the mother for the first six weeks after delivery.

Puerperium – the first six weeks' after delivery.

Postnatal care service utilization: a mother who received at least one PNC service by a health professional (midwife, nurse, health officer, and a medical doctor or health extension worker) during the first six weeks after delivery.

Recommended postnatal care: PNC was given to a mother for the first six weeks after delivery as per FMoH of Ethiopia standards; within the first 24 hours after birth, at 3 days, 7 days and at 6weeks.

Access to health facility: mother being no more than an hour from health facility or availability of health facility within one-hour travel by local means of transportation (foot, horse).

Knowledge about postnatal danger signs: a mother who is able to name the maternal potential danger sings during the postnatal period.

Have knowledge about postnatal danger signs: a mother who spontaneously mentions at least one maternal potential danger sings during the postnatal period. When 1 is given for correct answer and 0 is given for the incorrect answer.

Not have knowledge about postnatal danger signs: a mother who failed to spontaneously mention at least one maternal potential danger sings during the postnatal period. When 1 is given for correct answer and 0 is given for the incorrect answer.

Attitude about PNC service- a way of thinking about PNC service or behaving towards PNC service

Favorable attitude: The questions on Likert's scale had positive and negative responses that ranged from strongly agree to strongly disagree. The responses were summed up and a total score was obtained for each respondent. Those respondents who scored greater than the mean were considered favorable attitude.

Unfavorable attitude: Those respondents who scored less than the mean was considered as unfavorable attitude.

Maternal decision making regarding medical care seeking: the ability of the mother to make and execute independent decision pertaining to PNC service utilization.

Maternal near-miss: a woman who nearly died but survived a complication that occurred during pregnancy, child birth or within 42 days of termination of pregnancy. In practical terms, women are considered near miss cases when they survive life threatening conditions.

Postnatal danger signs: a severe headache, blurred vision, excess vaginal bleeding, offensive uterine discharge, convulsion, edema on face and hands.

RESULTS

Socio-demographic Characteristics of Study Population

Of 347 participants selected, 113 (98.26%) cases and 228(98.27%) controls were interviewed with overall response rates of 341(98%). The mean age of the participants was 27.85 years (SD + 5.376) and 111 (98.2%) cases and 211(92.5%) controls were married.

In this study 105(92.9%) of cases and 216(94.1%), controls were Oromo ethnic group. Concerning maternal educational status, uneducated mothers were 21(18.6%) in cases and 134(58.8%) of controls. Among the cases 7(6.2%) were educated to college and above level. Regarding maternal occupation, 101(89.4 %) cases and 228(100%) controls were a housewife. (Table 1)

Table 5: Socio-demographic characteristics of study participants in Diga district, 2017

Variables	categories	Cases (n = 113) No (%)	Controls (n = 228) No (%)
Maternal age in years	15-19	10 (8.8)	10 (4.4)
	20-24	25 (22.1)	40 (17.5)
	25-22 25-29	52 (46)	83 (36.4)
	30-34	25 (22.1)	47(20.6)
	35-39	1 (0.9)	48(21.1)
Marital status	Married	111(98.2)	211(92.5)
	Separated	0(0.0)	1(0.4)
	Divorced	2(1.8)	9(3.9)
	Widowed	0(0.0)	7(3.1)
Ethnicity	Oromo	105(92.9)	216(94.1)
	Amhara	6(5.3)	12(5.3)
	Gurage	2(1.8)	0(0)
Religion	Protestant	63(55.8)	123(53.9)
	Orthodox	26(23)	66(28.9)
	Muslim	24(21.2)	39(17.1)
Maternal education	Not Educated	21(18.6)	134(58.8)
	Able to read and write	6(5.3)	35(15.4)
	Grade 1-4	35(31)	46 (20.2)
	Grade 5-8	21 (18.6)	7 (3.1)
	Grade 9-10	19(16.8)	6(2.6)
	Grade 11-12	4(3.5)	0(0.0)
	College and above level	7(6.2)	0(0.0)
Husband Education	Not Educated	9(7.8)	102 (44.7)
	Able to read and write	2(1.8)	16 (7)
	Grade 1-4	9 (8)	65 (28.5)
	Grade 5-8	36 (31.9)	41 (18)
	Grade 9-10	42(37.2)	0(0.0)
	Grade 11-12	5(4.4)	2(0.9)
	College and above level	10(8.8)	2(0.9)

Obstetric characteristics

Regarding parity of participants 68 (60.2%) of cases and 68 (60.2%) of controls gave birth to two to four babies (multipara). About 10(8.8%) of cases and 18(7.9%) of controls gave birth to five or more babies (grand multipara) and 35 (31%) of cases and 92 (40.4%) of controls gave birth to one baby (have one child). As to the number of surviving children, most of the mothers have three surviving children on average. From the study participants 4(19%) of cases and 17(7.4%) of controls had a history of child deaths after birth within 42 days and of these, only 25% of cases and 15.4% controls were provided medical care before death.

Awareness of Mothers to PNC service utilization
Among study participants, 107 (94.7%) of cases and 72 (31.6%) of controls had ever heard about PNC. Among mothers who heard about PNC services after delivery 93(86.9%) of cases and 57 (79%) of controls heard from health professionals, 8(7.5%) cases and 8(11%) controls heard from women development army and 3 (3%) of cases and 4(6%) of controls heard from Radio.

Mothers attitude to PNC service utilization

In this study, 104(92%) of cases and 109(47.8%) of controls have favorable attitude on the importance of the PNC utilization with 42 days of delivery.

The practice of Mothers to PNC utilization

Of the total respondents, 113 (33.1%) utilized postnatal care service after delivery within Six weeks of their last delivery. Among PNC users(cases), majority 70(61.2%) mothers attended one time, 8(7%) attended two times and the rest 3 (2.5%) three times and none of them attended four times. Among PNC users, majority 43 (38%) of mothers attended PNC for their babies' immunization and 26 (23%) mothers had visited for excessive uterine bleeding. As to obstetric history, 50(46.3%) of cases and 63(53.7%) of controls had antepartum and postpartum related problem before giving their last birth. Among them, 48 (67.6 %) of cases and 23(32.4%) of controls have got treatment at the time of the problem. The main reasons for not receiving medical care during the time of problem were: 25(40%) of control were due to not knowing the benefits of PNC and 2(4%) of cases were due to lack of money for transportation. Of the respondents, 111(98%) of cases and 202(88.5%) of controls reported that they have received at least one ANC during their last pregnancy. Among them, 104(92%) of cases and 131(64.8%) of controls were advised to deliver at health facilities.

In this study 94(83.2%) of cases and 42(18.4%) of controls gave birth at a health center and 16(14.2%) of cases and 6(2.6%) of controls gave birth at a hospital. Among those mothers who delivered at health facilities, 110(70.1%) of them were told to attend PNC. Concerning home deliveries, only 3(2.7%) of cases and 180(78.9%) of controls gave birth at home.
Accessibility and Availability of Maternal Health Care Service

Seventy-eight (69%) of cases and 185(81.1%) of controls were traveled on foot; which took a maximum of one and half hour on foot travel to reach to usual health care facility. (Table2)

Table 2: Accessibility and Availability of maternal health care service in Diga district, 2017

Variables	Options	Cases (n = 113)No (%)	Controls (n = 228) No (%)
Residence	Urban	24 (21.2)	44(19.3)
	Rural	89 (78.8)	184 (80.7)
Occupation of the mother	House wife	101(89.4)	228(100)
	Merchant	6(5.3)	0(0.0)
	Civil servant	6(5.3)	0(0.0)
Average monthly income (Birr)	<500	68(60.2)	209(91.7)
	501-1000	17(15)	13 (5.7)
	1001-1500	16 (14.2)	3 (1.3)
	1501-2000	4(3.5)	0(0.0)
	>20	8(7.8)	3(0.6)
Means of transport	On foot /walk	78(69)	185(81.1)
	Public transport	33(29.2)	23(10.1)
	Hourse/cart	2(1.8)	20(8.8)
Perceived distance	<30 minutes	78(76.5)	78(69)
from residence to usual	30 minutes to1 hr	21(18.6)	144(63.2)
health care facility.	1hr to 2 hrs	14(12.6)	60(26.3)
	short	62(54.9)	35(15.4)
Perceived waiting time at health facility	Satisfactory	38(33.6)	97(42.5)
	Long	13(11.5)	96(42.1)
Perceived quality of Health facility	Very good	17(15)	9(3.9)
	Good	77(68.1)	56(24.6)
	satisfactory	12(10.6)	132(57.9)
	Bad	7(6.2)	31(13.)

Socio-cultural practices that prohibited mothers from attending PNC

The majority 297 (87.1 %) of mothers were able to decide to go to the health facility for PNC follow up by themselves. Among those who could not decide to go to the health facility for PNC follow up, for 256 (75% of the them decision was made by their husband's and for 71(20.8%) of them by other family members and/ or neighbors. In about 161(42.2%) of respondents reported that their culture has prohibited them from attending PNC services, of them, 8(36.02%) has reported that the mother could not have enough energy to go out of the home and 55(34.16%) has replied that inflammation "MICH" will kill them if they go out before 42 days after delivery.

Factors associated with postnatal care service utilization

In bivariate analysis variables like ever heard about PNC, maternal knowledge of potential postnatal danger signs and symptom, ANC attendance before giving last birth, place of delivery, attitude of mothers towards PNC, number of Surviving children, puerperium related problems after delivery advice to deliver at health institution, cultures that prevent from attending PNC were statistically significant with PNC utilization.

After adjusting for other variables, maternal knowledge of postnatal danger signs, ANC follow up, place of delivery and information heard about PNC remained significant in multiple logistic regression. Mothers who gave birth at health institution were 4.5 times (AOR: 4.5, 95%CI: (3.03,6.72) more likely to utilize postnatal care service than those mothers who gave birth at home. Mothers who have ANC follow up were 11 times more likely to utilize PNC service (AOR= 11, 95% CI: (1.76, 17.34). Mothers who have information on PNC service were more likely to utilize PNC service (AOR= 27.7, 95% CI (10.08,70.3). A mother who knows at least one maternal danger sign were more likely to utilize PNC than mothers who did not know any maternal danger sign after birth (AOR= 1.3, 95% CI (1.02, 1.69) (Table 3).

Table3: Association between postnatal care service utilization and different characteristics among mothers in Diga District, October 2017

Variables value		Case (No)	Control (No)	COR (95%CI)	AOR (95%CI)
Mother knows postnatal period was more dangerous to the life of mother& her baby.					
	Yes	98	111	7.4(4.0,13.8)	2.4(.748,7.459)
	No	15	117	1	1
Mother knows at least one maternal danger sign and symptoms after give birth.					
	Yes	105	138	11.6(4.9,27.5)	1.3 (1.020,1.69) *
	No	8	90	1	1
Mother attended ANC	Yes	111	202	21(5.2,29.3)	11 (1.76, 17.34) *
	No	2	26	1	1
Mother gave her last birth at health institution					
	Yes	110	47	138(41.7,458.5)	4.5 (3.04, 6.72) *
	No	3	181	1	1
Importance of PNC service	Agree	108	209	6.5(1.6,26.7)	2.1(0.85,5.22)
	Disagree.	5	19	1	1
The mother had any pregnancy, childbirth or puerperium related problem					
	Yes	53	63	2.3(1.4,3.7)	1.3(0.585,2.875)
	No	60	165	1	1
No of Surviving children	1-4	109	194	4.8(1.65 ,13.81)	.679(0.14,3.23)
	5-8	4	34	1	1
Mother ever heard of PNC					
	Yes	107	72	38.6(16.2,92.0)	27.7(10.03, 76.3) *
	No	6	156	1	1

COR: crude odds ratio: odds ratio by bivariate analysis. 95% CI: confidence interval at the 95% level.
*: p –value significant at ≤0.05, AOR-Adjusted OR: odds ratio by multiple logistic regression
1: Referent category

DISCUSSION

Postnatal care is one of the most important maternal health care intervention for prevention of illnesses and deaths during the postnatal period. According to this study, there is a significant association between knowledge of mother and utilization of postnatal care service. The finding of this study identified that maternal attitude on the importance of postnatal care utilization, place of delivery, advises to have postnatal care and having ANC follow up are factors associated with postnatal care utilization.

Mothers who gave birth in health institution are more likely to utilize PNC compared with who gave birth at home. This finding online with other studies conducted in Jabitena District, Amhara region6. Similarly, mothers who have attended at least one ANC visit before giving their last birth were more likely to utilize PNC service than those mothers who have not attended ANC visit at all. These findings are consistent with the studies conducted in Gondar Zuria district, Amhara region11, Nepal12, and Pakistan13. This implies that if mother gave birth in health facility the probability of receiving advice and knowing the importance of postnatal care is high. Attending ANC follow up will also increase the chance of mother know the importance of postnatal care service and which of course help them overcome some traditional barriers that prohibit the utilization of PNC.

Knowledge of postnatal danger signs and symptoms has a positive association with PNC utilization. Mothers who know at least one potential postnatal danger sign and symptom are more likely to utilize PNC service as compared to those who did not mention any postpartum danger signs and symptoms. This finding is supported by local studies conducted

in, Goba woreda, Oromia region14, Jabitena District, Amhara region (6), and in addition, it is similar with a study conducted in Uganda15.This can be justified that knowledge on obstetric danger signs and symptom during puerperium is an important factor in motivating mothers and their families to attend health care service at the earliest opportunity with the intention of prevention, early detection and getting managed their obstetric danger signs and symptoms.

CONCLUSION

This study revealed that utilization of postnatal care service in Diga district, Oromia Regional State, is still low compared to some other studies conducted in different areas of Ethiopia and national target of postnatal care coverage. Maternal knowledge on postnatal danger sign, attending of ANC follow up, place of delivery, and lack of information about PNC found to be independent predictors for PNC service utilization. Therefore, encouraging regular ANC follow up with institutional delivery along with integrated health education about postnatal care both during pregnancy and delivery will increase postnatal care service utilization.

LIST OF ABBREVIATIONS AND ACRONYMS

ANC-Antenatal Care, AOR-Adjusted Odds Ratio, COR- Crude Odds Ratio, EDHS-Ethiopian Demography and Health Survey, FMoH-Federal Ministry of Health, PNC-Postnatal Care, SPSS-Statistical Package for the Social Sciences, WHO¬¬¬¬¬¬¬¬ World Health Organization

DECLARATIONS

Ethical Consideration

Ethical clearance was obtained from the Research Ethics Review Committee (RERC) of Wollega University. Permissions were obtained to undertake the study from Diga district health office and local administration. Written informed consent was obtained from each participant before conducting data collection. They were informed their right of not participating in the study and terminating at any time. Privacy and confidentiality of information were assured throughout the entire study period. Confidentiality of study participants was assured by using questionnaire identification number and privacy by removing names and other identifiers during the interview.

COMPETING INTERESTS

The authors have no conflicts of interest to declare for this study.

FUND

The study has been funded by Wollega University. The organization has no any influence on the design of the study and collection, analysis, and interpretation of data and in writing the manuscript.

ACKNOWLEDGMENTS

The authors would like to thank, Wollega University for all rounded support. We would like to acknowledge, Diga District Health Office for their cooperation and facilitating the field work throughout the study period. Our appreciation also goes to the supervisors, data collectors and all of the district community especially mothers who generously and willingly participated in the study; without them, this study would have been unthinkable.

CORRESPONDING AUTHOR:

Worku Dechassa Heyi, MPH
Medical and Health Sciences, Wollega University, Nekemte, Ethiopia
E-Mail1: dechasa.worku5@gmail.com

REFERENCES

1. Fraser, D, Cooper, M. and Nolte, A. Myles text- book for midwives: African edition, Edinburgh, Churchill Living- stone 2006. 1. 2006;2006.
2. Federal Democratic Republic of Ethiopia Ministry of health. management protocol on selected obstetrics topics (FMOH). 2010;8–14.
3. Addisse M. Maternal and Child Health Care. Ethiop Public Heal Train Initiat. 2003;(January):1–98.
4. Central Statistical Agency Addis Ababa E, ICF TDP, Rockville, Maryland U. Ethiopia Demographic and Health Survey key indicators. 2016. 59 p.
5. World Health Organization. Maternal mortality fact sheet. Dept Reprod Heal Res World Heal Organ. 2014;4.
6. Gebeyehu Workineh Y. Factors Affecting Utilization of Postnatal Care Service in Amhara Region, Jabitena District, Ethiopia. Sci J Public Heal [Internet]. 2014;2(3):169. Available from: http://www.sciencepublishinggroup.com/journal/paperinfo.aspx?journalid=251&doi=10.11648/j.sjph.20140203.15
7. Diga Woreda Health Office.pdf.
8. Alemayeh H, Assefa H, Adama Y. Prevalence and Factors Associated with Post Natal Care Utilization in Abi - Adi Town , Tigray , Ethiopia : A Cross Sectional Study. Int J Pharm Biol Sci Fundam. 2014;8(1):2278–3997.
9. Babalola S, Fatusi A. Determinants of use of maternal health services in Nigeria - Looking beyond individual and household factors. BMC Pregnancy Childbirth. 2009;9:43.
10. Shamu S, Abrahams N, Temmerman M, Musekiwa A, Zarowsky C. A Systematic Review of African Studies on Intimate Partner Violence against Pregnant Women : Prevalence and Risk Factors. 2011;6(4):1–9.
11. Tesfahun F, Worku W, Mazengiya F, Kifle M. Knowledge, Perception and Utilization of Postnatal Care of Mothers in Gondar Zuria District, Ethiopia: A Cross-Sectional Study. Matern Child Health J. 2014;18(10):2341–51.
12. Dhakal S, Chapman GN, Simkhada PP, van Teijlingen ER, Stephens J, Raja AE. Utilisation of postnatal care among rural women in Nepal. BMC Pregnancy Childbirth. 2007;7:1–9.
13. Yunus A, Iqbal S, Munawar R, Zakar R, Mushtaq SK, Sadaf F, et al. Determinants of Postnatal Care Services Utilization in Pakistan-Insights from Pakistan Demographic and Health Survey (PDHS) 2006-07. Middle-East J Sci Res [Internet]. 2013;18(10):1440–7. Available from: https://www.idosi.org/mejsr/mejsr18(10)13/11.pdf
14. Markos D, Bogale D. Birth preparedness and complication readiness among women of child bearing age group in Goba woreda, Oromia region, Ethiopia. BMC Pregnancy Childbirth. 2014;14(1).
15. Kabakyenga JK, Östergren PO, Turyakira E, Pettersson KO. Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. Reprod Health [Internet]. 2011;8(1):33. Available from: http://www.reproductive-health-journal.com/content/8/1/33

PREGNANCY IN THE RUDIMENTARY UTERINE HORN: A CASE REPORT

Awol Yeman Legesse, MD[1], Hale Teka, MD[1], Abida Hassen, MD[2], Ermias Abate Tinikishea, MD[1],
Sumeya Ahmed Mohammednur[3], MHA

ABSTRACT

OBJECTIVE: Rudimentary horn is a developmental anomaly of the uterus. Pregnancy in a rudimentary horn is rare, represents a form of ectopic gestation. The diagnosis of the rudimentary horn pregnancy is very difficult before it ruptures.

CASE: We present a case of pregnancy in the communicating horn that was difficult to diagnose preoperatively. An emergency exploratory laparotomy was done considering abdominal ectopic pregnancy after the patient was given misoprostol for missed abortion from referral hospital. Our ultrasound evaluation revealed abdominal ectopic pregnancy. Intra operative finding was unruptured rudimentary horn. A non-viable female fetus with a birth weight of 200 g was delivered. The ruptured rudimentary horn and left tube were excised together.

CONCLUSION: Despite advances in ultrasound, the diagnosis of pregnancy in the rudimentary horn remains difficult with definitive diagnosis being made at laparotomy. It is very important to have high index of suspicion especially in resource limited setting where most patients present with rupture.

KEYWORDS: Rudimentary horn, Ectopic pregnancy, Mekelle University

(Ethiopian Journal of Reproductive Health; 2018; 10; 4: 62-66)

1 Department of Obstetrics and Gynecology, College of Health Sciences, Mekelle University, Mekelle, Ethiopia
2 Department of Obstetrics and Gynecology, University of Illinois at Chicago
3 Department of Public Health, College of Health Sciences, Mekelle University, Mekelle, Ethiopia

INTRODUCTION

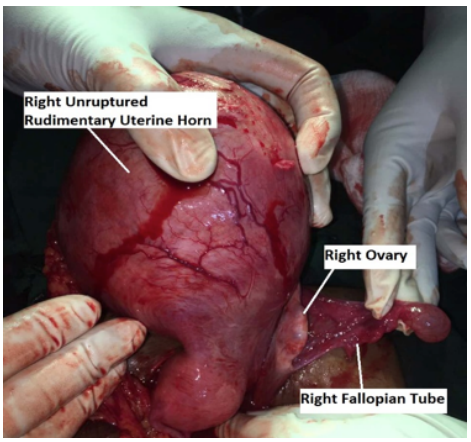
Unicornate uterus with rudimentary horn results from arrested development of one of the two mullerian ducts. This anomaly constitutes range of anatomical variations and is divided into four subgroups according to the American Fertility Society classification of Mullerian anomalies: IIa rudimentary horn with cavity communicating to unicornate uterus. II b with cavity non-communicating, IIC with no cavity and IId with no horn1. Prevalence of unicornate uterus with rudimentary horn is very rare. It is usually associated with obstetrical complications 2. Reported incidence of pregnancy in a rudimentary horn varies between 1/7,600 to 1/140,000. The pregnancy occurs most commonly in noncommunicating cavitary horn and it represents a form of ectopic gestation3-5.

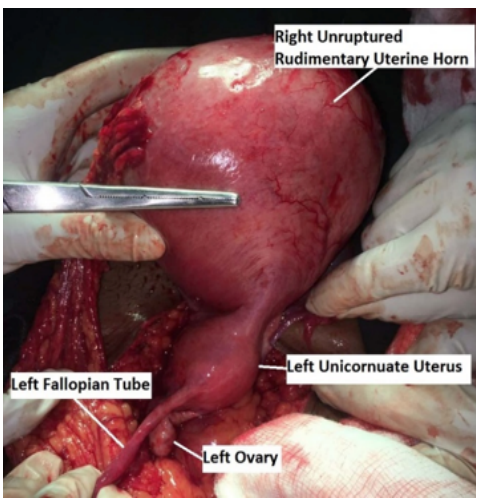
CASE REPORT

A 24 years old Gravida 3 Para 1(alive via spontaneous vaginal delivery), abortion 1(spontaneous at 2 months of gestation) presented at GA of 19 weeks and two days for antenatal care and told to have missed abortion. She was given 200 mg of Mifepristone oral route followed with 5 doses of 200 microgram misoprostol per vagina. Because there was no response after 24 hrs. rest the same dose of misoprostol was repeated at the same hospital but there was no response. Then she went to private clinic and was told to have abdominal ectopic pregnancy. Finally, she was referred to our hospital with the impression of abdominal ectopic pregnancy. On arrival to our hospital she was alert, blood pressure and pulse rate being normal. There was 16-week sized palpable pelvic mass with mild tenderness. Pelvic examination showed cervix closed and 16 weeks size bimanually palpable mass. Ultrasound examination was repeated and revealed abdominal ectopic pregnancy. All laboratory examinations were within normal range.

An emergency laparotomy was performed based on the suspicion of abdominal ectopic pregnancy. Abdomen entered via midline infra umbilical incision. Intraoperative finding was right-sided unruptured gravid rudimentary horn measuring 15x14x7 cms. The right rudimentary horn was excised completely along with ipsilateral tube after right side Utero ovarian ligament was clamped, cut and trans fixated. The rudimentary horn had no direct communication to the uterine cavity. The gravid uterus was dissected there was dead 200gm fetus and placenta inside it.

The left tube and ovary appeared healthy and normally attached to the uterus. The right tube and ovary were attached to the rudimentary horn. She was discharged improved on her third postoperative day. Histopathology confirmed rudimentary horn pregnancy, intravenous pyelogram showed no associated renal anomaly.





DISCUSSION

This is a rare case of non-communicating rudimentary horn of a unicornuate uterus (class IIb Mullerian duct anomaly according to classifications of the American Society of Reproductive Medicine 1998). The non-communicating cavitated rudimentary horn has probably become functional after many years of menarche. The case shows the clinical and radiological dilemma posed in such atypical presentation of mullerian anomalies.

Unicornate uterus with rudimentary horn often presents with first trimester recurrent abortion (5-10%) second trimester loss (25 %) or it is incidentally discovered during infertility work up. There may be a wide range of clinical presentation ranging from mild dysmenorrhea during puberty to sever pelvic pain among parous women6. Our patient had normal gynecologic history with previous reasonably normal reproductive outcome.
Rudimentary horn pregnancy is due to intraperitoneal transmigration of sperm or contralateral tubal pick of the fertilized ovum in the peritoneal cavity. Natural history of rudimentary horn pregnancy involves rupture in 80-90 % in second or early third trimester3-5.

Rudimentary horn pregnancy is difficult to diagnose based on clinical examinations. But it can be suspected on early pelvic examination, wherein a mass presenting outside the uterine angle (Baart de la Faille's sign) or displacement of the uterine fundus to the contralateral side with rotation of the uterus causing elevation of the affected horn (Ruge Simon syndrome) can be found. Diagnosis by ultrasonography is highly operator dependent and is usually missed as in our case. Around 26 % of cases are diagnosed antenatally prior to rupture. Also, the sensitivity of ultrasonography in diagnosing horn pregnancies decreases as pregnancy advances beyond first trimester, as seen in our case where sonography misled the clinician and diagnosed missed abortion and later on abdominal pregnancy` 7. Diagnosis is usually confirmed by MRI3. Other modalities for diagnosis are CT scan and laparoscopy. HSG can help diagnose the anomaly in non-pregnant state. Although neonatal survival rate in case of rudimentary horn pregnancy is only 11 %, early diagnosis before rupture can prevent maternal morbidity8.

What makes special this case is the fact that termination of pregnancy with misoprostol had been tried unsuccessfully twice for the diagnosis of missed abortion. non-response after prior attempts at termination by misoprostol is often associated with a missed diagnosis of an extrauterine pregnancy.

In early gestation, medical management by methotrexate followed by laparoscopic excision has also been tried9. Prior to pregnancy, excision of horn to prevent complications is also recommended. Though immediate surgery is recommended after the diagnosis even in unruptured cases as in our case., conservative management till viability of fetus has been tried in few selected cases provided that facilities for emergency surgery are available and patient is properly counseled. A case of pregnancy progressing till the third trimester delivered by cesarean section resulting in live birth has been documented. Induction of labour termination of pregnancy in a rudimentary horn should be avoided as it can lead to rupture of the horn. It is essential to avoid pregnancy for 1 year after surgical excision8.

CONCLUSION

Pregnancy in a rudimentary horn is catastrophic to the mother. It is very important to have high index of suspicion especially in resource limited setting where most patients present with rupture. We have reported the case to show difficulties faced in establishing diagnosis of rudimentary horn pregnancy, and to consider possibility in patients no response attempts of termination of pregnancy.

CORRESPONDING AUTHOR:

Awol Yemane Legesse, MD
Department of Obstetrics and Gynecology, College of Health Sciences, Mekelle University, Mekelle, Ethiopia
Email: hayuawol1@gmail.com

REFERENCES

1. American Fertilty Society. The American Fertilty Society classification of adnexal adhesions, mullerian anomalies and intrauterine adhesions, Fertilit.Steril.1998: 49,944-945 (Med line)
2. Jayasinhe Y, Rane A, Stalewski H, The presentation and early diagnosis of the rudimentary horn, Obstet.Gyaecol.2005:105:1456-1466
3. Tsafir A, Rojansky N, SelaHY,Gomori MJ, Nadjari M. Rudimentary Horn Pregnancy .J Ultrasound Med. 2005;24:219-223
4. Nahum GG. Rudimentary uterine horn pregnancy. A case report on surviving wins delivered eight days apart. J Reprod Med. 1997;42: 525-532
5. Johansen K. Pregnancy in rudimentary horn. Obstet Gynecol.1983; 61:565-567
6. Malik R, Radhika AG,Singh A, Radhakrishan G, Aggarwal R .The perplexing entity of rudimentary uterine horn.Open J ObstetGynecol 2011;1:217-20.doi:10.4236/ojog.2011.14042).
7. Feteh VF, Dimala CA, Njim T, Fuka B. Post term pregnancy in a non communicating rudimentary horn of a unicornuate uterus. BMC Res Notes 2016; 9:209.
8. Fouelifack FY, Fouogue JT, Messi JO, Kamga DT, Fouedjio JH, Sando Z. Spontaneous second-trimester ruptured pregnancy of rudimentary horn: a case report in Yaounde, Cameroon. The Pan African Medical Journal. 2014; 18: 86.
9. H. K. Sevtap, A. M. Aral, and B. Sertac. An early diagnosis and successful local medical treatment of a rudimentary uterine horn pregnancy: a case report. Arch GynecolObst. 2007; 275(4):297–298.

INSTRUCTION TO AUTHORS

1. Type of Articles

The Ethiopian Journal of Reproductive Health (EJRH) publishes original articles, review articles, short reports, program briefs, and commentaries on reproductive health issues in Ethiopia, and the African region. The EJRH aims at creating a forum for the reproductive health community to disseminate best practices, and relevant information on reproductive health.

Original Articles: Articles reporting on original research using quantitative and/or qualitative studies could be submitted to EJRH.

Review Articles: Review articles on all aspects of reproductive health issues could be considered for publication in the EJRH.

Commentaries: Commentaries on any aspects of reproductive health in Ethiopia or the African region will be considered for publication in the EJRH.

Program Briefs: A one or two pages of description of a program run by governmental or non-governmental organizations could be submitted for publication. These briefs should give short summaries about the objectives, strategies for implementation, and expected outputs of programs that are executed by different organizations.

Short Reports: Preliminary research findings or interesting case studies could be presented in a summarized form to the journal.

2. Uniform Requirements

In order to fulfill uniform requirements for the journal, the following instructions have to be followed by authors:

The manuscript should be a total of 3000 to 4000 words.

Manuscript layout: Manuscripts should be written in English and typed double-spaced leaving generous margins. Pages should be consecutively numbered. The body of the manuscript should be organized under appropriate headings and sub-headings such as introduction, methods, results, discussion, acknowledgements, and references.

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

Abstracts: it should not be more than 250 words. It should summarize the background, objective, methods, major findings and conclusions?

Tables and Figures: All tables and figures should be submitted on separate sheets of paper and be clearly labeled in the order of their citation in the text. A reader should be able to read only the tables and easily understand all information without reading the text.
References: References have to be numbered consecutively in the order in which they are first mentioned in the text. References must also follow the Vancouver system.

EJRH

Visit us at www.ejrh.org

Designed & Printed by Central Printing Press
Tel. +251-11-466 5781/82