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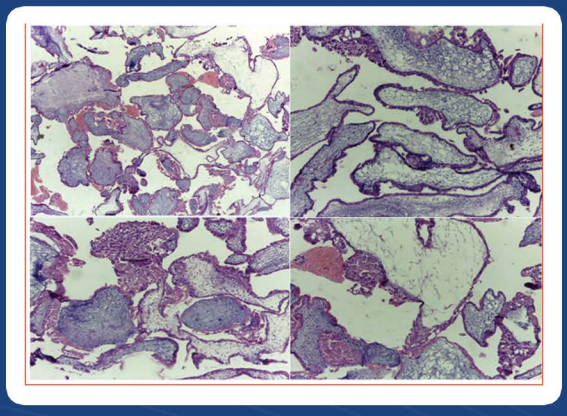

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OUTCOMES OF SECOND TRIMESTER SURGICAL ABORTION: THE EXPERIENCE OF A TERTIARY HEALTH FACILITY IN ETHIOPIA

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ABSTRACT

BACKGROUND: Abortion is defined as expulsion or extraction of a fetus before fetal viability. It is a very common occurrence globally (40-50 million per annum. There is increasing evidence to suggest that dilation and evacuation (D&E) leads to fewer complications than medical abortion for second trimester termination of pregnancy. However, there is no recent documentation of the outcome of such a method in Ethiopia. Hence the aim of this study is to document the outcome of second trimester D&E performed at St Paul Hospital and Millennium Medical College (SPHMMC).

OBJECTIVE: To describe clinical characteristics and short-term outcomes of second trimester surgical abortion at SPHMMC.

METHODS AND SUBJECTS: A retrospective cross-sectional study design was employed to review all cases of dilation and evacuation performed in the six months period from January 1, 2018- July 30, 2018. A structured questionnaire was used to collect selected socio-demographic data, clinical characteristics and acute complications. Data was entered and analyzed using IBM SPSS Statistics, version 20.0 (IBM Corp, Released 2011).

RESULT: A total of 43 client records were reviewed and used for this analysis. The median (IQR) age of the study participants was 24 (20,26), with age range of 16 to 34 years old. The average gestational age is 16 weeks + 2 days (ranging from 13 weeks + 1 day to 20 weeks + 6 days). All women received doxycycline prior to performing D&E. No ultrasound was used during all the procedures. Over all complication rate is 2.3%, with 1 case of uterine perforation. The contraceptive uptake rate was 88.4% (38/43). The most common post abortion family planning method was long acting reversible contraceptives (LARC).

CONCLUSION: Our review demonstrated that D&E is safe after applying recommended procedures in a tertiary health facility in Ethiopia. Further analysis using a larger sample should be undertaken and comparison should be made with medical induction in order to establish the safety and effectiveness of second trimester surgical abortion.

KEY WORDS: second trimester safe abortion, Dilation & Evacuation

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INTRODUCTION

Surgical methods of second trimester termination have evolved over the past 30 years starting in the early 1970s and is currently found to be the predominant method of second trimester termination of pregnancy in many parts of the world[18]. Dilation and Evacuation (D&E) has become the preferred surgical technique over dilation and curettage, hysterotomy and hysterectomy due to its relative safety[2]. Virtually all first trimester (less than 13 weeks' gestation) abortions in the United States (US) have been performed by curettage procedures (sharp or suction), predominantly suction curettage (vacuum aspiration)[19]. The relative frequency of D&E compared to medical abortion varies at different centers. Dilation and Evacuation accounts for 96%, 75% and 100% of abortions performed at ≥ 13 weeks' gestation in the United States, England and Wales respectively [22]. However, there is a limited evidence regarding D&E's in developing countries.

Globally, 10-15% of abortions are performed during the second trimester10,12, but accounts for two-thirds of major abortion-related complications[13]. Later abortions are restricted by laws in many countries, however, saving a women's life, health reasons, pregnancy related to rape or incest, fetal anomalies and socioeconomic constraints are given as reasons for performing the procedure4,14,18. Although previously the optimal method of second trimester termination was debated, recent evidence suggests that D&E is associated with less side effects and lower complication rates than medical induction abortion[15].

A D&E procedure can usually be performed on an outpatient basis, with typical procedures taking less than 30 minutes to perform. Anesthesia is recommended by the WHO for every D&E and involves a paracervical block and non-steroidal anti-inflammatory analgesics or conscious sedation[11,23]. It requires preparation of the cervix using osmotic dilators or pharmacological agents and evacuation of the uterus using manual vacuum aspiration (MVA) with a 12-16 mm diameter cannula and long forceps. Depending on the duration of pregnancy, preparation to achieve adequate cervical dilation can require from 2 hours to 2 days[18]. Various methods of preparing the cervix have been proposed in an attempt to reduce the risk of uterine and cervical damage. Specialized training and the maintenance of an adequate case load are required to perform D&E safely[5]. Staff should also be trained to provide counseling and information specific to second-trimester abortions[18].

Antibiotic use is recommended prior to performing D&Es, although there is lack of studies addressing the proper antibiotic regimen. In the United States, 80% of D&E providers report using perioperative antibiotics, with the most common regimen being doxycycline. Currently, the American College of Obstetrics and Gynecology (ACOG) recommends administration of 200mg of doxycycline orally prior to the procedure[19].

Even if D&E is known to be safe and effective for second semester termination, there are some potential complications. Acute complications include retained products of conception, cervical laceration, uterine perforation, hemorrhage, and infection, the most common of which are cervical laceration and uterine perforation. Uterine perforation, one of the serious complications, is reported to occur in less than 1% of D&Es. However, dilation and evacuations performed by inexperienced providers have higher risks of complications, mainly, uterine perforation[16]. Consequently, inexperienced providers are advised to use medical methods[6].

Recent review of the safe abortion services in Ethiopia concluded that inclusion of second semester medical or surgical (D&E) termination of pregnancy should be provided to those who need it[8]. In Ethiopia only 8% of all abortions are performed during the second trimester of pregnancy[12]. Dilatation and evacuation have only been performed in instances of failed medical abortion or if a woman has contraindications to medical abortion, but there is no study done to review cases of D & E before. Furthermore, a recent study reported that the majority of obstetrician-gynecologists in Ethiopia (72.1%) held favorable opinions toward D&E for second semester pregnancy termination[2].

In October 2017, St Paul's Hospital and Millennium Medical College (SPHMMC, one of the teaching tertiary health facilities in Ethiopia) began a fellowship program in Family Planning, in which comprehensive training in performing D&E has been provided. Therefore, the aim of this study is to analyze and document the outcomes and acute complications of D&E procedures performed at this institution for the period from January 1, 2018 to Jun 30, 2018.

METHODS AND MATERIALS

Study area and period

The study was conducted at SPHMMC, which is the second largest hospital in Ethiopia, located in Addis Ababa, Gullele Sub City. The medical school was opened in 2007G.C. to commemorate the Ethiopian Millennium. The department of obstetrics and gynecology is one of the departments in the hospital offering services on various areas. The service delivery sites are outpatient department, gynecology ward, maternity ward, labor ward, operation rooms and MICHU clinic. MICHU clinic provides services in the area of reproductive health including comprehensive abortion care and family planning. The analysis was performed on cases of D & E procedures carried out for termination of pregnancy in the six-month period from January 1, 2018- June 30, 2018.

Study design and sample: Retrospective cross-sectional study design was used to evaluate the outcomes and acute complications of D&E among clients who were admitted to procedure room for D&E procedure. All women who were managed with D&E during the study period were included in the study while excluding those with lost records.

Variables and measurement

Structured questionnaire prepared in English was used to collect data. Selected socio-demographic, reproductive and medical history related variables were extracted from the medical records of clients for whom D&E was performed between January 1, 2018 and June 30, 2018.

The variables include various socio-demographic characteristics, obstetric profile (parity, gestational age), reasons for second trimester D&E, type of abortion care (safe abortion, post abortion care), type of cervical preparation for the procedure, and procedure complications (hemorrhage, uterine perforation, failed D&E).

DEFINITION OF TERMS

Comprehensive abortion care -includes all of the elements of post abortion care as well as safe induced abortion for all legal indications (i.e. as allowed by national law), while safe abortion-refers to a comprehensive termination of pregnancy that is offered to clients as permitted by the law.

Post abortion care –is a comprehensive service to treat women that present to a health care facility after abortion has occurred spontaneously or after attempted termination outside the hospital.

Second trimester surgical abortion- a method of abortion using medical or mechanical method for cervical preparation followed by evacuation of uterine contents using different types of forceps

Cervical preparation- Using medical or mechanical techniques to make the cervix soft and favorable for doing an intrauterine procedure.

Data processing and analysis:

The collected data was checked for completeness and consistency and coded. The data was then analyzed using IBM SPSS Statistics for Windows, Version 22.0 ((IBM Corp, Released 2011). Descriptive statistics were performed to generate the mean (±SD), median (IQR), and frequency tables.

ETHICAL CONSIDERATIONS

The purpose of the study and the starting time was communicated, and permission received from head of the department and the academic vice provost of the SPHMMC. The study is conducted after getting clearance from SPHMMC IRB. An official letter is also obtained from IRB before starting the data collection.

RESULTS

Basic characteristics of patients:

There were 46 cases of D&E done in the six-month period and we were able to collect 43 (93.5%) records with only three missing records. There were missing values for some of the variables, but all records were included in the analysis as they contain the outcome of interest. The median (IQR) age of the study participants was 24 (20,26), with age range of 16 to 34 years old. Patients had an average gestational age of 16 weeks + 2 days (ranging from 13 weeks + 1 day to 20 weeks + 6 days. Dilation and evacuations performed as post abortion care (PAC) made up 16.2% (7/43) of patients in the study.

Procedure preparation:

Regarding antibiotic use, all women in the study received Doxycycline prior to the procedure (Table 1). Nearly 98% (42/43) of women were provided with analgesia and there is no documentation for the remaining one patient. Ninety-five percent (41/43) of women received a para cervical block using lidocaine 1%. The most common combination of analgesia used was diclofenac with para cervical block (79.1%).

All women received mifepristone the day prior to the procedure and all but 1 woman received an additional method of cervical preparation prior to the D&E (Table 1). Sixty-five percent of patients (26/43) received misoprostol alone, while 37.2% of patients (16/43) received both misoprostol and laminaria. The most common route of misoprostol administration was sublingual (41.9%, 18/43). Misoprostol was administered on average 2 hours (± 0.78) prior to the procedure, with a range of 1-4 hours. Laminaria was placed an average of 22.4 hours prior to the procedure (range of 12 to 48 hours). For patients ≤ 16 weeks + 6 days, misoprostol alone 1-3 hours prior to the procedure was the preferred method (85.2%), whereas for patients ≥ 17 weeks, misoprostol in combination with laminaria was the most common method of cervical priming (81.3%). The only woman who did not receive cervical preparation was receiving D&E as post abortive care for inevitable abortion and already had a cervical dilation of 3cm prior to the procedure.

(81.3%). The only woman who did not receive cervical preparation was receiving D&E as post abortive care for inevitable abortion and already had a cervical dilation of 3cm prior to the procedure.

Table 1-Perioperative care for clients who had undergone D & E at SPHMMC, January-June 2018.

Care provided	Number of patients	Percentage
Mifepristone	43	100%
Cervical preparation done	42	97.7%
Misoprostol alone	26	60.5%
Misoprostol + Laminaria	16	37.2%
Administered essential antibiotics	43	100.0%
Received systemic analgesia	42	97.7%
Received paracervical block	41	95%
Counseled on contraception	43	100.0%
Provided contraception	38	88.3%

The procedure characteristics and complications:

The procedures lasted for an average duration of 22.78 minutes and ranged from a minimum of 10 minutes to a maximum of 40 minutes (Table 2). All patients have pre-procedure hematocrit and no patient had bleeding requiring observation or transfusion. The median (IQR) time of total patient hospital stay for their procedure was 3 (2.8,4) hours. The mean duration from initial consultation for safe abortion services to procedure was 31.9 hours (SD ±19.8 hours).

Out of the 43 D&E's performed at SPHMMC during this 6-month period, only 1 acute complication occurred, with an overall complication rate of 2.3%. This complication was a case of uterine perforation following D&E done for a case of septic inevitable abortion. This patient was on triple antibiotic for sepsis and has feature of chorioamnionitis at the time of the procedure. 24 hours has lapsed after initiation of misoprostol. The cervix was open to 3 cm at the time of the procedure. Due to the low incidence of complications, we were not able to make correlation of complication rates with patient clinical factors.

Table 2- procedure characteristics for clients who had undergone D & E at SPHMMC January-June 2018.

Procedure characteristics	Mean	Std deviation	Minimum	Maximum
Duration of procedure (minutes)	22.78	7.69	10	40
Length of hospital stay (hours)	6.9	12.32	2	72
Time from initial visit to discharge (hours)	31.9	19.82	4	96

Post procedure contraception:

All women who received D&Es at SPHMMC were counseled on family planning. Of those women, 88.3% (38/43) received contraception after the procedure. The majority (73.7%) opted for Long Acting Reversible Contraceptives (LARC), including 36.8% (14/38) chose Implanon, 5.3% (2/38) chose Jadelle and 31.6% (12/38) chose an intrauterine contraceptive device (IUCD). The remainder of patients choose oral contraceptive pills (OCPs; 13.2%, 5/38), and the contraceptive injection (Depo-provera; 13.2%, 5/38) (Figure.1). About 11% (5/43) of the patients did not receive any form of contraceptive

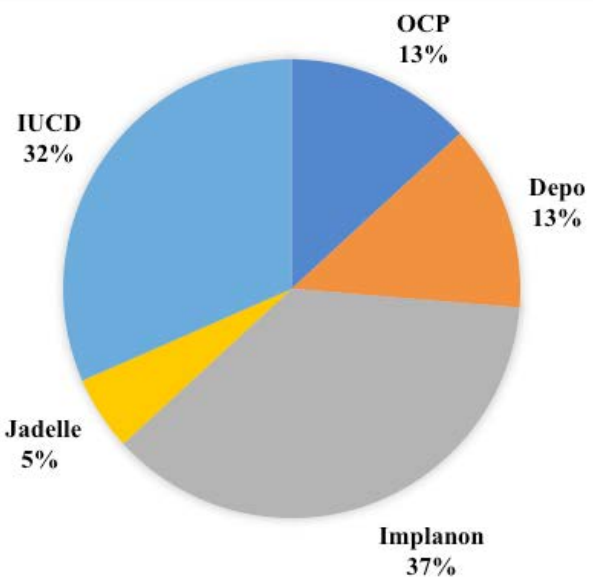

Figure 1: Percentage of post abortion family planning provided to D&E clients, SPHMMC

DISCUSSION:

Dilation and Evacuations have historically been a relatively uncommon procedure in Ethiopia. Since 2005, the country has been making strides to improve the provision of abortion services. For example, in 2014, abortion only accounted for 6-9% of maternal mortality, a decrease of 75% since 20057,11. As a result of the initiation of the Family Planning Fellowship Program and the beginning of the regular of D&E service in SPHMMC, D&E has become the routine treatment for a woman electing surgical abortion in the second trimester. The current analysis demonstrated the institutional capacity to perform it and safety and effectiveness of the second trimester D&E for candidate patients.

The pre-operative and peri-operative care provided for patients undergoing dilation and evacuation at our institution met international standards for all patients. All patients in our study received a pre-operative antibiotic. Regarding peri-operative pain control, the WHO recommends an analgesia regimen of a paracervical block plus non-steroidal drugs or conscious sedation, which was provided for 97.7% of our patients23. General anesthesia was not used on any patients in this study, as the WHO reports that this can increase rates of complications23. Mifepristone is used in all patients 24 hours prior to the D&E at all gestational ages. Furthermore, cervical preparation, which is known to reduce complication rates of D&E, was performed for all women undergoing safe termination and all but one woman who underwent post-abortion care. Multiple studies indicate that laminaria or a combination of laminaria with misoprostol is recommended for patients at higher gestational ages, as this can improve cervical dilation and lower complication rates9. Similarly, misoprostol alone is acceptable for patients at gestational ages <16-17 weeks. Our data reflected these recommendations, with the majority (81.3%) of patients at gestational age ≥ 17 weeks receiving a combination of laminaria and misoprostol, whereas the majority of patients below 16.6 weeks of gestation received misoprostol alone. Our methods of cervical preparation proved to be effective, as only 1 patient in the study was noted to have inadequate cervical dilation, which led to an extra 10 minutes of procedure time.

Our overall complication rate was very low (2.3%), which is consistent with recent studies demonstrating complication rates of D&E ranging from 1.5 to 7% across different international institutions that have been providing the procedure as regular practice for many years17,1. The only patient who had a complication was admitted for post abortion care for inevitable septic abortion. The finding underscores the safety and effectiveness of D&E as there was no complication documented for the elective induced procedures.

Provision of post abortion contraception is an important part of comprehensive abortion care and helps to reduce unintended pregnancy and subsequent abortions. In our study, 100% of women who underwent D&E were counseled on family planning, with 88% women provided with various options of contraception post-procedure. This rate is higher than previous studies demonstrating that 77-86% of women in Ethiopia received contraception following abortion services3,12,20.

This analysis is the first attempt to document the clinical characteristics of patients, procedure, outcomes and complications of D&E in Ethiopia which largely has not been offered to Ethiopian women. A 2014 study concluded that safe abortion care interventions in Ethiopia should prioritize training of providers in D&E, in order to improve women's access to second trimester abortion services8. Despite the fewer number of second trimester D&E used for this analysis, we were able to document all aspects of the procedure and outcomes. More accurate rates of complications and procedure characteristics could be obtained by having a higher sample size.

CONCLUSION:

In conclusion, there were a total of 46 D&E procedures performed in the study period from which we analyzed 43 of them. The cervical preparation method employed was found to be effective. The study also demonstrated the clinical safety and effectiveness of D&E for second trimester surgical induction when performed by trained providers. Only one complication was documented, and it was on a patient who underwent post abortion care for a septic abortion. Our model for second trimester D&E can be used to inform other local institutions on the benefit and safety of offering the procedure to women seeking second trimester termination.

Future studies should analyze larger sample as more D&Es continue to be performed at

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REFERENCES

1. Autry, A. M., Hayes, E. C., Jacobson, G. F., & Kirby, R. S. (2002). A comparison of medical induction and dilation and evacuation for second-trimester abortion. American Journal of Obstetrics and Gynecology, 187(2), 393-397.
2. Ayana B AA, Gebeyhu A, Getachew Y, Teklu A, Adefris M, Abtea M, & R., J. (2018.). Perception towards Dilation and Evacuation and Associated Factors among Abortion Service Providers in Ethiopia: A Cross Sectional Study. 9th CUGH Conference.
3. Benson, J., Andersen, K., Brahmi, D., Healy, J., Mark, A., Ajode, A., & Griffin, R. (2018). What contraception do women use after abortion? An analysis of 319,385 cases from eight countries. Global public health, 13(1), 35-50.
4. Boland, R. (2010). Second trimester abortion laws globally: actuality, trends and recommendations. Reproductive Health Matters, 18(36), 67-89.
5. Borgatta, L., Chen, A. Y., Vragovic, O., Stubblefield, P. G., & Magloire, C.-A. (2005). A randomized clinical trial of the addition of laminaria to misoprostol and hypertonic saline for second-trimester induction abortion. Contraception, 72(5), 358-361.
6. Coughlin, L., Roberts, D., Haddad, N., & Long, A. (2004). Medical management of first trimester miscarriage (blighted ovum and missed abortion): is it effective? Journal of Obstetrics and Gynaecology, 24(1), 69-71.
7. CSA [Ethiopia] and ICF. (2016). Ethiopia Demographic and Health Survey 2016: Key Indicators Report. Addis Ababa, Ethiopia, and Rockville, Maryland, USA. CSA and ICF.
8. Dibaba, Y., Dijkerman, S., Fetters, T., Moore, A., Gebreselassie, H., Gebrehiwot, Y., & Benson, J. (2017). A decade of progress providing safe abortion services in Ethiopia: results of national assessments in 2008 and 2014. BMC pregnancy and childbirth, 17(1), 76.
9. Drey, E. A., Benson, L. S., Sokoloff, A., Steinauer, J. E., Roy, G., & Jackson, R. A. (2014). Buccal misoprostol plus laminaria for cervical preparation before dilation and evacuation at 21–23 weeks of gestation: a randomized controlled trial. Contraception, 89(4), 307-313.
10. Finer, L. B., & Henshaw, S. K. (2005). Estimates of US abortion incidence in 2001 and 2002: Alan Guttmacher Institute.
11. FMOH [Ethiopia]. (2014). Technical and Procedural Guidelines for Safe Abortion Services in Ethiopia Second Edition.
12. Gebrehiwot, Y., Fetters, T., Gebreselassie, H., Moore, A., Hailemariam, M., Dibaba, Y., . . . Getachew, Y. (2016). Changes in morbidity and abortion care in Ethiopia after legal reform: National results from 2008 and 2014. International perspectives on sexual and reproductive health, 42(3), 121.
13. Gemzell-Danielsson, K., & Lalitkumar, S. (2008). Second Trimester Medical Abortion with Mifepristone–Misoprostol and Misoprostol Alone: A Review of Methods and Management. Reproductive Health Matters, 16(sup31), 162-172. doi: 10.1016/S0968-8080(08)31371-8
14. Grimes, D. A., Schulz, K. F., Cates Jr, W., & Tyler Jr, C. W. (1977). Mid-trimester abortion by dilatation and evacuation: a safe and practical alternative. New England Journal of Medicine, 296(20), 1141-1145.
15. Grossman, D., Constant, D., Lince, N., Alblas, M., Blanchard, K., & Harries, J. (2011). Surgical and medical second trimester abortion in South Africa: A cross-sectional study. BMC Health Services Research, 11(1), 224. doi: 10.1186/1472-6963-11-224
16. Jacot, F. R., Poulin, C., Bilodeau, A. P., Morin, M., Moreau, S., Gendron, F., & Mercier, D. (1993). A five-year experience with second-trimester induced abortions: no increase in complication rate as compared to the first trimester. American Journal of Obstetrics & Gynecology, 168(2), 633-637.
17. Kafrissen, M. E., Schulz, K. F., Grimes, D. A., & Cates, W. (1984). Midtrimester Abortion: Intra-amniotic Instillation of Hyperosmolar Urea and Prostaglandin F2 v Dilatation and Evacuation. JAMA, 251(7), 916-919.
18. Lohr, P. A., Hayes, J. L., & Gemzell-Danielsson, K. (2008). Surgical versus medical methods for second trimester induced abortion. Cochrane Database Syst Rev, 1, CD006714.
19. Rigterink, E. S., Saftlas, A. F., & Atrash, H. K. (2013). Induced Abortion Women and Health (Second Edition) (pp. 235-250): Elsevier.
20. Samuel, M., Fetters, T., & Desta, D. (2016). Strengthening postabortion family planning services in Ethiopia: expanding contraceptive choice and improving access to long-acting reversible contraception. Global Health: Science and Practice, 4(Supplement 2), S60-S72.
21. Strauss, L. T., Herndon, J., Chang, J., Parker, W. Y., Bowens, S. V., & Berg, C. J. (2005). Abortion surveillance—United States, 2002. Morbidity and Mortality Weekly Report, 54(7), 1-31.
22. WHO. (2012). Safe abortion: technical and policy guidance for health systems: World Health Organization.
23. Wildschut, H., Both, M. I., Medema, S., Thomee, E., Wildhagen, M. F., & Kapp, N. (2011). Medical methods for mid trimester termination of pregnancy. Cochrane Database of Systematic Reviews(1). doi: 10.1002/14651858.CD005216.pub2

PREVALENCE AND OUTCOME OF PREGESTATIONAL DIABETES MELLITUS AMONG PREGNANT MOTHERS ATTENDING ANTENATAL CARE AT THREE TEACHING HOSPITALS IN ADDIS ABABA, PROSPECTIVE FOLLOW UP STUDY

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ABSTRACT

BACKGROUND: Diabetes mellitus is one of the most common medical conditions complicating pregnancy with a significant impact on maternal and perinatal outcome.

OBJECTIVE: To assess the prevalence of pregestational diabetes mellitus and its pregnancy outcome at three teaching hospitals in Addis Ababa

METHODS: Prospective cohort study was conducted at three teaching government hospitals in Addis Ababa, Ethiopia.

RESULT: There were a total of 19,797 deliveries, among which 80 were women with pregestational diabetes mellitus were identified making a prevalence of 0.4%. Out of these 39(48.8%) had type 1 and 41(51.2%) had type 2 diabetes mellitus. The glycemic control was poor in each trimester with higher fasting, 2-hour post prandial and HgA1C level than the standard. Majority of pregnancies (67.1%) ended up with induction of labor for fetal and maternal indications and 61.8% were delivered by cesarean section. Hypertensive disorders of pregnancy were commonest maternal complication seen in 28.5% of the women. The rate of premature delivery and neonatal intensive care referral was high (53.4%). There was statistically significant association between adverse pregnancy outcome and having preconception care. care.

CONCLUSION: The Prevalence of pregestational diabetes mellitus was found to be comparable to most setups. The glycemic control was poor in each trimester with higher fasting, 2-hour post prandial and HgA1C level from the standard. These hospitals should have management protocol advocating preconceptional care and tighter glucose control which may help in reducing the adverse maternal and perinatal outcome.

KEY WORDS: Pregestational diabetes mellitus; Pregnancy outcome, prevalence

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BACKGROUND

Diabetes mellitus is a metabolic disorder of multiple etiologies characterized by chronic hyperglycaemia resulting from defects in insulin secretion, insulin action, or both. It is caused by inherited and/or acquired deficiency in production of insulin by the pancreas, or by the ineffectiveness of the insulin produced[1].

Diabetes is one of the most common medical conditions complicating pregnancy. It is estimated that by the year 2030 more than 360 million people will have diabetes mellitus and as the burden of the disease increases the management of pregnancies complicated by diabetes mellitus will be part of the daily obstetric practice in many regions of the world[2].

Abnormalities in glucose regulation occur in 3-5% pregnancies. This prevalence may increase with new screening guidelines and increasing prevalence of obesity. Pregestational diabetes accounts about 10% of diabetes in pregnancy and the rest are gestational. Due to the more severe fetal and maternal complications resulting from such diabetes mellitus antedating pregnancy, in 2013, the WHO has divided hyperglycemia in pregnancy as follows: (i) Diabetes in pregnancy: Pre-gestational diabetes or pregnancy occurring in a women with known diabetes, and Overt diabetes - diabetes first detected during pregnancy; and (ii) Gestational diabetes mellitus[3].

Pregestational or overt—diabetes have a more significant impact on pregnancy outcome. The embryo, the fetus, and the mother commonly experience serious complications directly attributable to diabetes. The likelihood of successful outcomes with overt diabetes is related to the degree of glycemic control and the degree of underlying cardiovascular or renal complications[4].

In a retrospective cohort study done on Omani women, women with pregestational diabetes mellitus had a significantly higher incidence of pre-eclampsia (p-0.022), preterm deliveries (p <0.0001) and cesarean section (p<0.001). Neonatal complications such as RDS, neonatal hypoglycemia, neonatal jaundice and subsequent admission to NICU were significantly higher for neonates born to mothers with pregestational diabetes mellitus compared to those born to mothers with gestational diabetes mellitus ($p < 0.001$)[5].

Pre-pregnancy care for women with pre-gestational type 1 or type 2 diabetes mellitus is effective in improving rates of congenital malformations, perinatal mortality and in reducing maternal HbA1C in the first trimester of pregnancy. Pre-pregnancy care might cause maternal hypoglycemia in the first trimester of pregnancy[6].

Exact incidence of diabetes is not known in Ethiopia. Many mothers are becoming pregnant in the presence of diabetes and are prone to have recurrent pregnancy loss, stillborn, babies with multiple congenital anomalies. This study will help to have baseline data on pregestational diabetes mellitus in this set-up and can be used as a reference for studies in this area.

METHODS AND MATERIALS

A prospective follow up study was conducted at the three teaching hospitals in Addis Ababa Ethiopia from 1 January 2016 to 30 December 2016.The three teaching hospitals were Saint Paul's, Black lion and Yekatit12 hospital. These hospitals run residency program under Addis Ababa University and Saint Paul's hospital millennium medical college in Addis Ababa, the capital city of Ethiopia.

A structured questionnaire was used to interview study participants. For administering the structured questionnaire, nurses who were working at ANC clinics at the three hospitals filled the initial socio-demographic data, attached the second part of the questionnaire on the clients' card and gave a code and reported to the principal investigator. The remaining data was filled by the person who attended the delivery. Medical record review at each hospital was conducted by the principal investigator to complete any missing information.

Adverse pregnancy outcome was the dependent variable. The independent variables were maternal age, type of diabetes mellitus, and duration of diabetes, treatment of diabetes before pregnancy, preconceptional care, maternal blood glucose level, gestational age, birth weight and mode of delivery.

Data was entered and analyzed using SPSS version 20. Results are presented as percentages and comparison of the results was performed by the chi-squared test. All tests are two-sided and the level of significance will be set at $P < 0.05$. Bivariate analysis was done to see relationship between dependent and independent variables. Multivariate analysis was done to control the confounding variables and variables which had a p value of ≤ 0.2 in bivariate analysis were included.

OPERATIONAL DEFINITIONS

Pregestational Diabetes mellitus:- Patients who were diagnosed to have diabetes prior to the current pregnancy.

Macrosomia: - Birth weight of 4000 grams or greater was taken to classify macrosomic babies.

Adverse pregnancy outcome definitions:- The WHO guidelines define APO as an event of low birth weight, preterm birth, stillbirth, or abortion. So in our study APOs means the above definition on WHO guideline plus maternal complications like hypertensive disorders of pregnancy. Presence of any of the following, low birth weight, preterm birth, stillbirth, or abortion, congenital anomaly,

RESULTS OF THE STUDY

1. **Socio demographic characteristics and reproductive performance (Table I)**

   Over the study period there were a total of 19,797 deliveries at the three teaching hospitals and 80 were women with pregestational diabetes mellitus making prevalence of 0.4%.

   Twenty five (31.2%) of them had follow up and delivered at SPHMMC, 38 (47.5%) at Black Lion hospital and the remaining 17(21.2%) at Yekatit 12 hospital. Majority, 71(88.8%) were from urban area, 78(97.5%) were married and 79(98.8%) were educated. Majority of the women, 62(77.5%) were between the age group of 20-35 years, 3(3.8%) were below 20 years of age and 15(18.8%) were above age 35 years. About 57(71.2%) have parity of one to four, 19(23.8%) were primigravids and the rest (5%) were grand multipara. The other sociodemographic characteristics are shown in table 1.

2. **The profile of diabetes and glycemic control during pregnancy (Table-II & III)**

   The distribution of type one and two diabetes is almost equivalent. Nearly half, 39(48.8%) were type 1 and 41(51.2%) were type 2 with duration of illness being less than 10 years in 67(83.8%). Fifty five (68.8%) of them were on insulin, 20(25%) on oral hypoglycemic agents and 6(6.2%) on dietary management before the current pregnancy.

   Forty-one (51.2%) of the study populations had glucometer at home for monitoring of their blood glucose level. Forty two (52.5%) of the women were not on any form of contraceptive and half of them had preconceptional care.

Table I- Sociodemographic characteristics of pregnant mothers with pregestational diabetes who had followed and delivery at three teaching hospitals in Addis Ababa from 1 January 2016 – 30 December 2016

Name of hospital	St.Paul's	25	31.2
	Black lion	38	47.5
	Yekatit 12	17	21.2
AGE (Years)	<20	3	3.8
	20-35	62	77.5
	>35	15	18.8
Residency	Urban	71	88.8
	Rural	9	11.2
Marital status	Married	78	97.6
	Single	1	1.2
	Divorced	1	1.2
Religion	Orthodox	51	63.8
	Muslim	19	23.8
	Protestant	10	12.4
Occupation	House wife	37	46.2
	Employed	36	45
	Unemployed	7	8.8
Educational Status	Uneducated	1	1.2
	Primary school	24	30
	Secondary school	42	52.6
	University	13	16.2
Reproductive performance	Primigravida	19	23.8
	1-4	57	71.2
	Grandmultipara	4	5
Type of pregestational diabetes	Type 1	39	48.8
	Type 2	41	51.2
Duration of diabetes(In years)	<10	67	83.8
	10-20	12	15
	>20	1	1.2
Type of therapy	Insulin	55	68.8
	Oral hypoglycemic agent	20	25
	Dietary	5	6.2
Use of contraceptive	Yes	38	47.5
	No	42	52.5
Preconceptional Care	Yes	40	50
	No	40	50
Presence of glucometer at home	Yes	39	48.8
	No	41	51.2

In this study 54(67.5%) of the mothers didn't have any determination of HgA1C during their pregnancy. HgA1C was determined for only 11(13.75%) women in the first trimester and the mean HgA1C value was 8.6%. The mean FBS and 2 hour postprandial RBS in the first trimester of pregnancy was 98.3 and 154.9 respectively. HgA1C was determined for only 6(7.5%) women in the second trimester with a mean value of 9.03%. The mean FBS and 2 hour postprandial RBS in the second trimester of pregnancy was 100 and 144.3 respectively. HgA1C was determined for only 13 (16.3%) women in the third trimester and the mean was 7.2%. The mean FBS and 2 hour postprandial RBS in the third trimester of pregnancy was 98 and 142 respectively.

Table II: - The Average maternal Glycemic control of pregnant mothers with pregestational diabetes who had follow and delivery at three teaching hospitals in Addis Ababa from 1 January 2016 – 30 December 2016

Trimesters	FBS	2-Hour postprandial	Glycosylated hemoglobin
First	98.3	154.9	8.6%
Second	100	144.3	9.03%
Third	98	142	7.2%

3. Maternal, Fetal and Neonatal Complications (Table-III and IV)

Out of the 80 women 55(68.8%) didn't have any maternal complication. Ten women (12.5%) has preeclampsia, 11.2% chronic hypertension out of which two experience superimposed preeclampsia. Four (5%) women had gestational hypertension. Totally hypertensive disorder of pregnancy is the commonest (28.5%) maternal complication seen in our study. Two women have diabetic ketoacidosis (2.5%) and one end up with spontaneous abortion and the other with preterm labor. There were two women with diabetic nephropathy and one has intrauterine growth restriction and one woman with non-proliferative diabetic retinopathy.

Out of the 80 deliveries 10 (12.5%) had fetal complications 3 stillborn (3.75%), 3 (3.75%) congenital anomaly and 4 (5%) spontaneous abortion.

Majority of pregnancies (67.1%) ended up with induction of labor for fetal and maternal indications and 61.8% delivered by cesarean section. From the cesarean section 38.3% were elective and 61.7% emergency. There were 6(7.9%) instrumental deliveries and one birth injury (elbow dislocation) after forceps delivery. Nearly one-third (30.3%) of the deliveries were preterm and majority in the normal birth weight range (73.7%), with 7(9.2%) of babies born macrocosmic and low birth weight babies account for 17.1%.

More than half of neonates (53.4%) were referred to neonatal intensive care unit because of prematurity. Hypoglycemia, Jaundice, RDS and birth injury were seen in 6.8%, 4.1%, 10.9% and 1.4% respectively. The one neonate admitted for birth injury had elbow dislocation after forceps delivery.

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Table III: - Maternal, Fetal and Neonatal Complications of mothers who had pregestational diabetes mellitus and had follow up and deliver at three teaching hospitals in Addis Ababa, January 1- December 30 2016

Outcome measures	Frequency	Percent
Maternal Comorbidities		
No comorbidity	55	68.8
Preeclampsia	10	12.5
Chronic Hypertension	9	11.2
Gestational hypertension	4	5
Diabetic ketoacidosis	2	2.5
Fetal complications		
Abortion	4	5
Congenital anomaly	3	3.75
Stillborn	3	3.75
No complication	70	87.5
Onset of labor		
Spontaneous	25	32.9
Induced	51	67.1
Mode of delivery		
SVD	23	30.3
Cesarean section	47	61.8
Instrumental	6	7.9
Gestational age at time of birth		
<37	23	30.3
≥37	53	69.7
Birth-weight		
<2500	13	17.1
2500-3999	56	73.7
≥4000	7	9.2

Table IV: - Multivariate analysis of adverse pregnancy outcome in mothers with pregestational diabetes who had follow up and delivery at three teaching hospitals in Addis Ababa from 1 January 2016 – 30 December 2016

Baseline Characteristics	Adverse pregnancy outcome		COR Yes	AOR No	95% confidence interval	P-Value
Hospital						
SPHMMC and Yekatit 12	23	19	0.432	-	-	0.082
Black lion	28	10	-		-	-
Type of PGDM						
Type 1	23	16	1.498	-		0.387
Type 2	28	13	-		-	-
Duration of PGDM						
≤10 Years	41	26	0.473	-	-	0.288
>10 years	10	3	-		-	-
Treatment before conception						
Insulin	32	23	0.439	-	-	0.129
OHG anddietary	19	6	-		-	-
Preconceptional care						
Yes	28	10	-		-	-
No	21	19	0.24	0.033	0.065,0.892	0.033
Presence of Glucometer						
Yes	21	19	0.24	0.033	0.065,0.892	0.033
No	30	10	-		-	-
3rd trimester 2-hour postprandial blood glucose level						
≤120	10	4	1.488	-	-	0.616
>120	31	25	-		-	-
Maternal Age						
≤35 years	38	27	0.217	-	-	0.056
>35 years	13	2	-		-	-

DISCUSSION

Pregestational diabetes mellitus is an important problem which has a significant impact on the maternal and perinatal outcome. It is now accepted that the best form of care in these pregnancies can be provided through specialized multidisciplinary clinics[7].

The prevalence of pregestational diabetes mellitus in this study was 0.4% which is close to other studies where preexisting diabetes complicates pregnancies at a rate of 1-3 per 1,000 births. Prevalence of type 1 and 2 DM were reported as ranging from 0.20 to 0.70% in a systemic review entitled burden of diabetes mellitus during pregnancy in low- and middle-income countries[8]. In a study designed similar to ours done at district hospital in Australia prevalence of PGDM was 0.63%[9]. The prevalence of pregestational diabetes increased from 3.1 per 1000 births in 1996–98 to 4.7 per 1000 in 2002–04 driven mainly by a sharp increase in type II diabetes[10].

The mean age of the women was 30.6 years which is comparable to other studies 31.5 years and 28.5yrs + 2.2years[11, 12]. These shows that type 2 diabetes mellitus is being diagnosed in younger age which may be because of a change in life style and obesity. The mean age of mothers in our study was higher in type 2 mothers 32.7 years than those of type 1 (27.4 years). In both cases it is lower than other studies. In the study done by Hayfaa A Wahabi et al the mean age was 35.3 ± 5 and 34.4 ± 6 years and in another study done by A.A Sobande et al it was 36.0 ± 3.2 and 30.5 ± 7 for type 2 and 1 diabetes respectively11, 13. Among patients with age ≥ 35 years 4(20%) are mothers with type 1 DM and the rest 16 (80%) are women with type 2 DM.

Forty two (52.5%) of the women were not on any form of contraceptive. This means it is difficult to institute preconceptional care like supplementation of folic acid, achieving glycemic control and assess end organ damage before conception unless we improve use of contraceptive among these clients.

The Confidential Enquiry in Maternal and Child Health reported that only 34% of women with diabetes had preconception counseling, 28% in Atlantic seaboard 2006–2007 study and in our study 50% of the clients had preconceptional care, which was determined as any checkup and consultation to a physician before getting pregnant. This may be explained because most of them are from urban area and has access to health care[9, 14]. The importance of having preconceptional care should be emphasized since it showed significant association with adverse pregnancy outcomes [OR (0.033), 95% CI (0.065, 0.892)].

In our study the glycemic control of the clients was poor in each trimester especially the 2-hour postprandial is >130 and it should have been ≤120. The average HgA1C in our study at each trimester is higher than the target of 7%. Though we didn't show significant association between glycemic control and adverse pregnancy outcome due to small sample of study population, all hospital should have standard protocol to achieve good glycemic control. In the antepartum period one of the indicators of poor glycemic control is polyhydraminous which was seen in 2.5% of the cases lower than other studies 11.3 %[13].

In this study adverse pregnancy outcomes are more commonly seen in type 2 diabetic mellitus than type 1, though not significant [OR (1.498), 95% CI (0.599, 3.746), P=0.387] like the study done in King Khalid University Hospital.(11) The rate of spontaneous abortion is 5% which is closer to the study done in Sweden in which they used 532 pregnancies complicated by pregestational IDDM, spontaneous abortion rate in these pregnancies was 7.7%[15].

Among all patients with pregestational diabetes, the risk of congenital anomalies is reported at 6 - 7%. There is a dose-response curve to these risks, with the highest risk observed among women who are poorly controlled in the periconceptional period and throughout pregnancy. Atlantic seaboard 2006–2007 study congenital anomaly was 2.4% and in our study it's was 3.75%[9]. The stillbirth rate in women with PGDM from Australia was 2.8%,

2.5% in Atlantic seaboard study, 3.4% in King Khalid University Hospital and in our case 3.75%[7, 9, 11]. The higher incidence of congenital anomaly and stillbirth rate in our study may be as a result of the poor glycemic control.

The prevalence of cesarean deliveries has consistently been reported to be higher in pregestational diabetic pregnancies than in nondiabetic pregnancies. Cesarean rates have been in the range of 24-66% in diabetic patients, rates that were three to five times the rates in nondiabetic women[12,16]. Also in a prospective evaluation of pregnancy outcomes in pregestational diabetes along the Atlantic seaboard 2006–2007 the caesarean section rates were greater (43%), in Omani study 60.3%, in our study it wais 61.8% which was high. The rate of emergency c-section was also higher (61.7%) than other reports (25%)[9].

According to Confidential Enquiry into Maternal and Child Health (CEMACH), 67% of women with DM had a higher incidence of caesarean section, which was mainly iatrogenic as a result of early induction of labour[14]. Induction of labour was done in 14 (60.8%) at district hospital in Australia which is close to our result which is 67.1%.

Recent population-based data from Sweden revealed a 25% rate of preterm delivery (<37 weeks gestation) in women with IDDM, in an Omani study it was also 25.9% and in our study it was 30.0%[5]. The higher percentage of preterm delivery in our study may be accounted to the poor glycemic control and iatrogenic intervention for fetal or maternal indications.

Eleven percent of the infants delivered to the diabetic mothers were macrosomic in a study at King Khalid University, 7.9% in Indian study, 10.3% in Omani study. But in our case it is 9.2%[5, 11, 17]. Women with type 2 DM had a slightly higher frequency of large babies compared to type 1. There were two cases of intrauterine growth restriction one from each type of DM and the duration of DM was between 10-20 years in both cases.

The NICU referral rate was 48% in the Atlantic seaboard study, 56% in a study done at a district general hospital in Australia and 49%in a retrospective study in Nigeria which was comparable to our study (53.4%) [7,9,18]. Pregnancy-induced hypertension/ preeclampsia was three times more common in women with PGDM (14%), (11%) in Indian study, 10.8% in study at tertiary hospital in Saudi Arabia, in Omani cohort study 17.2% which are comparable to our study (12.5%) [5,9,13,17]. As it seen in other studies type 1 diabetes is more often associated with preeclampsia and type 2 diabetes with chronic hypertension 60% and 66.7% respectively.

Incidence of diabetic ketoacidosis is low 1% to 2% mostly in type 1 DM. Though rate of maternal mortality secondary to DKA is not well known, but fetal mortality has been reported to be as high as 10%. In our study DKA diagnosed in 2 (2.5%) both were women with Type 1 DM pregnancy and these two pregnancies ended up with abortion and preterm delivery.

STRENGTH AND LIMITATIONS OF THE STUDY

The strength of this study was that it was a prospective follow up study, selection of those hospitals where most of the diabetic clients in the study area would be managed and the fact that it was conducted in a multicenter setting. The limitations of the study are lack of data on important factors such as maternal body mass index and the small sample size of the diabetic patents.

CONCLUSIONS

The Prevalence of pregestational diabetes mellitus was found to be 0.4% comparable to most setups. The glycemic control was poor in each trimester with higher fasting, 2-hour post prandial and HgA1C level than the standard. Hypertensive disorders of pregnancy were commonest maternal complication and cesarean section is high accounting 61.8% of deliveries. The rate of premature delivery and NICU referral was high. There is significant association between preconceptional care and adverse pregnancy outcome. These hospitals should have management protocol advocating preconceptional care and tighter glucose control.

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REFERENCES

1. Alberti KG, Zimmet PZ. Definition, diagnosis and classification of diabetes mellitus and its complications. Part 1: diagnosis and classification of diabetes mellitus provisional report of a WHO consultation. Diabet Med 1998; 15(7):539-553.
2. Wild S, Roglic G, Green A, Sicree R, King H: Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. Diabetes Care 2004, 27:1047–1053.
3. World J Diabetes 2015 June 25; 6(6): 782-791 ISSN 1948-9358 (online) :-Gestational diabetes mellitus: An update on the current international diagnostic criteria
4. Cunningham, F. G., Leveno, K. J., Bloom, S. L., Hauth, J. C., Rouse, D. J., & Spong, C. Y. (2010). Williams Obstetrics (23rd ed.). New York, USA: McGraw-Hill.
5. Adel T Abu Heija, Majeda Al-Bash, Mariam Mathew Gestational and pregestational diabetes mellitus in Omani women comparison of obstetric and perinatal outcomes Sultan Qaboos University Med J, Nov 2015, Vol. 15, Iss 4, pp-e496-50
6. Hayfaa A Wahabi*, Rasmieh A Alzeidan and Samia A Esmaeil Pre-pregnancy care for women with pre-gestational diabetes mellitus: a systematic review and meta-analysis BMC Public Health 2012, 12:792Am
7. Abhijit Basu, MBBS, MD, FRANZCOG, FRCS, FRCOG, MBA, Department of Obstetrics & Gynaecology, Logan Hospital, Armstrong Road, Meadowbrook, 4131, Queensland, Australia Practical Diabetes 2012; 29(9): 372–376
8. The burden of diabetes mellitus during pregnancy in low- and middle-income countries:-a systemic review Glob Health Action 2014, 7: 23987 Lovney Kanguru1*, Navya Bezawada2, Julia Hussein1 and Jacqueline Bell
9. Prospective evaluation of pregnancy outcomes in pregestational diabetes along the Atlantic seaboard 2006–2007. DIABETES CARE, VOLUME 32 :1205–1206,, NUMBER 7, JULY 2009
10. R Bell,a K Bailey,b T Cresswell,c G Hawthorne,d J Critchley,a N Lewis-Barnede on behalf of the Northern Diabetic Pregnancy Survey Steering Group. Trends in prevalence and outcomes of pregnancy in women with pre-existing type I and type II diabetes. BJOG 2008; 115:445–452.
11. Hayfaa A Wahabi, Samia A Esmaeil, Amel Fayed, Ghadeer Al-Shaikh and Rasmieh A Alzeidan. Prevalence of preexisting diabetes mellitus and adverse pregnancy outcomes.. BMC Research Notes 2012, 5:496
12. Lavin JP, Lovelace DR, Miodovnik M, Knowles HC, Barden TP: Clinical experience with one hundred seven diabetic pregnancies. Am J Obstet Gynecol 147:742-52, 1983
13. Sobande AA, Eskandar M, Archibong EI. complications of pregnancy and fetal outcomes in pregnant diabetic patients managed in a tertiary hospital in Saudi Arabia. West Afr J Med. 2005 Jan-Mar;24(1):13-7.
14. Confidential Enquiry into Maternal and Child Health. Diabetes in Pregnancy: Are we providing the best care? Findings of a National Enquiry: England, Wales and Northern Ireland. CEMACH, 2007.
15. Hanson U, Persson B, Thunell S: Relationship between hemoglobin A1C in early type I (insulin-dependent) diabetic pregnancy and the occurrence of spontaneous abortion and fetal malformation in Sweden. Diabetologia 33:100-04, 1990
16. Gabbe SG, Mestman JH, Freeman RK, Goebelsman UT, Lowensohn RI, Nochimson D, Cetrulo C, Quilligan EJ: Management and outcome of pregnancy in diabetes mellitus, classes B to R. Am J Obstet Gynecol 129:723-32, 1977
17. Sanjaykumar Patil1, Pallavi D. Pandey2, N. S. Kshirsagar Comparsion of pregnancy complications and fetal outcomes in pregnancies complicated with pregestational and gestational diabetes mellitus, International Journal of Recent Trends in Science And Technology, , Volume 9, Issue 3, 2014
18. C O John, J O Alegbeleye, and A O Otoide Fetomaternal outcome of diabetes in a tertiary health facility in Nigeria African Journal of diabetes medicine vol 23 No2 November 2015

ASSESSMENT OF THE KNOWLEDGE, ATTITUDE AND PRACTICE OF RESIDENTS AT TIKUR ANBESA HOSPITAL ABOUT PRECONCEPTIONAL CARE 2018

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ABSTRACT

BACKGROUND: Preconception care is a set of interventions provided before pregnancy to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management.

OBJECTIVE: The aim of the study was to assess the knowledge, attitude and practice of physicians in Tikur Anbesa hospital about preconceptional care with the view of providing recommendations to optimize the uptake and delivery of the service and improve maternal and perinatal outcomes.

METHODS: A descriptive cross-sectional study was done among 156 internal medicine and obstetrics and gynecology residents of Tikur Anbesa hospital using a self-administered semi structured questionnaire. The data was analyzed using descriptive statistics, chi-square and T-tests. P-value of less than 0.05 was taken as significant.

RESULT: Of 156 questionnaires distributed 130 completed responses were collected making response rate of 83.3%. Among the respondents 69.2% had good, 26.9% had moderate and 3.8% had poor knowledge about preconceptional care. Of all the respondents 48.5% had positive, 43.8% had intermediate and only 7.7% had negative attitude towards preconceptional care. But only 19.2% of them had good practice scores, whereas 42.3% had moderate and 38.5% had poor preconceptional care practice scores.

CONCLUSION: Even though the knowledge and attitude about preconceptional care is good there is a significant gap in the delivery of the services. Efforts should be made by the concerned bodies to improve the practice of preconceptional care through preparation of guidelines, providing training and creating awareness in the public.

KEY WORDS: Preconception care, Tikur Anbesa hospital, Residents, KAP

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INTRODUCTION

Preconception care (PCC) is defined as a set of interventions that aim to identify and modify biomedical, behavioral, and social risks to a woman's health or pregnancy outcome through prevention and management[1]. It is the provision of healthcare to women of reproductive age and their partners prior to conception in order to optimize a woman's physical, social and emotional wellbeing and to ensure optimal intra-uterine conditions for the developing fetus[2]. Identification of potential risk factors for poor pregnancy outcomes and institution of appropriate measures before pregnancy improves both maternal and fetal outcomes of pregnancy[3]. It was first associated with the care provided to women who had already experienced adverse pregnancy outcomes, but soon came to be recommended for all women[4].

When poor pregnancy outcomes occur, they frequently have been set in motion long before the first prenatal visit. The traditional early prenatal visit is too late to affect reproductive outcomes associated with abnormal organogenesis secondary to drugs, alcohol, and poor diet[5]. A study done in Ethiopia show that the mean time of first antenatal care visits 15.9 weeks[6] and only 27.1% started ANC before 12 week[7]. According to EDHS 2016, only 20% of women had their first ANC during the first trimester[8].

In addition, many women conceive unintentionally and might not even realize they are pregnant until the first trimester has passed by which time damage might already have occurred. In Ethiopia 23.5%-32% of pregnancies are unintended[9, 10, 11].

A significant number of women have risk factors that could negatively affect a pregnancy if not appropriately managed before conception. Data from the CDC's pregnancy risk assessment monitoring system show that in the 3 months before pregnancy, 23.2% of women used tobacco, 50.1% consumed alcohol and only 35.1% took a multivitamin at least 4 times a week[13]. Once pregnant, 11% of women continue to smoke and 10% continue to drink alcohol[13].

METHODOLOGY

This was a descriptive cross-sectional study done on internal medicine and obstetrics and gynecology (Ob-gyn) residents practicing in Tikur Anbesa hospital, which is the largest teaching and referral hospital in Ethiopia, located at the capital of the country. The hospital receives patients from all over the country. It has more than 700 beds. The hospital is also a center for medical education in the country having both undergraduate and postgraduate programs. We chose the two departments considering women at risk of poor pregnancy outcome mainly visit these departments in our set up. The department of internal medicine has 4 inpatient wards and 10 outpatient specialty clinics where as department of obstetrics and gynecology has two inpatient wards, one labor ward, one ANC and one regular gynecologic clinic. There was a total of 180 residents (88 internal medicine and 92 obstetrics and gynecology) working in the two departments during the study period. Since no study was done in the past to estimate the level of positive KAP of physicians about PCC in our setup, we took a 50% proportion as recommended by Fisher16 making sample size of 123 according to Mugenda & Mugenda. The permission to conduct the study was obtained from the ethics review committee of Addis Ababa University College of health sciences.

The data was collected over a two-week period from April 01 to April 15, 2018 from residents found in all inpatient and outpatient clinics of the two departments and agreed to participate in the study using a self-administered semi structured questionnaire whose content was obtained from similar studies of reviewed literature. Validity of the questionnaire was assessed by asking 5 Ob-gyn and 2 internal medicine consultants to review the relevance of each question in assessing the respondent's KAP about PCC on a 4-point Likert scale (1=not relevant to 4=very relevant) and found to have overall scale CVI of 0.94, 0.85 and 0.90 for the knowledge, attitude and practice respectively and

reliability was found through test-retest on 5 residents from each department over a 10-day interval (r=0.86). It has 10 demographic and occupational variables, 15 knowledge items, 9 Likert scale (strongly agree to strongly disagree) items to assess level of agreement on statements about PCC as a measure of the respondents attitude, 16 Likert scale (always to never) items to assess how often the respondents at least discuss with women before pregnancy about the benefits (and or the effects) of the 16 major components of PCC on future fetal and maternal health as a proxy to measure their practice. The questionnaire also has two separate list all that applies type questions with a space for further ideas to assess what the resident believes as barrier for PCC provision in our set up and their recommendations.

For knowledge part each correct answer was scored 1 and each incorrect answer was scored 0. The attitude score was obtained based on the 5-point answers (strongly disagree=0, disagree=1, neutral=2, agree=3 and strongly agree=4). Similarly, the practice score was obtained based on the 5-point answers (never=0, rarely=1, sometimes=2, often=3 and always=4).

The total score of the respondents was calculated for each of the three components by adding up the individual item scores and converted to percentage of the maximum possible score (15 for knowledge, 36 for attitude and 64 for practice). In addition, the percentage of practice was calculated for individual components of PCC by adding up the score of all the residents for that specific item and dividing by the maximum possible score of 520 (4×130 if practiced always by all residents) for comparison of the frequency of practice between the different components of PCC. The original Bloom's cut off point (greater than 80%, 60 to 80% and less than 60%) was used to classify the scores in to three parts as good, moderate and poor for the knowledge and practice and as positive, intermediate and negative for the attitude.

Data was analyzed using descriptive statistics, t-test and $\chi 2$ test in SPSS-version 20 software. P-value of less than 0.05 was considered significant.

RESULTS

The questionnaire was distributed to a total of 156 residents and 130 completed questionnaires were returned making response rate of 83.3%. Eighty-one (62.3%) were Ob-Gyn residents and 49(37.7%) were internal medicine residents. As shown in the table 1 most of them were male (71.5%), less than 30 years old (75.4%), single (67.7%), junior (first and second year) residents (62.3%) and served less than 5 years (62.3%).

For women with medical conditions preconception care strategies might include counseling about the risks of pregnancy complication including maternal and fetal morbidity and mortality , optimizing disease control in preparation for pregnancy, changing a potentially teratogenic treatment regimen to one that is safer for the fetus and provision of family planning services to delay or avoid pregnancy[14].

Antenatal care and postnatal cares which are provided in a more organized way in different countries may not address problems that occur before pregnancy. Institution of a comprehensive PCC program will fill the gap in the continuum of women care.

Even though the benefits of preconception care have been established, the uptake and delivery of preconception care remain low especially in developing countries like Ethiopia. A study done by Ayalew show that there is a relatively low level of awareness (27.5%) about PCC among women[15]. One way of improving women's awareness and utilization of PCC services is by improving health care provider's awareness and practice[7].

Knowledge of physicians' current practices and opinions regarding PCC and what they perceive to be barriers to successful implementation of PCC is important in the development of national PCC program. Currently there is no published study assessing the knowledge, attitude and practice (KAP) of health care providers in Ethiopia. The purpose of this study was to assess KAP of physicians working in Tikur Anbesa Hospital regarding PCC. Tikur Anbesa hospital being the largest referral

and teaching hospital in Ethiopia the practice of PCC in the hospital may reflect the level of PCC in the country because physicians graduating from this hospital are working throughout the country. The findings of this study may inform health workers, educators and policy makers in designing appropriate PCC programs and guidelines that would increase the delivery and uptake of PCC services to decrease maternal and fetal morbidity and mortality in Ethiopia.

Table 1: Socio demographic characteristics

Parameters	Number (%)
Sex	
Male	93 (71.5)
Female	37 (28.5)
Age	
< 30 years	98 (75.4)
≥ 30 years	32 (24.6)
Marital status	
Single	88 (67.7)
Married	42 (32.3)
Nationality	
Ethiopians	124 (95.4)
Non-Ethiopians	6 (4.6)
Religion	
Orthodox	70 (53.8)
Muslim	32 (24.6)
Protestant	20 (15.4)
Others	8 (6.2)
Level of residency	
First year	47 (36.2)
Second year	34 (26.1)
Third year	29 (22.3)
Fourth year	20 (15.4)
Total years of service	
Less than 5 years	81 (62.3)
≥ 5 years	49 (37.7)

Table 2: Mean of different variables by specialty and level of residency

Parameters	Specialty			Residency		
Age	Ob-Gyn 28.96	IM 27.73	P 0.001*	Senior 29.61	Junior 27.83	P 0.000*
Years of service as GP	2.10	1.84	0.335	2.13	1.93	0.458
Total years of service	4.49	3.65	0.014*	5.54	3.35	0.000*
RAW seen per week	57.82	11.35	0.000*	54.80	31.53	0.006*
Knowledge score	90.21	76.02	0.000*	89.76	81.89	0.000*
Attitude score	79.32	74.83	0.028*	80.56	75..86	0.020*
Practice score	65.86	63.58	0.419	64.45	65.34	0.752

*significant difference, P p-value, GP general practitioner, RAW reproductive age women, IM internal medicine

The mean knowledge score of the respondents was 84.86% ±12.5 % (55-100%). It was significantly higher for Ob-Gyn residents than internal medicine residents (90.21% versus 76.02%, p=0.000) and for senior residents than junior residents (89.76% versus 81.89%, p =0.000). As shown in table 3 of all respondents 90(69.2%) had good, 35(26.9%) had moderate and 5(3.8%) had poor knowledge about PCC. Level of knowledge had a significant association with total year of service, residency level and specialty (P< 0.05). But after controlling for confounders only specialty was found to be significantly associated with knowledge score, Ob-gyn residents were 13.9 times more likely to have good knowledge about PCC than internal medicine residents (AOR=13.9, 95% CI 4.5 to 43.0). The knowledge score had a significant positive correlation with the number of RAW seen per week (P=0.000).

Table 3: Knowledge of preconceptual care among residents at Tikur Anbesa Hospital by demographic variables

	Knowledge score			
	Poor N (%)	Moderate N (%)	Good N (%)	P- value
Sex				
Male	2(2.2)	22(23.7)	69(74.2)	0.086
Female	3(8.1)	13(35.1)	21(56.8)	
Age in years				
< 30	4(4.1)	28(28.8)	66(67.3)	0.718
≥ 30	1(3.1)	7(21.9)	24(75)	
Marital status				
Single	2(2.3)	25(28.4)	61(69.3)	0.372
Married	3(7.1)	10(23.8)	29(69.0)	
Total years of service				
< 5 years	2(2.5)	28(34.6)	51(63.0)	0.031*
≥ 5years	3(6.1)	7(14.3)	39(79.6)	
Residency				
Junior	4(4.9)	28(34.6)	49(60.5)	0.021*
Senior	1(2.1)	7(14.3)	41(83.7)	
Specialty				
Internal medicine	4(8.2)	25(51)	20(40.8)	0.000*
Ob-gyn	1(1.2)	10(12.3)	70(86.4)	
Total	**5(3.8)**	**35(26.9)**	**90(69.2)**	**0.000***

*significant association

The mean attitude score was 77.6 %±11.2 (41.7-100.0). It was significantly higher for Ob-gyn residents than internal medicine residents (79.3% versus 74.8%, P=0.028) and senior residents than junior residents (80.6% versus 75.9%, P=0.02). Table 4 shows attitude score by demographic and occupational characteristics. Of all respondents 68(48.5%) had positive, 57(43.8%) had intermediate and only 10(7.7%) had negative attitude towards PCC. Ob-gyn residents were 3.2 times more likely to have positive attitude towards PCC than internal medicine residents (AOR=3.2, 95% CI 1.2 to 8.8) and senior residents (third and fourth year) were 4 times more likely to have positive attitude towards PCC than junior residents (first and second year) (AOR=4.0, 95% CI 1.4 to 11.6).

Table 4: Attitude towards preconceptual care among residents at Tikur Anbesa Hospital by demographic variables

	attitude score			
	Negative N (%)	Intermediate N (%)	Positive N (%)	P- value
Sex				
Male	6(6.5)	39(41.9)	48(51.6)	0.450
Female	4(10.8)	18(48.6)	15(40.5)	
Age in years				
< 30	9(9.2)	41(41.8)	48(49.0)	0.463
≥ 30	1(3.1)	16(50.0)	15(46.9)	
Marital status				
Single	6(6.8)	35(39.8)	47(53.4)	0.262
Married	4(9.5)	22(52.4)	16(38.1)	
Total years of service				
< 5 years	4(4.9)	38(46.9)	39(48.1)	0.275
≥ 5years	6(12.2)	19(38.8)	24(49.0)	
Residency				
Junior	8(9.9)	40(49.4)	33(40.7)	0.065
Senior	2(4.1)	17(34.7)	30(61.2)	
Specialty				
Internal medicine	6(12.2)	25(51.0)	18(36.7)	0.072
Ob-gyn	4(4.9)	32(39.5)	45(55.6)	
Total	**10(7.7)**	**57(43.8)**	**63(48.5)**	

Even though the majority of them 129(99.2%) agreed that PCC is an important issue and that it improves future maternal health 126 (96.9%) and fetal outcomes 128 (98.3%), only 69(53%) of them believed PCC is a priority in their setting and only 70(53.8%) believed that they are the right person to provide PCC. Ob-Gyn residents were 8.7 times more likely to consider themselves as the right person to provide PCC than internal medicine residents (AOR=8.7, 95% CI 3.1 to 24.4).

The mean practice score of the respondents was 65% ± 15.46 (34-100%). As shown in table 5, of all respondents 50(38.5%) had poor, 55(42.3%) had moderate and only 25(19.2%) had good PCC practice scores. The overall practice score of respondents had no significant association with residency level, specialty, total year of service, average number of women seen, knowledge score and attitude score.

Table 5: Practice of preconceptual care among residents at Tikur Anbesa Hospital by demographic variables

Independent variables	attitude score			
	Negative N (%)	Intermediate N (%)	Positive N (%)	P- value
Sex				
Male	37(39.8)	41(44.1)	15(16.1)	0.363
Female	13(35.1)	14(37.8)	10(27.0)	
Age in years				
< 30	40(40.8)	42(42.9)	16(16.3)	0.309
≥ 30	10(31.2)	13(40.6)	9(28.1)	
Marital status				
Single	34(38.6)	38(43.2)	16(18.2)	0.902
Married	16(38.1)	17(40.5)	9(21.4)	
Total years of service				
< 5 years	31(38.3)	31(38.3)	19(23.5)	0.244
≥ 5years	19(38.8)	24(49.0)	6(12.2)	
Residency				
Junior	31(38.3)	30(37.0)	20(24.7)	0.093
Senior	19(38.8)	25(51.0)	5(10.2)	
Specialty				
Internal medicine	22(44.9)	20(40.8)	7(14.3)	0.389
Ob-gyn	28(34.6)	35(43.2)	18(22.2)	
Total	**50(38.5)**	**55(42.3)**	**25(19.2)**	

Most residents had frequently discussed about the future maternal and fetal effects and /or benefits of chronic medical disease (86.2%), past obstetric history (82.3%), contraception (80.8%), immunization (78.5%), medication use (72.3%) and folic acid supplementation (71.5%) with women of reproductive age. But a significant proportion of residents had never or only rarely discussed the future maternal and fetal effects of genetic diseases (46.9%), illegal drug use (50.8%), environmental and occupational hazards (31.5%), cigarette smoking (30.8%), alcohol use (23.1%) and obesity (20.0%).

Eighty-four (64.6%) of the residents had appointed a woman for PCC at least once. Of those who appoint most of them were for an indication of medical disorder (43.3%), followed by neural tube defect (34%), preeclampsia (9.4%), congenital anomaly (7.5%) and bad obstetric history (5.7%).

Majority of the respondents felt that PCC should be provided by obstetricians (79.2%) followed by family medicine (56.2%), midwives (54.6%), GPs (53.8%), internists (46.2%). Most of them 114 (87.7%) believed that lack of standardized PCC program was the major barrier for provision of PCC followed by lack of guidelines and unplanned pregnancies in105 (80.8%). Lack of resource 76 (58.5%) and lack of knowledge by physicians 69 (53.1%) was reported as a reason for low PCC service provision. Awareness creation through mass media 118 (90.8%), developing guidelines 117 (90.0%), providing training 110 (84.6%) were the major solutions recommended by the residents for improving PCC. Three quarter 98 (75.4%) of them also recommended opening separate PCC clinics.

DISCUSSION

Even though most of the residents had good knowledge and favorable attitude towards PCC, the delivery of PCC to RAW was poor. The PCC practice of those having good knowledge and positive attitude was not better than those not having good knowledge and positive attitude towards PCC. The reason for poor practice therefore may not be related to lack of knowledge or negative attitude, rather as believed by the respondents it could be related to the lack of standardized program, guidelines and awareness of the consumer about PCC. This study shows that residents of the hospital miss outpatient visit opportunities by RAW to discuss PCC, a finding similar to that of Bernstein who found that many of the providers were not addressing family planning services, domestic violence, nutrition and medical risk factors, medication use, appropriate counseling and use of referral services during gynecologic visits[17].

Our study shows that the knowledge of residents about PCC was good. This finding is similar to that of Wallace who found that the average knowledge score of health professionals was 77% but higher than the finding of Conway who found poor knowledge scores among internal medicine and family practice residents[18]. We also found that knowledge scores of Ob-Gyn residents were significantly better than that of internal medicine residents. This is in contrast to the finding of Conway showing no significant difference in knowledge scores of internal medicine and family practice residents (median knowledge score is 5 out of 18 for internal medicine and 8.5 out of 18 for family practice residents) even though family practice residents had standard obstetric training[18]. This difference could be explained by the less emphasis given by internal medicine residents to pregnancy related issues in our set up owing to their limited exposure to pregnant women as shown by the low average number of RAW seen by internal medicine residents per week compared to Ob-Gyn.

Our study shows that the majority of residents had a moderate to positive attitude towards PCC. This finding is consistent with that of Bayrami, Morgan and Heyes[19]. Bayrami found that the majority of physicians in Iran had a positive attitude towards PCC19. Ob-Gyn residents had a better attitude about PCC than internal medicine residents, a finding similar to Conway showing median attitude score of 22 out of 28 for internal medicine residents and 25 out of 28 for family practice residents who had a standard obstetric training[18]. Even though the majority of residents had a favorable attitude about PCC in this study, only about half of them believed that it is a priority in our setting and that they are the right person to provide PCC, a finding similar to Moran and Heyes. Morgan found that only 20.7% of American gynecologists agreed that PCC is a high priority in their workload[20]. Heyes found that most of primary care workers in UK do not believe that PCC is a priority in their workload (71.2%) and that they are the right person to provide PCC (62.4%)[21].

Our study shows that the practice score of the residents was low similar to Moser and Conway. Moser found that only 37% of providers reported counseling women of childbearing age about preconception behaviors more than 75% of the time[22]. We found that the overall practice score of internal medicine residents was not significantly different from that of Ob-gyn residents a finding consistent with that of Conway in which the median management scores of family practice physicians who had standard obstetric training was not significantly different from that of internal medicine residents18. This study also shows no significant difference in the practice score of senior and junior residents, a finding consistent with that of Conway showing no trend of improvement of management score of residents with increasing level of residency18. This could be a reflection of the poor attention given to the practice of PCC in our residency training programs as effective residency training programs are expected to bring an improvement in the level of practice of residents as they are advancing from one level to the other.

CONCLUSION AND RECOMMENDATION

There was a good knowledge and attitude about PCC among residents of Tikur Anbesa hospital, but the practice was poor. Therefore, efforts should be made by the departments and all other concerned bodies to enable effective translation of the good knowledge and positive attitude about PCC into practice so that the future maternal health and perinatal outcome will show improvement. Further study is recommended on how to tackle the barriers that hinder the provision of PCC and how to integrate PCC services to our health system.

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REFERENCES

1. Floyd RL, Johnson KA, Owens JR, Verbiest S, Moore CA, Boyle C. A National Action Plan for Promoting Preconception Health and Health Care in the United States (2012–2014). J Women's Heal. 2013;22(10):797–802.
2. Shannon GD, Alberg C, Nacul L, Pashayan N. Preconception healthcare delivery at a population level: Construction of public health models of preconception care. Matern Child Health J. 2014;18(6):1512–31.
3. Christiansen C, Chandra-Mouli V, Ogbaselassie L, Willumsen J. Meeting to develope a global consensus on Preconception Care to Reduce Maternal and Childhood Mortality and Morbidity. 2012.
4. Greaves L, Poole N. Preconception care Call for national guidelines. Can Fam Physician. 2013;59(1):87–92.
5. Frey KA. Preconception care by the nonobstetrical provider. Mayo Clin Proc. 2002;77(5):469–73.
6. Girum T. Assessment of Timing of First Antenatal Care Visit and Associated Factors Among Pregnant Women Attending Antenatal Care in Dilla Town Governmental. 2016;5(3).
7. Kondale M, Tumebo T, Gultie T, Megersa T, Yirga H, Azimarew A, et al. Timing of First Antenatal Care Visit and associated Factors among Pregnant Women Attending Anatal Clinics in Halaba Kulito Governmental Health Institutions, 2015. J Womens Heal Care. 2016;5(308):8–11.
8. The DHS Program. Ethiopia Demographic and Health Survey. Vol. 6, Women's health issues : official publication of the Jacobs Institute of Women's Health. 2016. 187-189 p.
9. Melese KG, Gebrie MH, Badi MB, Mersha WF. Unintended Pregnancy in Ethiopia : Community Based Cross-Sectional Study. 2016;2016.
10. Habte D, Teklu S, Melese T, Magafu MGMD. Correlates of Unintended Pregnancy in Ethiopia : Results From a National Survey. 2013;8(12):1–8.
11. Tebekaw Y, Aemro B, Teller C. Prevalence and determinants of unintended childbirth in Ethiopia. BMC Pregnancy Childbirth. 2014;14(1):326.
12. D'Angelo D, Williams L, Morrow B, Cox S, Harris N, Harrison L, et al. Preconception and interconception health status of women who recently gave birth to a live-born infant--Pregnancy Risk Assessment Monitoring System (PRAMS), United States, 26 reporting areas, 2004. MMWR Surveill Summ Morb Mortal Wkly report Surveill Summ / CDC. 2007;56(10):1–35.
13. Adams EK, Miller VP, Ernst C, Nishimura BK, Melvin C, Merritt R. Neonatal health care costs related to smoking during pregnancy. Health Econ. 2002;11(3):193–206.
14. Johnson K, Posner SF, Biermann J, Cordero JF. Recommendations to Improve Preconception Health and Health Care -- United States: A Report of the CDC / ATSDR Preconception Care Work Group and the Select Panel on Preconception Care. Vol. 55, Morbidity and Mortality Weekly Report. 2006.
15. Ayalew Y, Mulat A, Dile M, Simegn A. Women's knowledge and associated factors in preconception care in adet, west gojjam, northwest Ethiopia: a community based cross sectional study. Reprod Health. 2017 May 12;14(1):15.
16. Singh A, Masuku M. Sampling Techniques & Determination of Sample Size in Applied Statistics Research: an Overview. IjecmCoUk [Internet]. 2014;II(11):1–22. Available from: http://ijecm.co.uk/wp-content/uploads/2014/11/21131.pdf
17. Bernstein PS, Sanghvi T, Merkatz IR. Improving Preconception Care. J Reprod Med. 2000;45(7):546–52.
18. Conway T, Hu T, Mason E, Mueller C. Are Primary Care Residents Adequately Prepared to Care for Women of Reproductive Age? Fam Plann Perspect [Internet]. 1995;27(2):66. Available from: http://www.jstor.org/stable/2135907?origin=crossref
19. Bayrami R, Ebrahimipour H, Ebrahimi M, Forootani M, Najafzadeh B. Health care provider s' knowledge, attitude and practice regarding pre-conception care. J Res Heal [Internet]. 2013;3(4):519–26. Available from: http://jrh.gmu.ac.ir/article-1-175-en.html
20. Morgan MA, Hawks D, Zinberg S, Schulkin J. What obstetrician-gynecologists think of preconception care. Matern Child Health J. 2006;10(SUPPL. 7):59–65.
21. Heyes T, Long S, Mathers N. Preconception care: Practice and beliefs of primary care workers. Fam Pract. 2004;21(1):22–7.
22. McCance KL, Moser Jr. R, Smith KR. results of a national survey of physicians' knowledge and application of prevention capabilities. Am J Prev Med. 1991;7(3):20894.

KNOWLEDGE, RISK PERCEPTION AND ASSOCIATED FACTORS TOWARDS OBSTETRIC DANGER SIGNS AMONG MOTHERS IN DEBRE BERHAN TOWN, NORTH SHOA, ETHIOPIA

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ABSTRACT

BACKGROUND: Child birth is also known as labour and delivery. It is an exciting time in the life of a family. Occasionally a pregnant woman may experience signs and symptoms which pointer danger. Danger signs are those signs that a woman will see, or those symptoms that she will feel which indicate that something is going wrong.

METHODS: A community based cross sectional study design was conducted on a sample of 405 mothers from April 1- April 30/2017. Study participant were selected using simple random sampling by allocating proportion to population size for each selected kebeles. A structured questionnaire was used to collect the data. The data were coded and entered into Epi data version 3.1 and the analysis was carried out in a statistical package for social science versions 22. Descriptive statistics for each variable and binary logistic regression analysis with 95 % CI was carried out.

RESULT: A total of 405 respondents were participated with a response rate of 97.3%. Out of which 50.6% have good knowledge about obstetric danger signs. Educational status [AOR=7.26, 95%CI (1.219-43.247), number of ANC visits [AOR=2.912, 95%CI (1.27-6.681)] and information on danger signs [AOR=2.366, 95%CI (1.089-5.139)] were found to be significantly associated with knowledge of obstetric danger signs. Twenty-eight-point six percent of respondents had good perception towards obstetric danger signs. Occupation [AOR=3.711, 95%CI (1.256-10.699)], number of ANC visit [AOR=4.575, 95%CI (1.439-14.543)] and information about danger signs [AOR=4.204, 95%CI (1.243-14.223)] were found to be significantly associated with perception towards obstetric danger signs.

CONCLUSION: This study showed low level of Knowledge and perception towards obstetric danger signs. Occupation, educational status, number of ANC visits and information on danger signs were significantly associated with knowledge and/or perception. It is recommended that mothers should have at least four antenatal visits and more educational program about obstetric danger signs needs to be implemented to increase knowledge and risk perception.

KEY WORDS: Danger signs, Knowledge, Risk perception, Ethiopia

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INTRODUCTION

Worldwide, a projected half million women die as a result of pregnancy and childbirth related complications. Virtually all of all maternal deaths occur in low resource countries[1]. Most could have been prevented[2]. Ethiopia has one of the highest maternal mortality statistics globally (353/100,000) and is one of the 10 countries that accounted for 59% of the global maternal deaths in 2015[3].

The maternal mortality ratio in developing countries in 2015 is 239 per 100 000 live births versus 12 per 100 000 live births in developed countries. There are large differences between countries, but also within countries, and between women with high and low income and those women living in rural versus urban areas[4]. Globally majority of maternal death were caused by hemorrhage (22.9%), hypertensive disorders (18.5%), abortion (14.6%), and sepsis (8.6%)[5]. Indirect causes such as malaria, diabetes and anemia which are aggravated by pregnancy can also lead to maternal death[6]. Knowledge of danger signs during ANC, delivery, and perinatal period is central for safe parenthood. Maternal morbidity and mortality could be prevented significantly if women and their families recognize obstetric danger signs and promptly seek health care[7]. The commonest danger signs during pregnancy include vaginal bleeding, swollen hands/face, convulsion, fever and blurred vision. Key danger signs during labor and childbirth include severe vaginal bleeding, pro-longed labor, convulsions, and retained placenta[7,8]. Lack of knowledge on the significance of symptoms and or signs of obstetric complications is one of the reasons of failure of women to identify and seek timely appropriate emergency care[9]. Perception of obstetric danger signs is also the vital initial stage in being compliant and accepting appropriate and timely referral to obstetric care[10]. A community based cross-sectional study conducted in Tanzania showed that about half of the study subjects knew at least one obstetric danger sign[11].

Descriptive cross- sectional study carried out among antenatal care clients at Kenya National Hospital revealed that 27.9% of the study respondents were not informed about danger signs in pregnancy[12]. In generally high levels of maternal mortality can be reduced by empowering women with knowledge on danger signs of pregnancy and promote appropriate health seeking perception. Little is known about the current level of mothers' knowledge and associated factors in Ethiopia as evidenced by literature[13,14]. Therefore, this study aims to assess the current status of knowledge, risk perception about obstetric danger signs and associate factors among mothers in Debre Berhan Town, North Shoa, Ethiopia.

METHODS

Study area

The study was conducted in Debre Berhan town Amhara regional state. Debre Berhan is located in the North Shoa Zone of the Amhara Regional state, about 130 kilometers North East of Addis Ababa. The total population of the town is 92,887 of which, 42,002 are males and 50,885 are females. Debre Berhan city administration has nine kebeles. In Debre Berhan town there are three public health centers, one referral hospital, one private general Hospital and fifteen private clinics.

Study Design and Period

A community based cross sectional study was conducted in Debre Berhan town from April 1-30, 2017

Population

Population source

All mothers who gave birth in the last one year at Debre Berhan town.

Study population

All mothers who gave birth within the last one year from selected three kebeles of Debre Berhan towns and fulfill inclusion criteria.

Sample size determination

The single population proportion formula was used to calculate the sample size by considering the proportion (p) of knowledge on obstetric danger sign from the previous study 56.8 % (15) adding non-response rate of 10% and considering the assumption of a 95% confidence level, a 5% margin of error, the sample size was 415 mothers

Sampling Procedure

In Debra Berhan town there are nine kebeles from this three kebeles were selected by simple random sampling. After selecting the kebeles the total sample size (n = 415) was allocated proportionally on each kebeles based on the number of mothers who gave birth in the last one year prior to the data collection of this study. Finally, systematic sampling was employed to select the study subjects in each kebeles until the desired numbers of sample was obtained. To select the first house hold in each kebeles, data collectors were used the kebeles administration office and the church as a reference/ a starting point than the data collectors were used spinning techniques to select the first household by rotating a pen and select the house which is found in the direction of the tip of the pen. Then consequently gone to the right direction of the first household 4 house was coded and using lottery method one household was selected. From this onwards Data was collected in every 4th interval until the desired sample was achieved in kebeles.

Data collection tool and procedure

Data were collected by face to face interview using a structured Questionnaire adapted from the survey tools developed by JHPIEGO(16).The questionnaire was used to assess the knowledge and risk perception of mothers towards pregnancy danger signs. The data collection tool was pre-tested on women with similar characteristics living out of the study area on 10% of sample size or 42 mothers. After pre-testing further adjustments to the data collection tool was made to improve clarity, understandability, and simplicity of the messages. All of the questionnaires were checked for completeness and accuracy before, during and after the period of data collection. Eight diploma midwives who were fluent in speaking local language were involved in the data collection. Two Bachelor of Science degree (BSc) holder health professionals were recruited as supervisors.

Data quality control

After pre-testing the questionnaire, Cronbatch's Alpha was calculated by using SPSS window version 22.0 to test internal consistency (reliability) of the item and Cronbatch's Alpha greater than 0.7 was considered as reliable. On the top of this, content validity was cross checked by another maternal and/or reproductive health expert at Arba Minch and Debra Berhan University. Data collectors and supervisors were trained for two days on the study instrument and data collection procedure. The principal investigator and the supervisors checked the collected data for completeness and corrective measures was taken accordingly.

Data Processing and Analysis

The collected data was checked visually by the investigators, then data was coded, entered and cleaned using Epi-Data version 3.1 software and finally exported into statistical package for social science version 22 for analysis. Descriptive statistical analysis such as simple frequencies, measures of central tendency and measures of variability was used to describe the characteristics of participants. Then the information was presented using frequencies, summary measures, tables, and figures. Initially, bivariate logistic regression was carried out to see the association of each of the independent variables with the outcome variable. Thereafter, the multivariable logistic regression method was used. The variables that were not significant in the bivariate logistic regression were not considered in the multiple regression analysis. P- Value of <0.05 and 95% confidence level was used as a difference of statistical significance.

OPERATIONAL DEFINITION

Good knowledge: Those respondents who scored equal and above mean score of the knowledge questions towards danger signs.

Poor knowledge: Those respondents who scored below mean score of the knowledge questions towards danger signs.

Good perception: participants who scored equal and above mean score of perceptions questions towards danger signs.

Poor perception: participants who scored below mean score of perceptions questions towards danger signs.

ETHICAL APPROVAL

Ethical clearance was obtained from Debra Berhan University, College of Health Science Institutional Ethical Review Board. Support letter was obtained from department of midwifery to Debra Berhan city Administration. Then again Debra Berhan city Administration wrote letter to selected kebeles. Informed verbal consent was obtained from the study subjects after the data collectors explained the study objectives, procedures and their right to refuse not to participate in the study. Furthermore, confidentiality of the study subjects was assured.

RESULTS

Socio demographic characteristics

Out of the total 415 mothers who were planned for the study, 405 were successfully interviewed yielding the response rate of 97.6%. The mean age of the study subjects was 28.6 (SD ± 5.48). Orthodox Tewahido were found as a dominant religion which accounting 354(87.4%). Around 159(39.3%), reported that they were attended diploma and above. 359(88.6%) of respondents were Amhara in ethnicity. Regarding marital status of the respondents, 341 (84.2%) were married (Table 1).

Table 1 .Socio demographic characteristics of respondent in Debre Berhan Town, North Shoa Zone, Ethiopia, 2017 (n=405)

Variables	Frequency	Percent (%)
Age of respondents		
15-19	3	0.7
20-24	97	24.0
25-29	144	35.6
30-34	84	20.7
35-39	57	14.1
>=40	20	4.9
Ethnicity		
Amhara	359	88.6
Oromo	31	7.7
Tigre	9	2.2
Other	6	1.5
Religion		
orthodox	354	87.4
Muslim	21	5.2
Protestant	27	6.7
Catholic	3	0.7
Educational status		
Can't read and write	30	7.4
Read and write	24	5.9
Elementary	81	20.0
Secondary	111	27.4
Diploma and above	159	39.5
Occupation		
Governmental employee	119	29.4
NGO employee	37	9.1
Private business(merchant)	160	39.5
Daily laborer	10	2.5
Housewife	70	17.3
Other	9	2.2
Origin of residence		
Urban	327	80.7
Rural	78	19.3
Monthly income		
<500	26	6.4
500-1000	69	17.0
>=1000	310	76.5

Obstetric history related characteristics

Out of total 405 respondents 194(47.9%) had history of one pregnancy. Vast majority of respondent 352(86.9%) had history of ANC follow up. Among those who had ANC, 298(84.7%) had got health education about danger Signs of obstetric complications. Majority 267(65.9%) of the mothers were pervious history of institutional delivery (Table 2).

Table 2. Obstetric characteristics of respondents in Debre Berhan Town, North Shoa Zone, Ethiopia, 2017 (n=405)

Variables	Frequency	Percent (%)
Age at first pregnancy		
<20	119	29.4
20-34	285	70.4
>=35	1	2
Gravidity		
Primipara	194	47.9
Multipara	190	46.9
Grand Multipara	21	5.2
Parity		
One	119	29.4
Two	169	41.7
Three and above	117	28.9
ANC		
Yes	352	86.9
No	53	13.1
Frequency of ANC		
One	90	25.6
Two	57	16.2
Three	73	20.7
four and above	132	37.5
Place of delivery		
Home	108	26.7
Health institution	297	73.3
Health education During ANC		
Yes	298	84.6
No	54	15.4
Information of danger signs		
Yes	337	95.7
No	17	4.3
Source of information		
Health care providers	276	78.4
Relatives	20	5.7
Friends	29	8.3
Media	27	7.6

Knowledge about obstetric danger signs

Knowledge of respondents about obstetric complication was assessed by questions of danger signs related to pregnancy and childbirth. Out of 405 respondents 62.7%, 55.1% and 51.8% had good knowledge during pregnancy, labor and peurpuriuem respectively.309(76.3%), 160 (40.7%),140(34.6%) 134(33.1) and116(28.6) of the respondents spontaneously mentioned vaginal bleeding, swollen hand and face, severe headache, absence or reduced fetal movements and leakage of liquor per vagina as danger signs during pregnancy, respectively. The most commonly mentioned danger signs during labor and childbirth were excessive bleeding 271(66.9%), swollen hand and face 134(33.1), absence or reduced fetal movements 118(29.1) and placenta not delivered within 30 minutes after delivery of baby 106 (26.2%). The commonly mentioned danger signs of post-partum period were excessive bleeding 276 (68.1%), Foul smelling vaginal discharge 173 (42.7%) and swollen hand and face 116(28.6%) (Table 3, figure 1).

Table 3. Knowledge of respondents towards danger sign in Debre Berhan Town, North Shoa Zone, Ethiopia, 2017 (n=405)

Danger sign during pregnancy	Number	Percent %
Vaginal bleeding	309	76.3
Swollen hand and face	165	40.7
Blurring of vision	113	27.9
Severe headache	140	34.6
Excessive nausea and vomiting	122	30.1
Convulsion	71	17.5
Loss of consciousness	89	22.0
Leakage of liquor or gush of fluid pervagina	116	28.6
Reduced fetal movements	134	33.1
Anemia	147	36.3
Other	11	2.7
Danger sign during labor and delivery		
Vaginal bleeding	271	66.9
Swollen hand and face	134	33.1
Blurring of vision	84	20.7
Severe headache	84	20.7
Leaking of fluid from vagina 24hours before labor begin	111	27.4
Convulsion	77	19.0
Loss of consciousness	71	17.5
Severe pelvic or abdominal pain	84	20.7
Absence /reduced fetal movement	118	29.1
Placenta not delivered 30 minutes after baby born	106	26.2
Anemia	157	38.7
Others	16	3.9
Danger sign During peurpuriuem		
Severe vaginal bleeding	276	68.1
Swollen hand and face	116	28.6
Blurring of vision	93	23.0
Severe headache	82	20.2
Foul smelling vaginal discharge	173	42.7
Convulsion	75	18.5
Loss of consciousness	72	17.8
High fevers	96	23.7
Anemia	114	28.1
Other	18	4.4

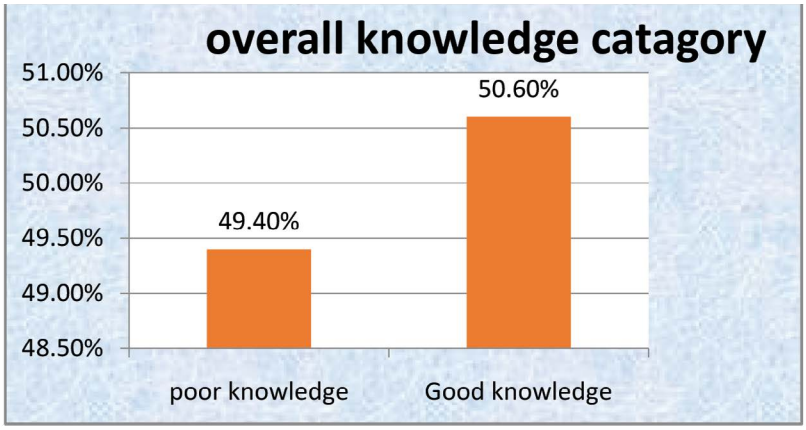

Figure 1. Over all knowledge of respondents towards danger sign in Debre Berhan Town, North Shoa Zone, Ethiopia, 2017 (n=405)

Risk perception towards obstetric danger sign

When asked about the seriousness of obstetric danger signs, 31.4% of respondents were perceived APH as slightly serious and 30.4% very serious obstetric danger signs. Regarding PPH majority 48.4% of participants perceived as a very serious, while 30.4% of them as serious obstetrics complication. Whereas high fever and foul-smelling vaginal discharge during postnatal period were perceived as slightly serious obstetrics complication by 39.8% and 37% of mothers respectively (Table 4, figure 2).

Table 4. Risk perception towards danger sign of respondents in Debre Berhan Town, North Shoa Zone, Ethiopia, 2017 (n=405)

Variables	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)	Frequency (%)
	Not at all serious	Not serious	Slightly serious	Serious	Very serious
Bleeding during pregnancy	5(1.2%)	21(5.2%)	127(31.4%)	129(31.9%)	123(30.4%)
Pregnancy induced hypertension	9(2.2%)	50(12.3%)	126(31.1%)	117(28.9%)	103(25.4%)
Severe weakness	95(23.5%)	176(43.5%)	68(16.8%)	38(8.6%)	31(7.7%)
Premature rupture of membrane	42(10.4%)	138(34.1%)	122(30.1%)	63(15.6%)	40(9.9%)
Cessation or reduced fetal movement during pregnancy	8(2.0%)	49(12.1%)	143(35.3%)	132(32.6%)	73(18.0%)
Cessation or reduced fetal during labor	10(2.5%)	35(8.6%)	145(35.8%)	136(33.6%)	79(19.5%)
Cord presentation	7(1.7%)	120(29.6%)	110(27.2%)	112(27.7%)	56(13.8%)
Retained placenta	10(2.5%)	104(25.7%)	115(28.4%)	97(24%)	79(19.5%)
Post-partum hemorrhage	2(0.5%)	19(4.7%)	65(16%)	113(30.4%)	196(48.4%)
High fever during peurpuriuem	22(5.4%)	101(24.9%)	161(39.8)	103(25.4%)	18(4.4%)
Foul smelling vaginal discharge during peurpuriuem	10(2.5%)	126(31.1%)	150(37%)	90(22.2%)	29(7.2%)

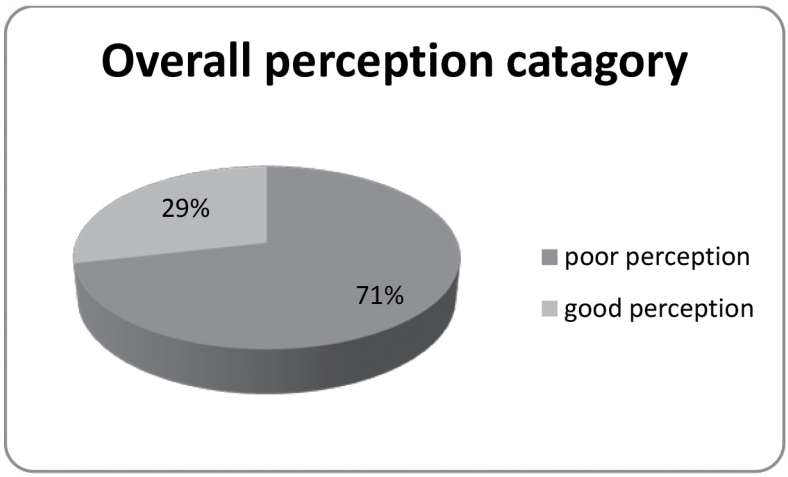

Figure 2. Over all perception of respondents towards danger sign in Debre Berhan Town, North Shoa Zone, Ethiopia, 2017 (n=405)

Factors affecting knowledge of obstetric danger signs

In bivariate analysis's educational status of mothers, residency, Gravidity, party, number of ANC visit and having information on danger signs were associated with Good knowledge to wards obstetric danger signs. Respondents having educational statuses of diploma and above were 4.85 times more likely Good knowledge to wards obstetric danger sign than those who cannot read and write [COR=4.85, 95%CI (1.52-15.53)]. Respondents who were from urban area were 1.72 times more likely Good knowledge towards obstetric danger signs as compared to those respondents who were from rural area [COR=1.72, 95%CI (1.04-2.85)]. Respondents who were pregnant 2-4 times were 2.28 times more likely Good knowledge to wards obstetric danger sign as compared to those respondents who were pregnant for first time [COR =2.28, 95%CI (1.51-3.43)]. Respondents who had given birth three times and above were 2.13 times more likely Good knowledge to wards obstetric danger sign than those mothers who had given birth for the first time [COR=1.13, 95%CI (1.266-3.577)] In multivariate logistic regression on both socio-demographic and obstetric history of respondents, confounding effect of one variable on the other variable were adjusted. Educational status, number of ANC visits and information on danger signs were found to be significantly associated with knowledge of obstetric danger signs at P-value of <0.05. Respondents with educational status of diploma and above were 7.26 times more knowledgeable than those who can't read and write [AOR=7.26, 95%CI (1.219-43.247)]. Those respondents who had a history of four and above ANC visits were 2.91 times more knowledgeable than those who had only one ANC visits [AOR=2.912,95%CI (1.27-6.681)]. Similarly, those who have heard about obstetric danger sign were 2.36 times more knowledgeable than those who had not ever heard obstetric danger signs [AOR=2.366, 95%CI (1.089-5.139)] (Table 5).

Table 5. Factors associated with knowledge of key obstetric danger sign during pregnancy among mothers in Debra Berhan Town, Ethiopia, 2017

Variable	Knowledge of danger sign		COR (95% CI)	AOR (95% CI)
	Poor	Good		
Educational status				
Can't read and write	20	10	1	1
Read and write	27	17	1.18(0.48-2.84)	0.62(0.16-1.99)
Elementary	51	40	2.35(1.01-5.48)	1.35(0.439-4.20)
Secondary	51	60	2.48(0.09-5.63)	1.57(0.47-5.23)
Diploma and above	71	88	4.85(1.52-15.53)*	7.26(1.219-43.217)*
Occupation				
Governmental employee	61	58	1.43(0.78-2.59)	1.08(0.46-2.54)
Merchants(private business	86	111	1.88(1.06-3.32)*	2.05(1.991-4.241)*
Housewife	48	32	1	1
Origin of residence				
Urban	153	174	1.72(1.04-2.85)*	0.58(0.298-1.141)
Rural	47	31	1	1
Gravidity				
1	116	78	1	1
2-4	75	115	2.28(1.515-3.431)*	1.49(0.764-2.933)
>4	9	12	1.983(0.798-4.929)	1.31(0.262-6.546)
Parity				
One	70	119	1	1
Two	83	86	1.48(0.922-2.377)	0.78(0.392-1.582)
≥3	47	70	2.128(1.266-3.577)*	0.85(0.332-2.206)
Number of ANC				
One	25	12	1	1
Two	39	18	0.962(0.396-2.333)	0.875(0.336-2.279)
Three	32	41	2.669(1.165-6.116)*	1.90(0.762-4.748)
Four and above	68	117	3.585(1.693-7.592)*	2.91(1.27-6.681)*
Having information on danger signs				
Yes	135	163	2.297(1.331-3.967)*	2.36(1.089-5.139)*
No	29	25	1	1

*=Statistically significant association at p-value <0.05

FACTORS AFFECTING PERCEPTION OF RESPONDENTS TO WARDS DANGER SIGN

In bivariate analysis's educational status of mothers, Gravidity, number of ANC visit and having information on danger signs were associated with perception towards obstetric danger sign. Respondents having educational statuses of diploma and above were 4.62 times more likely Good perception towards obstetric danger sign than those who cannot read and write [COR=4.62, 95%CI (1.34-15.94)]. Respondents who were pregnant 2-4 times were 1.63 times more likely Good perception towards obstetric danger sign as compared to those respondents who were pregnant for first time [COR =1.63 95%CI (1.04-1.55)]. Respondents who have information on obstetric danger sign were 4.16 time more likely Good Perception towards obstetric danger sign than those respondents who have no information to wards obstetric danger signs [COR=1.13, 95%CI (1.266-3.577)].

In multivariate logistic regression occupation, number of ANC visit and information about danger signs were found to be significantly associated with perception towards obstetric danger signs. Respondents who have had four and above ANC visit were 4.57 times more likely

good perceptions, than those who had only one ANC visits [AOR=4.575,95%CI (1.439-14.543)]. Additionally, respondents who have had heard about danger signs were 3.39 times more likely good perception than those who had not ever heard about Obstetric danger signs [AOR=3.395, 95%CI (1.059-10.884)] (Table 6).

Table 6. Factors associated with perception towards key obstetric danger sign during pregnancy among mothers in Debra Berhan Town, Ethiopia, 2017.

Variable	Perception towards danger sign		COR (95% CI)	AOR (95% CI)_
	Poor	Good		
Educational status				
Can't read and write	27	33	1	1
Read and write	22	2	0.818(0.125-5.339)	0.62(0.16-1.993)
Elementary	56	25	3.646(1.033-12.872)*	2.386(0.57-10.012)
Secondary	59	32	4.018(1.114-14.488)*	2.99(0.702-12.737)
Diploma and above	105	54	4.629(1.343-15.943)*	3.826(.885-16.538)
Occupation				
Governmental employee	83	36	2.096(1.006-4.369)*	1.113(0.429-2.884)
Merchant(private business)	130	67	2.197(1.085-4.45)*	1.543(0.681-3.497)
Housewife	67	13	1	1
Gravidity				
One	148	46	1	1
2-4	126	64	1.634(1.045-1.556)*	1.344(0.787-2.298)
> 4	15	6	1.287(0.472-3.08)	1.052(0.168-6.586)
Number of ANC visits				
One	33	4	1	1
Two	45	12	2.2(0.651-7.433)	2.658(0.737-9.584)
Three	48	25	4.297(1.368-13.499)*	4.21(1.243-14.223)*
Four and above	122	63	4.26(1.445-12.562)*	4.575(1.439-14.543)*
Health education				
Yes	24	94	2.304(1.082-4.908)*	1.584(0.658-3.811)
No	45	9	1	1
Having information about danger sign				
Yes	228	109	4.166(1.844-9.41)*	3.395(1.059-10.844)*
No	61 7	1	1	

*=Statistically significant association at p-value <0.05

DISCUSSION

This study attempted to assess knowledge, risk perception and associated factors towards obstetric danger signs among mothers in Debra Berhan town. Out of the total study participant 50.6% were knowledgeable about danger signs of pregnancy. This finding is higher than the same studies done in Debra Berhan public health institution, 38.6%[17], Egypt 26.0 %[18] Jordan. 15.2%[19], Uganda 19%[20]; however, it was lower than the findings of KwaZulu-Natal, South Africa 52%[21]. This difference might be due to the fact that socio-cultural difference and Difference in implementation of relevant health intervention programs.

In this study, about 309(76.3%) mentioned vaginal bleeding as danger sign during pregnancy and child birth 271(66.9%) during labor and 276(68.1%) during peurpuriuem which is higher than study in Aleta Wondo 45.9%[13] Debaytilatgin, District, Ethiopia 56.8 %[15]. Tsegedie District, Tigray 52.8%[14]. The discrepancy may be due to increasing up take of service and increasing the number of health care providers who provide education to mothers on obstetric danger signs. According to this study 62.7%, 55.1% and 51.8% mothers have good knowledge during pregnancy, labour and peurpuriuem respectively, which was higher than study done in Harare regional state and Debark district 28.6%, 28.6%, 40.9% and 47% and 45.7% respectively[22,23]. This difference could be due to deployment of health extension worker which strengthen the awareness of pregnant women toward ANC and institutional Delivery, and currently different media were promoting ANC visits and institutional delivery. In addition to this there was education campaign started in this district to better inform pregnant women about the potential danger sign that affects pregnancy outcome.

According to this finding bleeding during pregnancy 30.4%, Post-partum bleeding 48.4%, premature rupture of membrane 9.9%, Cessation or reduced fetal movement during pregnancy 18% and Cessation of fetal movement during labor were perceived as very serious obstetric danger signs. This is higher than study conducted in Pakistan which shows that 5%, 3% and 39% of respondents perceived absent/decreased fetal movement, premature rupture of membranes and bleeding as obstetric danger signs respectively[24]. The discrepancy might be due to sociocultural and the ways of health care delivery system.

The finding of this study revealed that respondents who have had diploma and above were 7.26 times more likely knowledgeable than those who can't read and write towards danger sign. The finding of this study is consistent with study done in Tanzania, Debaytelatigin District Sidama Zone, Debark North West Ethiopia[11,15,23].

In this study respondent who had a history of four and above ANC visits were 2.91 times more knowledgeable than those who had one ANC visits. This finding is consistent with study done in other part of Ethiopia[15,23]. Similarly, respondent who had heard about obstetric danger sign were 2.366 times more knowledgeable than those who had not ever heard obstetric danger signs. This is congruent with study conducted in Tanzania, Debaytelatigin District Sidama Zone, Debark North West Ethiopia[11,15,23].

The finding of this study raveled that those respondents who have had diploma and above were 3.71 times more likely good perception towards obstetric danger signs than others. Similarly, those respondents who have had information about danger signs were 4.20 times more likely good perception towards obstetric danger signs than others. In addition to this respondent who had a history of four and above ANC visits was 4.57 times more likely good perception towards obstetric danger signs than who had one ANC visits.

CONCLUSIONS

This study finding revealed that knowledge about obstetric danger signs of pregnancy poor. This specifies that many maternity care users are more likely to postponement in deciding to seek care. In this finding the most commonly mentioned danger signs during

pregnancy, labor and childbirth was sever vaginal bleeding followed by swollen hand and face. From this study finding it can be concluded that women knowledge on danger signs during pregnancy and child birth was exaggerated by their educational level, number of ANC visit and occupational status. In addition to this, women perceptions towards obstetric complications were affected by educational level, number of ANC visit and information about obstetric danger signs. Based on the finding we will be recommended that mobilizing community to increasing knowledge on obstetric danger sign and rick perception during pregnancy is very important. In addition to this advancing woman decision-making power, planning, and preparation for risk perception during pregnancy, labour and delivery and post natal period is very essential for reducing maternal mortality due to easily preventable maternal related complication. Similarly encouraging pregnant women to attend antenatal clinics and providing health information dissemination related to pregnancy danger sign and seeking behavior is also vital.

RECOMMENDATION

Based on the study findings, the researcher recommended that the Ministry of Health should put in place measures to intensify health education on danger signs in pregnancy to increase levels of knowledge among women, and to improve perception towards danger signs in pregnancy. The Ministry of Health should also work in conjunction other non-governmental organizations working with maternal and child health issue so as to improve maternal and child health. The researcher recommended that another research should be done on women's knowledge and perception of danger signs in pregnancy in both urban and rural area because this study focused only urban areas.

DECLARATIONS

Ethics approval and consent to participant

Ethical clearance was obtained from Debra Berhan University, College of Health Science Institutional Ethical Review Board. Support letter was obtained from department of midwifery to Debra Berhan city Administration. Then again Debra Berhan city Administration wrote letter to selected kebeles. Informed verbal consent was obtained from the study subjects and for those participants under the age of 18 based on Ethiopian constitution parental assent was secured after the data collectors explained the study objectives, procedures and their right to refuse not to participate in the study. Furthermore, confidentiality of the study subjects was assured.

AVAILABILITY OF DATA AND MATERIALS

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

COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

BN was involved in the conception, design, analysis, interpretation, report and manuscript writing. SH and BW were involved in the design, analysis, interpretation and report writing. All authors read and approved the final manuscript.

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REFERENCES

1. Moran AC, Sangli G, Dineen R, Rawlins B, Yaméogo M, Baya B. Birth-preparedness for maternal health: findings from Koupéla district, Burkina Faso. Journal of health, population, and nutrition. 2006;24(4):489.
2. Alkema L, Chou D, Hogan D, Zhang S, Moller A-B, Gemmill A, et al. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group. The Lancet. 2016;387(10017):462-74.
3. Bongaarts J. WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division Trends in Maternal Mortality: 1990 to 2015 Geneva: World Health Organization, 2015. Population and Development Review. 2016;42(4):726-
4. Conde-Agudelo A, Belizán JM, Lammers C. Maternal-perinatal morbidity and mortality associated with adolescent pregnancy in Latin America: Cross-sectional study. American Journal of Obstetrics & Gynecology. 2005;192(2):342-9.
5. Victora CG, Requejo JH, Barros AJ, Berman P, Bhutta Z, Boerma T, et al. Countdown to 2015: a decade of tracking progress for maternal, newborn, and child survival. The Lancet. 2016;387(10032):2049-59.
6. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller A-B, Daniels J, et al. Global causes of maternal death: a WHO systematic analysis. The Lancet Global Health. 2014;2(6):e323-e33.
7. Sufiyan MB, Adam N, Umar AA, Ibrahim JM, Bashir SS, Birukila G. Knowledge, attitude and perception of pregnancy danger signs among women of childbearing age in samaru community Northwestern Nigeria: Results from a cross-sectional survey. Archives of Medicine and Surgery. 2016;1(2):24.
8. Dutta D. Text Book of Obstetrics: Including Perinatology and Contraception: New central book agency; 2004.
9. Kearns A, Hurst T, Caglia J, Langer A. Focused antenatal care in Tanzania: delivering individualised, targeted, high quality care. Woman and health initiative: Maternal Health Task Force. 2014.
10. Afolabi BM, Ezedinachi EN, Opara S, Arikpo I, Ogunwale A. Perception of obstetric danger signs among women living on the coastline of the Atlantic Ocean in rural Lagos, Nigeria. Journal of Public Health and Epidemiology. 2016;8(1):1-11.
11. Pembe AB, Urassa DP, Carlstedt A, Lindmark G, Nyström L, Darj E. Rural Tanzanian women's awareness of danger signs of obstetric complications. BMC pregnancy and childbirth. 2009;9(1):12.
12. Mutiso S, Qureshi Z, Kinuthia J. Birth preparedness among antenatal clients. East African Medical Journal. 2008;85(6):275-83.
13. Hailu M, Gebremariam A, Alemseged F. Knowledge about obstetric danger signs among pregnant women in Aleta Wondo District, Sidama Zone, Southern Ethiopia. Ethiopian journal of health sciences. 2010;20(1).
14. Hailu D, Berhe H. Knowledge about obstetric danger signs and associated factors among mothers in Tsegedie District, Tigray Region, Ethiopia 2013: community based cross-sectional study. Plos one. 2014;9(2):e83459.
15. Dile M, Taddesse D, Gedefaw M, Asmama T. Knowledge of obstetric danger signs and its associated factors in debaytilatgin district, ethiopia: a community based cross sectional study. Gynecol Obstet (Sunnyvale). 2015;5(315):2161-0932.100031.
16. Okereke E, Aradeon S, Akerele A, Tanko M, Yisa I, Obonyo B. Knowledge of safe motherhood among women in rural communities in northern Nigeria: implications for maternal mortality reduction. Reproductive health. 2013;10(1):57.
17. Solomon AA, Amanta A, Chirkose E, Badi MB. Knowledge about danger signs of pregnancy and associated factors among pregnant women in Debra Birhan Town, Central Ethiopia. Sci J Public Health. 2015;3(2):269-73.
18. Rashad WA, Essa RM. Women's awareness of danger signs of obstetrics complications. Journal of American Science. 2010;6(10):1299-306.
19. Okour A, Alkhateeb M, Amarin Z. Awareness of danger signs and symptoms of pregnancy complication among women in Jordan. International Journal of Gynecology & Obstetrics. 2012;118(1):11-4.
20. Kabakyenga JK, Östergren P-O, Turyakira E, Pettersson KO. Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. Reproductive health. 2011;8(1):33.
21. Hoque M, Hoque M. Knowledge of danger signs for major obstetric complications among pregnant KwaZulu-Natal women: implications for health education. Asia Pacific Journal of Public Health. 2011;23(6):946-56.
22. Tilahun T, Sinaga M. Knowledge of obstetric danger signs and birth preparedness practices among pregnant women in rural communities of Eastern Ethiopia. International Journal of Nursing and Midwifery. 2016;8(1):1-11.
23. Mengesha E, Taye H. The Level of Awareness on Danger Signs of Pregnancy and Associated Factors among ANC Attendant Pregnant Women in Debark Town, North West Ethiopia, 2012. placenta. 2014;1:6.
24. Hasan I, Nisar N. Womens' perceptions regarding obstetric complications and care in a poor fishing community in Karachi. JPMA The Journal of the Pakistan Medical Association. 2002;52(4):148-52.

RESPECTFUL MATERNITY CARE: A QUALITATIVE STUDY ON THE EXPERIENCE OF HEALTH PROVIDERS IN PUBLIC HEALTH FACILITIES OF NORTH SHEWA ZONE, OROMIA, ETHIOPIA

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ABSTRACT

BACKGROUND: Emerging evidence indicates that women face humiliating and undignified conditions in health facilities in developing countries like Ethiopia. This negative aspect of maternity care can influence women's decision not to make use of health facilities. It is, therefore, crucial to examine the experiences of health providers on the provision of respectful maternity care and to identify the forms of disrespect and abuse that exist, and better meet women's needs as part of broader efforts to provide better quality care.

METHODS: A qualitative study employing a phenomenological research design was carried out from August to September 2017 in six woredas/districts of North Shewa Zone, Oromia, Ethiopia. A total of 20 key informant interview was done. The key informants were selected by purposive sampling techniques considering their experience in Maternal, Neonatal and Child Health (MNCH) service delivery in the selected public health facilities. The data were collected using a semi-structured key informant interview guide. All interviews were transcribed and translated verbatim into English. Data analysis was initiated alongside data collection using a thematic approach based on a priori identified themes and those emerged during the analysis.

RESULT: The health providers' experiences indicated the existence of different categories of disrespect and abuse to women in the study area. Non-consented care, physical abuse, non-confidential care, non-dignified care were the areas identified. Furthermore, painful procedures such as episiotomy were performed without anesthesia, women may also stay for a long time without getting the service and they were restricted to have a companion of their choice in the birthing area. The discrimination of women because of personal attributes such as income level, being rural versus urban, and HIV status was also revealed in the present study. However, detention wasn't reported by any of the respondents.

CONCLUSION: To promote quality maternal health service, the government in partnership with other stakeholders should address the challenges faced by women in the health facilities. Providers should also be capacitated with the required knowledge, attitude and skill and further effort should be made to equip health facilities with the necessary material and human resource. Enforcing policies on respectful maternity care is also important.

KEY WORDS: Respectful Maternity Care, Health Providers Experience, Qualitative Study, Ethiopia

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BACKGROUND

Delivery with a skilled birth attendant significantly decreases maternal mortality[1,2]. While multiple factors explain low health service utilization, there is increasing recognition that many women are reluctant to use maternal health services because of poor service quality and fears of provider mistreatment[2,3]. Different studies demonstrate that women's perceptions of how they will be treated at health facilities can strongly influence their choice about where to deliver, and deter women from accessing services in a timely manner, or at all[3,4]. Unfortunately, disrespect and abuse of women during childbirth is common in East Africa[3,5].

Emerging evidence indicates that women face humiliating and undignified conditions in health facilities. These negative patient experiences contribute to poor health outcomes and reinforce mistrust of institutional care. Additionally, women and families may delay or avoid seeking care in health facilities; which may increase the risk to her own health and that of her newborn[6].

Over the past decade, disrespect and abuse of women during childbirth has become an increasingly recognized phenomenon[7,8]. Respectful Maternity Care (RMC) is an approach that focuses on the interpersonal aspect of maternity care. That is an attitude that permeates each word, action, thought, and non-verbal communication involved in the care of women during pregnancy, childbirth, and the postnatal period[7].

In 2010, Bowser and Hill, by using a comprehensive review of the evidence, identified seven categories of disrespect and abuse during childbirth: physical abuse, non-consented care, non-confidential care, non-dignified care, discrimination based on specific patient attributes abandonment of care, and detention in facilities[6].

In Ethiopia, perceptions of poor quality of care such as lack of privacy and lack of psychosocial support, are significant factors in a woman deciding whether or not to give birth at a health facility[9,11]. Furthermore, a recent evidence of disrespect and abuse was reported in Ethiopian health facilities[12-15]. For example, result from women and health providers in health facilities in two regions revealed that 21% of post-partum women surveyed reported disrespect and abuse, non-consented care (17.7%), lack of privacy (15.2%), and non-confidential care; and 82% of providers cited occurrences of disrespect and abuse in their facilities[15].

The Ethiopian Ministry of Health is highly committed to increasing the rate of skilled birth attendant assisted deliveries in health facilities; the health sector transformation plan (HSTP) has a target of 90% skilled birth attendance rate and elimination of all preventable maternal deaths (Reduce to 199/1000000 live births, expected annual rate of reduction is11% per year) by 2020[16]. Ethiopia's Ministry of Health acknowledges, however, that provision of RMC is also a key intervention to bring unreached women to health facilities for maternity care services and thus, an important component in achieving their 2020 goals.

This important negative aspect of maternity care can influence women's decision not to make use of health facilities in their present or subsequent deliveries[17,18] thus contributing to the number of births assisted by non-skilled personnel. It is, therefore, crucial to assess the experience of health providers on the provision of respectful maternity care and to identify what forms of disrespect and abuse exist, and better meet women's emotional, physical, socio-cultural and psychological needs as part of broader efforts to provide better quality care. Therefore, the objective of the study was to examine the experiences of health providers on the provision of respectful maternity care in public facilities of North Shewa zone, Oromia Ethiopia.

METHODS AND MATERIALS

Study setting and study design

The study was conducted in six woredas of North Shewa zone, Oromia, Ethiopia. According to the Central Statistics Agency population projection, the total population of the six woredas/districts included in the present study, account for 43% (648,835) of the total population of North Shewa Zone. There were 26 health centers, 97 health posts/kebeles and two hospitals in these woredas included. A qualitative study employing a

phenomenological research design was carried out from August to September 2017.

Study population and data collection procedure.

The study populations were health professionals who were working on MNCH service delivery points of selected North Shewa Zone public health facilities, in the study period. By using purposive sampling method twenty key informant interview (KII) respondents (11 females and 09 males) were contacted. Among these, twelve KII respondents were selected from 6 health centers and eight KII respondents were selected from 2 Hospitals. To better understand and examine the health professionals experience on RMC, study participants were selected based on their experiences of MNCH service. The health professionals were identified based on the recommendation of the hospital managers and health center Out Patient Department (OPD) coordinators.

To assess health providers thought and experience regarding respectful maternity care, three facilitators/ data collectors, having masters degree in public health and well experienced in qualitative data collection and transcription conducted the interview

The data were collected using semi structured KII guide and field notes and tape recording.

After giving consent, all interviews were conducted in Amharic language with each key informant in a private room at the health facility. Each session lasted between 45 and 60 minutes. The facilitators acted as a guide for the participants helping to maintain the flow of ideas when relevant through probes. All roles of the facilitators were disclosed and vacant prior to beginning fieldwork so as to guarantee the interview and data was not overly compromised or prejudiced.

Ethical approval for the study was obtained from IRB of Saint Paul's Hospital Millennium Medical College and written support letter was also obtained from North Shewa Zone Health office. A written informed consent from all the participants was obtained. Confidentiality of the information was maintained throughout the study by excluding names as identification in the data. We assured all the information gathered during the course of the study was kept completely confidential. All the information was coded for anonymity. Only the investigators have access to the collected data.

Data processing and analysis

Groundwork data analyses were done alongside with study procedures to lead iterative revisions of the interview guide and decide theoretical saturation. After interviewing the 20th participants, the lead investigator decided that the responses to interview questions were becoming decidedly recurring and that no new data were likely to come into view. Thus, a twenty-participant sample size was finalized based on theoretical saturation. Interview were transcribed and then translated in to English. Data analysis was initiated alongside data collection. This helped in identifying emerging themes for consideration in subsequent interviews. Final data analysis was done manually using a thematic approach based on identified themes a priori and those emerged during the analysis.

RESULTS

Background Characteristics of the Respondents

Twenty KIIs respondents (11 females and 09 males) have participated in the study. Among these, the majority of respondents (14) were between age 25 to 30 years and twelve KII respondents were recruited from the Health Center. Fifteen KII respondents were Midwives by their profession and nine of them had work expe

rience level of fewer than 5 years (Table 1).

Table 1; Background characteristics of KII Respondents in North Shewa Zone Public Health Facilities, 2017

Back ground variable		Frequency
Sex	Male	09
	Female	11
Age	< 25 Years	02
	25 to 30 Years	14
	>30 Years	04
Facility Type	Health Center	12
	Hospital	08
Position	MCH Head	05
	Service Provider	14
	Labor Ward Coordinator	01
Profession	Midwifery	15
	Nurse	03
	Health Officer	02
Work experience	< 5 Years	09
	5 to 10 Years	08
	>10 Years	03

The present study found that health facilities in the study area were rendering almost similar maternity care services and some forms of disrespect and medical malpractices have been happening to the women. The identified practices of disrespects and medical malpractices were reported based on the seven categories of disrespect and abuse in childbirth that are drawn from human rights and ethics principles by Bowser and Hill. The manifestations of disrespect and abuse often fall into more than one category that are not intended to be mutually exclusive. Rather categories should be seen to be overlapping along a continuum6.

Physical Abuse and Medical Malpractices

Most health workers in the study area reported the practices of physical abuse. These include; hitting the women while providing various maternity care services.

"When we are doing an episiotomy, the mother may want to stand and try to leave the room, in such cases, we may kick the women by scissor…" (Male Midwife with 6 Years Work Experiences)

In almost all health facilities, vaginal examinations have been carried out every four hours using a partograph. Most of the health providers well understood that; repeated vaginal examination could result in infection/ sepsis to the women and they also know the importance of doing vaginal examination only when it is indicated for the individual women. However, some of the health providers uncovered the practices of repeated vaginal examination for different reasons. Women with precipitated labor and having multiple pregnancies were among the reasons behind repeated vaginal examination before four hours schedules interval.

"Regarding vaginal examination, we are working as per the standard (every four hours), as we are using partograph. However, for the women having multiple pregnancies, we may repeat the examination even before four hours." (Male Midwife with 2 Years Experiences)

Regarding the episiotomy procedure, all of the health providers have been providing episiotomy care by considering its indication for individual women and most of them have been using a local anesthesia for the procedure. However, few health providers have been still providing episiotomy care without anesthesia particularly while cutting the vulva.

"I cannot say that we all use anesthesia during episiotomy procedure. This is due to the fact that some of the health workers believe that women do not feel the pain of episiotomy during labor. However, these health providers use anesthesia while suturing the area." (Female Midwife with 10 Years Experiences)

In the study area, nearly none of the health care providers has been practicing fundal pressure. These providers recognized that the practice of applying fundal pressure could be risky for women as it potentially causes ruptured uterus. However, very few health providers are still practicing fundal pressure considering as if it facilitates/increases poor uterine contraction.

"... Some of the nurses are practicing fundal pressure assuming as if it facilitates labor. They are often saying that applying fundal pressure is like augmenting laboring mothers." (Female Midwives with 5 Years Work Experiences)

Non-Consented Care

Health care providers working in the study area have varying perception regarding the importance of obtaining women's consent before undertaking any medical procedures such as vaginal exam, catheterization, and IV-line opening. Some of the health providers clearly reported that all women should be asked for consent although it is practically difficult for implementation in their routine medical practice. However, there are still providers questioning the importance of having the women's consent for medical procedures despite the scientific recommendation.

"... To be honest we are not always asking for consent before examinations or medical procedures. I don't think that taking consent for every medical procedure is helpful despite the scientific recommendation." (Male Health Officer with 16 Years Work Experiences)

The study found out that most of the health provides does not usually ask women for their consent. Instead, they usually inform the women about the procedure they are going to do and even there are situations where some health providers directly proceed to the procedure without informing the women about the procedure.

"... In practice, for example I do not usually ask the women for consent, rather I simply inform them. When I am very busy, I may proceed to the procedure without even informing the women about the procedure." (Male Midwife with 2 Years Work Experiences)

Some providers may even enforce women while doing various maternity care procedures.

"For example, when we want to check the progress of the labor, some women may not be cooperative for vaginal examination; we may, therefore, enforce them for the examination." (Male Midwife with 2 Years Work Experiences)

Non-Confidential Care

Almost all health providers agree on the importance of maintaining the privacy of women while providing various maternal health services. In nearly all of the health facilities, different efforts such as providing the service in separate closed room, limiting the entrance of others including health providers and attendants, covering the women's private parts and the use of screen have been undertaken to maintain client's privacy. However, some health providers mentioned the practice of exposing the private parts of the women and the provision of maternity care with other health providers whose presence may not be essential as the existing malpractice with the potential of compromising the right of a woman to privacy and confidentiality. In a few health facilities, there were a shortage of screen, room, and space, the windows were transparent for an external view and lack curtain allowing other clients to look at what is happening inside.

"Our windows and doors are made of glass with no curtains. As you can realize, everyone can see what is happening inside." (Male BSc Nurse with 14 Years Work Experiences)

Non-Dignified Care

In the study area, most health workers reported the practice of insult: particularly using harsh tone or shout while providing various maternity health care services.

"Due to our culture some women may not allow us for vaginal examination; in this case, we may remove our glove and shout on her to leave the room. This is happening in our facility, and I think it is common in any hospital as well. (Male Midwife with 2 Years Work Experiences)

"For example, when the women ask repeated questions or if they say I am not clear to the given instructions/ information, some health workers could not be happy and usually say I told you already using harsh tone and

may shout on the women. This is a common problem in our facility." (Female Midwife with 5 Years Work Experiences)

Discrimination Based on Specific Patient Attributes

In this study, most of the health providers reported that mistreatment was not happening to women because of their personal attributes. Health providers have been serving the community without considering religious orientation, educational level, marital status, income, ethnicity, and other personal attributes. However, very few health providers reported the existence of mistreatment because of some personal attributes such as income level, being rural vs. urban, and HIV status.

"… For example, a poor and rural woman may not be treated like those who are rich and come from urban areas. Some health workers give priority to rich and urban women. In another scenario, some health workers may not equally serve HIV positive women as those who are HIV negatives because of the fear of infection." (Male Clinical Nurse with 9 Years Work Experiences)

Abandonment of Care and Not Allowing a Companion of Choice

In this study, leaving women alone or unattended for a long time was not a common problem in the health facilities. However, some of the health providers reported that women might stay for a long time in the health facility without getting the required medical service. In addition, there were also situations where the women may be unnecessarily appointed for another day or referrals to other facilities.

"… Sometimes, women may not be getting our service on time due to the staff work overload and related issues. They may even return back home without getting the service which is especially common for those women requiring laboratory service that may not be available due to the frequent power interruption." (Female Midwife with 2 Years Work Experiences)

Currently, most health care providers have been allowing a woman to have a companion of her choice such as a family member with her throughout labor and birth to provide support in her stay at the facility. Some health workers, however, do not allow women to bring a companion into the birthing area.

"… We may not allow family members to be with the women. This is because some family members may not understand the situation very well. Sometimes they are not even allowing us to care for other laboring women. Every time when the woman shouts, they think that she is sicker than others are and consider as if we are not offering her the required care, which occasionally leads to inappropriate conversations." (Female Midwife with 6 Years Work Experiences)

Detention in Facilities

In this study, there were no reported detentions of women in health facilities in relation to the inability to pay for the services. Right after the diagnosis of pregnancy, all services related to pregnancy and labor were delivered free of charge in the study area.

"I am truly speaking that the all services given to the mothers is free…" (Female Nurse with 4 Years Work Experiences)

DISCUSSION

In this study, we explored the various categories of disrespect happening to women in Public Health Facilities of North Shewa Zone, Oromia Regional State of Ethiopia. It was found that some form of mistreatments has been happening to the women. To mention some of the mistreatments; providers may shout on women, providers do not usually ask for women's consent, the women may stay longer without getting the health services, and medical malpractice such as episiotomy care without anesthesia were also there in the public health facilities.

All physical contact with pregnant women should be as gentle, comforting, and reassuring as possible. Even though freedom from physical abuse is the right of each patient, many stories of physical abuse during childbirth have been reported globally[19]. The present study found out that there were the practices of physical abuse including hitting the women by health care providers. In the study conducted through direct observation of RMC in five countries of East and Southern Africa including Ethiopia, the incidents of slapping or hitting the client was also reported[20]. In the Addis Ababa City

of Ethiopia, mothers reported the providers' practice of slapping/hitting patients in maternity care provision[12]. Another systematic review also reported a similar finding of physical abuse by nurses, midwives, and doctors[21]. Moreover, every woman seeking care is a person of value and has the right to be treated with respect and consideration[19]. It was however found out that, the providers in the study area practiced verbal abuse particularly using harsh tone or shout. A systematic review also reported that verbal abuse of women by the use of harsh or rude language as the common practice across all regions and countries around the globe[21].

The health providers further reported the practice of episiotomy care without using anesthesia particularly while cutting the vulva and for small episiotomies. Based on the qualitative study conducted in Debre Markos Town, midwives and midwifery students mentioned the practices of stitching episiotomies without anesthesia[22]. Another observational study conducted in East and Southern Africa found out the practice of routine episiotomy and the lack of anesthesia for episiotomies or suturing of tears20. A similar finding was also reported from a systematic review conducted in Nigeria[23]. Two reasons were commonly mentioned behind the practice; the first reason arises from the perception that the women could not feel the pain of the episiotomy since they are already suffering from the more advanced labor pain. These health providers, however, have been using anesthesia while suturing the episiotomy cuts. The second reason behind not giving anesthesia during episiotomy care lies in the fact that providers thought that anesthesia could cause a delay in the healing process. The health providers also reported the shortage of anesthesia in the health facilities as a reason behind providing episiotomy care without anesthesia.

In principle, all patients need a careful explanation of proposed procedures in a language and at a level, they can understand so they can knowingly consent to or refuse a procedure19. However, there is evidence of a widespread absence of informed consent for common procedures around the time of childbirth in many settings[6]. The present study also revealed that most of the health provides did not usually ask women for their consent. Instead, they usually inform the women. Even there are situations where some providers enforced women for medical procedures. A similar finding was reported from studies conducted in Debre Markos Town[22]. According to a study undertaken in Addis Ababa City, 43.4% and 48.0% of mothers reported that the provider did not explain the procedure and obtain consent respectively. In another study, it was noted that clients in Ethiopia received a prior explanation of the procedure and about their findings of the initial examination from providers least often[20]. The perceived high workload of the health providers was stated as the reason for not taking consent in the routine medical practice. The background of the women and the associated resistance to medical procedures and tests such as HIV test were another reported reason behind not taking consent.

Healthcare providers must do everything possible to protect the privacy and confidentiality of patients and their information19. However, there have been reports on the lack of privacy and confidentiality for many women around the world[6,22]. However, the present study found out encouraging practice in the provision of confidential care. It was revealed out that most of the problems challenging the provision of confidential care arise from the shortage of the materials, and space in the health facilities.

All women are equal and must be treated with respectful care regardless of their ethnic background, culture, social standing, educational level, or economic status[19]. The practice of discriminating women because of personal attributes such as income level, being rural vs. urban, and HIV status was not a common problem in the study area. Unlike the finding of a systematic review, the present study did not found discrimination based on ethnicity, race, religion and age of the women. However, we found similar finding in areas where very few health providers offer substandard care for women with lower socioeconomic status and positive HIV status[21].

At health facilities, women should be able to have a companion of their choice with them throughout labor and birth to provide continuous support[19]. However, this study found that some health workers did not allow women to bring a companion into the birthing area. The most common reason mentioned was; family members may not understand the process of labor and delivery. When the women shout and cry as the labor advances, worried family members sometimes considered this as if the problem of the health providers and start complaining and sometimes insist the health providers to look after their clients only which, causes inappropriate conflict in the birthing area.

Long waiting time, unnecessary appointments and referrals were also among the issues affecting the right of a woman to the highest attainable level of health in the study area. The finding of a systematic review also reported that women frequently referred and suffered from long delays, feeling alone, ignored, and abandoned during their stay at the facility[21]. Lack of promptness of care and time wasting was also reported from Nigeria as per the report of a systematic review[23]. In the present study the shortage human resource, the shortage of resources/equipment particularly the lack reagents for laboratory services, the frequent electric power interruption, lack of services integrity and the shortage of trained staffs in different units were also mentioned as a reason for the observed long waiting time, unnecessary appointments and referrals.

Some health facilities have been known to detain or prevent women from leaving with their babies because they cannot pay their bills[19]. In this study, there were no reported detentions of women in health facilities in relation to the inability to pay for the services. A similar finding was reported from a study conducted in Ethiopia where no reports of detention for non-payment[22]. In contrast, a systematic review reported that women of lower socioeconomic status believed that they received poorer treatment because they were unable to pay for services or to pay bribes[21]. In Nigeria, 22% of women reported detention in facilities for failure to pay their bills and that of their babies[23]. The observed variation may be explained by the fact that all maternal health care services in Ethiopia have been provided free of charge.

CONCLUSION AND RECOMMENDATIONS

The study examined health providers' experience on the provision of RMC. Accordingly; it was found out that various mistreatment to a woman has been happening in the study area. Among others, health providers may hit the women, use harsh tone and shout during providing care, health providers do not usually ask consent prior to medical procedures, and there was a situation where women may not be informed about the findings of examinations and painful procedures such as episiotomy may be performed without anesthesia. Although it was not common, the study disclosed the discrimination of women because of personal attributes such as income level, being rural vs. urban, and HIV status.

However, good medical practices were also observed in the study where health providers reported the practices that should be encouraged such as providing confidential care. There was also no detention of mothers in health facilities because the inability to pay for the services and no reported discrimination was reported based on the ethnicity, religion, and age of the women. Abandonment of care and not allowing a woman to have a companion of her choice such as a family member was not also a common problem in the study area. Furthermore, most of the health providers did not also report the discrimination of women based on personal attributes and the detentions of women in health facilities because of their inability to pay for the services.

The study reported the experience of health providers regarding the care they have been providing to the women in public health facilities. The potential introduction of the information bias should be taken into account while interpreting the finding of the study.

In recommendation, all concerned stakeholders should boldly strengthen RMC provision as the first step to attract more women to health facilities, to promote quality health service in the health facilities and to

subsequently improving the maternal health services. Interventions directed toward RMC should focus on capacitating the health providers on the required knowledge, attitude, and skill supported with effective interpersonal communication approaches. Motivating health providers, continuous supportive supervisions and feedbacks mechanisms should also be there. Effort should be made to equip the health facilities with the necessary infrastructures, resources, equipment, and human power. Finally, health facility managers and health providers should demonstrate commitment, work ethics and closely collaborate with the community to promote RMC.

ABBREVIATIONS AND ACRONYMS

HSTP- Health Sector Transformation Plan; KII- Key Informant Interview; MNCH- Maternal, Neonatal and Child health; RMC-Respectful Maternity Care

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COMPETING INTEREST

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

AG, NW, and TB participated in the coordination of the study, and performed the analyses. DW, TT, FA and AW drafted the manuscript and participated in the design and data analysis of the study. All authors read and approved the final manuscript.

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REFERENCES

1. Gabrysch S, Campbell OM. Still too far to walk: Literature review of the determinants of delivery service use. BMC Pregnancy and Childbirth. 2009; 9:34.
2. Campbell OM, Graham WJ. Strategies for reducing maternal mortality: getting on with what works. Lancet. 2006; 368:1284–99.
3. Kruk ME, Kujawski S, Mbaruku G, Ramsey K, Moyo W, Freedman LP. Disrespectful and abusive treatment during facility delivery in Tanzania: a facility and community survey. Health Policy and Planning. 2014; 1–8.
4. Leonard KL. Active patients in rural African health care: implications for research and policy. Health Policy Plan. 2014; 29:85–95.
5. Mannava P, Durrant K, Fisher J, Chersich M, Luchters S. Attitudes and behaviours of maternal health care providers in interactions with clients: a systematic review. Glob Health. 2015; 11:36.
6. Bowser D, Hill K. Exploring Evidence for Disrespect and Abuse in Facility-Based Childbirth Report of a Landscape Analysis. Washington, D.C.: USAID TRAction Project: Harvard School of Public Health, and University Research Co., 2010.
7. World Health Organization. The prevention and elimination of disrespect and abuse during facility-based childbirth. Geneva: World Health Organization; 2015.
8. Hastings MB. Pulling Back the Curtain on Disrespect and Abuse: The movement to ensure respectful maternity care. Policy Brief. White Ribbon Alliance; 2015.
9. Sheferaw ED, Mengesha TZ, Wase SB. Development of a tool to measure women's perception of respectful maternity care in public health facilities. BMC Pregnancy and Childbirth. 2016; 16:108.
10. Roro MA, Hassen EM, Lemma AM, Gebreyesus SH, Afework MF. Why do women not deliver in health facilities: a qualitative study of the community perspectives in south central Ethiopia? BMC Res Notes. 2014; 7:556.
11. Kruk ME, Paczkowski MM, Tegegn A, Tessema F, Hadley C, Asefa M, et al. Women's preferences for obstetric care in rural Ethiopia: a population-based discrete choice experiment in a region with low rates of facility delivery. J Epidemiol Community Health. 2010; 64:984–8.
12. Asefa A, Bekele D. Status of respectful and non-abusive care during facility based childbirth in a hospital and health centers in Addis Ababa. Ethiopia. BMC Reproductive Health. 2015; 12:33.
13. King R, Jackson R, Dietsch E, Hailemariam A. Barriers and facilitators to accessing skilled birth attendants in Afar region. Ethiopia Midwifery. 2015; 31:540–6.
14. Shiferaw S, Spigt M, Godefrooij M, Melkamu Y, Tekie M. Why do women prefer home births in Ethiopia? BMC Pregnancy and Childbirth. 2013; 13:5.
15. Snow International. Disrespect and abuse during facility-based childbirth in four PHCUs in two regions of Ethiopia – Baseline Study. Findings. doi:10.1016/S0140-6736(14)60696-6). Addis Ababa: Last 10 Kilometers.
16. Ethiopian FMoH. Health Sector Transformation Plan 2015-2020. 2015. Addis Ababa, Ethiopia.
17. Bohren MA, Hunter EC, Munthe-Kaas HM, Souza JP, Vogel JP, Gulmezoglu AM. Facilitators and barriers to facility-based delivery in low- and middle-income countries: a qualitative evidence synthesis. Reprod Health. 2014; 11(1):71.
18. Moyer CA, Adongo PB, Aborigo RA, Hodgson A, Engmann CM. 'They treat you like you are not a human being': Maltreatment during labour and delivery in rural northern Ghana. Midwifery. 2014; 30 (2):262-8
19. Windau-Melmer T. A Guide for Advocating for Respectful Maternity Care. Washington, DC: Futures Group, Health Policy Project; 2013.
20. Rosen HE, Lynam PF, Carr C, Reis V, Ricca J, Bazant ES. Direct observation of respectful maternity care in five countries : a cross-sectional study of health facilities in East and Southern Africa. BMC Pregnancy Childbirth [Internet]. 2015;15:306. Available from: http://dx.doi.org/10.1186/s12884-015-0728-4
21. Bohren MA, Vogel JP, Hunter EC, Lutsiv O, Makh SK, Diniz A, et al. The Mistreatment of Women during Childbirth in Health Facilities Globally : A Mixed-Methods Systematic Review. PLoS Med. 2015;12(6):1–32.
22. Burrowes S, Holcombe SJ, Jara D, Carter D, Smith K. Midwives ' and patients ' perspectives on disrespect and abuse during labor and delivery care in Ethiopia : a qualitative study. BMC Pregnancy Childbirth. 2017;17:263.
23. Ishola F, Owolabi O, Filippi V. Disrespect and abuse of women during childbirth in Nigeria : A systematic review. PLoS One [Internet]. 2017;12(3):1–17. Available from: https://doi.org/10.1371/journal. pone.0174084%0AEditor:

DETERMINANTS OF ADVERSE PREGNANCY OUTCOMES AMONG MOTHERS WHO GAVE BIRTH FROM JAN 1-DEC 31/2015 IN JIMMA UNIVERSITY SPECIALIZED HOSPITAL, CASE CONTROL STUDY, 2016

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ABSTRACT

BACKGROUND: Adverse pregnancy outcomes lead to serious health consequences to the mother and/or the baby. These Adverse birth outcomes; prematurity, low birth weight and still birth represent significant problems in both developing and developed countries.

OBJECTIVE: To identify determinants of adverse pregnancy outcomes among deliveries takes place in Jimma University specialized hospital from January1 – December 31 / 2015.

METHODS: The study was a facility based unmatched case-control study design conducted by reviewing mothers and newborn cards and registration log book who delivered in Jimma university specialized hospital from January 1 /2015 to December 31/2015, southwest Ethiopia. The study was done on randomly selected 86 cases and 258 controls using structured data collection checklist. Data analysis was done by SPSS version 20 and multiple logistic regression statistical methods were used to identify the predictors.

RESULT: Most of the cases 80.2 % and controls 82.9 % were between the age group of 20-34 years. Mothers who are referred for delivery service from other area are more than five times to have adverse pregnancy outcomes than mothers who are not referred, AOR=5.49 95% CI [2.80-10.76]. And mothers who had illness during current pregnancy are seven times to develop adverse pregnancy outcomes than controls, AOR=7.22, 95% CI = 1.65-31.58]. Mothers who attend ante natal care (ANC) were 83% less likely to have adverse pregnancy outcome, than mothers who didn't attended ANC follow up, AOR = 0.17 95% CI [0.06-0.49]. Pregnant mothers who are anemic or had hemoglobin level of less than 11 gram/dl are more than seven times to have adverse pregnancy outcomes than non-anemic pregnant mothers, AOR=7.29 95% CI=[2.85-18.67]. Additionally, women who had obstetric emergencies during current pregnancy, complications during current delivery, and multiple pregnancy are more than 18 times AOR =18.40[6.12-55.37], 2 times AOR=2.65[1.38-5.11] and 7 times AOR=7.59[1.49-38.65] to have adverse pregnancy outcomes than their counterparts respectively.

CONCLUSION: According to the findings of this study; referral, illness during current pregnancy, having ANC attendance, anemia during current pregnancy, complication during delivery, multiple pregnancy and having obstetric emergencies are statistically significant predictors of adverse pregnancy outcomes.

KEY WORDS: Adverse pregnancy outcome, Jimma

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INTRODUCTION

Pregnancy outcomes refer to life events that occur to the newborn infant from the age of viability (28 weeks) to the first week of life. pregnancy outcomes varies from pregnancy to pregnancy which includes; normal live birth, low birth weight, prematurity in the baby, stillbirth, intrauterine fetal death, early neonatal death and late neonatal death. Adverse pregnancy outcomes are those pregnancy outcomes other than normal live birth which majorly includes preterm birth, stillbirth and low birth weight which are the major cause of neonatal morbidity, mortality and long term physical and psychological problems[1].

These Adverse birth outcomes; prematurity, low birth weight and still birth represent significant problems in both developing and developed countries. Each year, about 15 million babies in the world, more than one in 10 births, are born too prematurely. More than one million of those babies die shortly after birth; countless others suffer from lifelong physical, neurological, or educational disabilities, often at great cost to families and societies[2].

Among 136 million babies born every year, approximately 4 million are stillborn, and the other 4 million die in the first month of life. In 2006 Worldwide, 12% of babies are born prematurely, 8% with low birth weight, and 3% have major birth defects. Adverse pregnancy outcomes lead to serious health consequences to the mother and/or the baby[3].

METHODS

Study area and period

The study was conducted in Jimma university specialized hospital. The hospital is one of the oldest public hospitals in the country located in Jimma town of Oromia Regional State, Ethiopia. The town is Located 357 km from Addis Ababa and JUSH is the only specialized teaching and referral hospital in the South Western region of Ethiopia.

The hospital has a predominantly rural catchment population of 15 million people for tertiary level care. According to 2006 fiscal year annual report, the hospital provided services for about15, 000 inpatient, 160,000 outpatient attendants, 11,000 emergency cases and around 5000 deliveries takes placed. The hospital has about 21 units and 503 beds where around 65 beds are found in Maternity ward. The ward has around 119 health professional and supportive staffs, namely: Seven (7) Senior Obstetricians and Gynecologists, 6 BSc Nurses, 6 BSc Midwives, 5 Diploma Nurses, 32 Diploma midwives,38 Residents, 16 Cleaners, 6 Porters and 3 Runners. The study was conducted from March 15- 30/ 2016.

Study design: Institution based case control study was conducted at JUSH in Jimma town, Oromia regional state.

Source population: All women who gave birth in JUSH from January 1, 2015 to December 31, 2015.

Study population

- For controls: selected women who gave normal live birth in JUSH from January 1, 2015 to December 31, 2015.
- For cases: selected women who gave birth with at least one adverse pregnancy outcome (preterm birth, stillbirth or low birth weight) in JUSH from January 1, 2015 to December 31, 2015.

Sampling unit: Mothers who gave normal birth for controls and mothers with at least one adverse pregnancy outcome (preterm, stillbirth, low birth weight) for cases were sampling units.

Inclusion criteria: All mothers who gave births from January 01/2015 December 30/2015 in JUSH were included.

Exclusion criteria: Mothers whose cards are missed and incomplete with outcome variable were excluded from the study.

Study variables

Dependent variables:

Adverse pregnancy outcomes: (stillbirth, preterm birth and low birth weight).

Independent variables

Socio-Demographic factors: (Age, Residence and gravidity)

Medical factors: (Previous medical illness, Illness during current pregnancy, HIV status and Anemia)

Past Obstetric and gynecologic factors: (Obstetric complications, History of adverse pregnancy outcomes, Abortion history and Family Planning history)

Current obstetric factors: (Pregnancy status, use of ANC and number of visit, TT vaccine, Obstetric emergencies and drug use during pregnancy)

Current delivery related factors: (Referred mother for delivery, status of labor, Parthograph use, Mode of delivery, Complication during delivery and multiple birth)

Operational definition

- Obstetric emergencies: obstetric complications like (APH, cord prolapse, eclampsia, fetal distress, shoulder dystocia)
- Medical illness: chronic disease like DM, hypertension, cardiac disease, HIV/AIDS...
- Adverse pregnancy outcomes: refers to a pregnancy results with at least one of the following birth outcomes (preterm birth, low birth weight and stillbirth).
- Preterm birth is any birth occurring between 28 – 37 weeks gestation.
- Still birth is any fetus born at 28 weeks gestational age or more with no heartbeat or respiratory effort.
- Birth weight: is the first weight of the fetus or newborn obtained after birth. Measured within the first hour of life before significant postnatal weight loss has been occurred by using a standard weight scale.
- Low birth weight: neonate birth weight less than 2,500 gm (up to and including 2,499 gm). 3.8.

Sample size determination

All recorded deliveries in the study period were included and Sample size was determined using the formula for two population proportion as follows.

Labor complication of last birth, complications during last pregnancy, residence (urban), Gravida (primi Gravida) and having ANC visit were considered in order to calculate required sample size by revising different literatures. To calculate sample size all the above exposure variables were considered and complication during current pregnancy was chosen as an independent variable since it gives maximum sample size as compared to other exposure variables.

The sample size was calculated by (statistical EPI info 7.1.1) software package by considering that the percent of controls exposed among the controls is 2.7 % (main exposure variable), with 4.85 odds ratio which is taken from similar study done in mekele town public hospitals, Ethiopia, 95% CI, 80% power of the study and case to control ratio of 1:34.

Accordingly, the final sample size was 86 cases and 258 controls (a total sample size of 344) was involved in the study.

Sampling technique and data collection procedures

Simple random sampling technique was used with the following steps. A total of 1740 Births from 1st Jan to 31st Dec 2015 were identified using registration log book and 387 births were with at least one adverse pregnancy outcomes (LBW, preterm, stillbirth). Card number of identified births were coded for cases and controls. After the codes of cases and controls are entered in to SPSS version 20 software separately, 86 cases and 258 controls were selected randomly. Cards were traced and checked for completeness of the necessary information. Incomplete birth cards were excluded and replaced with another card.

The data was extracted from clinical records of mother's and newborn's (registration log books and individual cards) using a structured data collecting checklist. Selected mother's cards on registration log book were traced through the hospital's registry book. Structured checklist was prepared in English. The data was extracted by 2 diploma midwives &2 diploma nurses and two degree Midwives as supervisor. Training was given for reviewers and supervisor before actual data collection.

Data processing and analysis

Collected Data was entered in to Epi Data version 3.1 and exported SPSS-version 20 for analysis.

Bivariate logistic regressions was used to select important

variables candidate for the multiple logistic regression. Independent variables with p value less than 0.2 were selected as a candidate for multiple logistic regression. Finally, multiple logistic regression was used to assess the relative effect of independent variables on dependent variable and to control the possible confounders and finally to select important predictors of adverse pregnancy outcomes included in the model. Odds Ratio (OR) and their 95% Confidence Interval (CI) was used to measure the association. A significance level of 0.05 was used to decide the significance of statistical tests. Finally the results is presented in text, table and graphs.

Ethical considerations

Ethical clearance was obtained from Ethical review committee of college of health sciences, Jimma University to conduct the study. Further permission was obtained from Medical Director of Jimma university specialized hospital, department head of the obstetric ward and card room head for the utilization of logbooks and cards. Since the cards include the name of the mothers, confidentiality will be maintained by making the data collectors aware not to record any identification information found on the card.

RESULT AND DISCUSSION

Socio-demographic characteristics of cases and controls

A total of 86 women (cases) and 258 controls were included in the study. The mean age among the cases was 26.01 (+ SD 5.49) years (range 18 to 40), and among the controls 25.34 (+SD 5.00) years (range 16 to 40). Additionally, 214(82.9%) of controls and 69 (80.2 %) of cases are within the age group of 20-34 years. In addition, 134 (51.9 %) of the controls and 32 (37.2 %) of the cases are Gravida one. With regards to the participants residence, majority of cases 58(67.4 %) and only 84 (32.6%) controls are rural in residents.

Past Obstetric and gynecologic characteristics of cases and controls

This study shows that 1(0.4 %) of the controls and 3(3.5 %) of the cases had a recorded complication in their previous pregnancies. Additionally, 15(5.8 %) controls and 14 (16.3 %) cases had history of abortion while 11(4.3 %) of controls and 12(14.0 %) cases had previous adverse pregnancy outcomes.

The study also indicates that 162(62.8 %) of controls and 51(59.3 %) of the cases ever used modern family planning methods where majority of controls 145(56.2 %) and cases 42(48.9%) used pills &injectable family planning methods.

The study also indicates that, six (2.33 %) of controls had previous history of early neonatal death while five (5.81%) of cases had previous history of stillbirth and low birth weight each.

Previous and current medical characteristics of cases and controls

The result of this study shows that 4(1.6 %) of the controls and 8(9.3 %) of cases had record of pre-existing medical illness where 5(5.81) of cases experience hypertension. Four (1.6 %) of controls and 12(14.0 %) of cases had medical illness during their current pregnancy. Concerning HIV/AIDS, 253(98.1%) of controls and 86 (100%) of cases are tested for HIV/AIDS where 251(99.2%) of controls and 85 (98.8%) of cases are non-reactive and all the reactive mothers among both groups are on anti- retroviral treatment (ART). Additionally, nine (3.5 %) of control and 27 (31.4%) of cases had been diagnosed as having anemia during their current pregnancy.

Current Obstetric characteristics of cases and controls

Majority of the controls, 243(94.2 %) and 75(87.2 %) cases had planned pregnancy. The proportion of women who received at least one ANC service was higher among controls 246(95.3 %) than cases 68 (79.1 %) where 173(67.1 %) and 31 (36.0 %) of controls and cases had ANC visit of four and above respectively.

Having at least one Tetanus toxoid vaccination was slightly lower among cases (50.0 %) compared to (59.7 %) controls that have got tetanus vaccination during current pregnancy. Higher proportions of cases 19(22.1 %) than controls 6 (2.3 %) had at least one obstetric emergency during their current pregnancy.

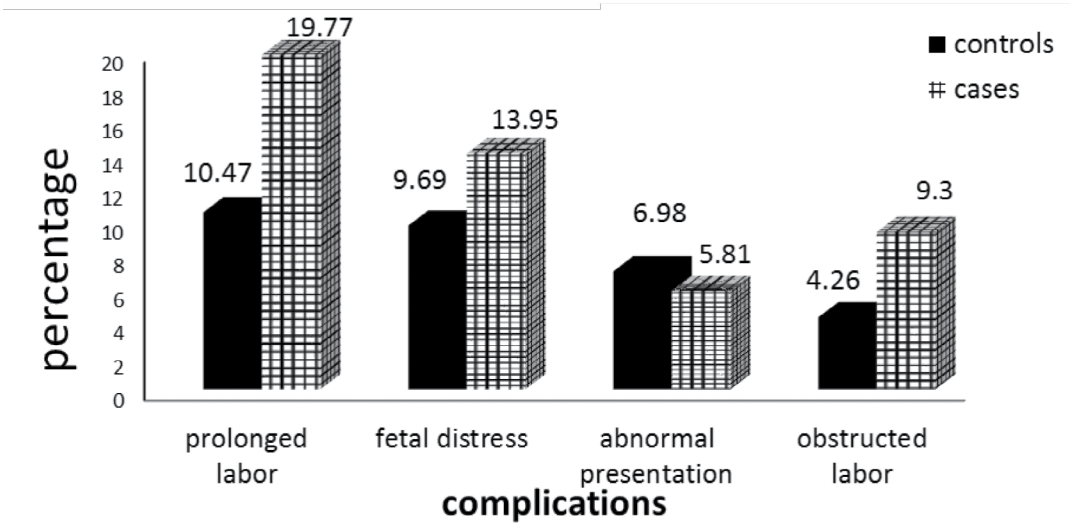

Figure 1: Distributions of current obstetric complication during labor delivery among cases and controls, at Jimma University specialized hospital, Jimma, Ethiopia, 2015.

This study investigated that, Stillbirth comprises majority of adverse birth outcomes contributing 62.7 % of cases while low birth weight and Preterm birth take second and third respectively.

Results from bivariate and multi-variable logistic regression Analysis

Variables considered for multiple logistic regression were those with a p-value <0.2 at bivariate analysis and these included Gravida, residence, referral status, complications during previous pregnancy, abortion history, adverse pregnancy outcomes history, medical complications, illness during current pregnancy, ANC utilization, number of ANC, TT vaccine, medication received, anemia status, delivery mode, delivery complications, partograph used, multiple pregnancy, obstetric emergencies.

Accordingly; mothers who are referred for delivery service from other area are more than five times to have adverse pregnancy outcomes than mothers who are not referred, AOR=5.49 95% CI [2.80-10.76]. Additionally, mothers who had illness during current pregnancy are seven times to be case than controls, AOR=7.22, 95% CI = 1.65-31.58]. Mothers who attend ANC were 83% less likely to have adverse pregnancy outcome, than mothers who didn't attended ANC follow up, AOR = 0.17 95% CI [0.06-0.49]. Pregnant mothers who are anemic or had hemoglobin level of less than 11 gram/dl are more than seven times to have adverse pregnancy outcomes than non-anemic pregnant mothers, AOR=7.29 95% CI=[2.85-18.67]. Additionally, women who had obstetric emergencies during current pregnancy, complications during current delivery, and multiple pregnancy are more than 18 times AOR =18.40[6.12-55.37], 2 times AOR=2.65[1.38-5.11] and 7 times AOR=7.59[1.49-38.65] to have adverse pregnancy outcomes than their counterparts respectively.

Multiple logistic regression output of this study showed that referral of mother with complication from other facility for delivery service is significantly associated with adverse pregnancy outcomes. According to findings of this study, 96% of urban mothers are not referred while 88% of referred mothers are from rural residence. This is consistent with the study done in Mekele public hospitals which indicates that mothers who lived in urban are76 % less likely to develop adverse birth out come as compared to those mothers who lived in rural

area[4]. This might be due to distance naturally prevents mothers from doing so even if they are knowledgeable of the benefits of antenatal care services but deprives them the opportunity for early identification and management of pregnancy related problems and may further influence their choice of place of deliver and also lack some health services on time. Additionally, 35(72.9%) of cases who are referred for delivery had obstetric complications during labor delivery time.so most of the women referred are with complication which may lead to the occurrence of the outcome variable.

Illness during current pregnancy was significantly associated with poor pregnancy outcomes [AOR 7.22 CI (1.65-31.58)]. This finding is consistent with similar study done in Kenya[5] and this may be medical illness present during pregnancy time affect maternal health as well as fetal growth and development.

Results of this study showed that, mothers who had ANC attendance were 83% less likely to have adverse pregnancy outcome, than mothers who didn't attended ANC follow up, AOR = 0.17 95% CI [0.06-0.49]. During ANC follow up women will have access to information related to nutrition, danger signs of pregnancy, birth preparedness and complication readiness. Regular ANC follow up will also help a pregnant woman seek early treatment for her potential pregnancy related problems but if failed to showed up for ANC, she will be disadvantaged. This finding is in agreement with study done in Wollo[6] and Gondar university hospital[7] where mothers who didn't attend ANC are more than 3 and 9 times at risk to develop adverse pregnancy outcomes respectively.

Anemia is significant predictor of adverse pregnancy outcome in this study where anemic mothers are more than 7 times at high risk to develop than those who are not anemic. This is similar with study done in Tanzania which indicates that low hemoglobin level is associated with the occurrence of low birth weight[8]. This might be low Hb levels during pregnancy leads to intra-uterine oxygen inadequacy and reduced iron stores, causing infantile anemia before the age of six months.

This study shows that those mothers who developed obstetric emergencies during pregnancy are more than 18 times at risk to develop adverse birth outcomes as compared to mothers who don't develop obstetric emergencies during current pregnancy. This finding is in line with the study done in Kenya where mothers who develop obstetric emergencies are about 14 time at high risk of developing poor pregnancy outcomes compared to the controls[5]. This is because, obstetric emergencies like APH, pre-eclampsia/eclampsia, cord prolapse, and fetal distress affect both maternal and fetal conditions and usually leads to occurrence of adverse pregnancy outcomes if they are not addressed timely.

The result also shows that mothers who develop complication during labor & delivery are 2.65 times more likely to develop adverse pregnancy outcome as compared to those mothers who don't develop complication during labor and delivery AOR=2.65 CI (1.38-5.11). According to the cross tabulation result 35(72.9 %) of mothers who develop complication during labor and delivery among cases are referred from other facilities for delivery service. So those mothers who are referred with complications maybe delayed to get the right care on time leading to development of adverse pregnancy outcomes. This finding is consistent with similar study done in Mekele public hospitals which shows that mothers who had complications during pregnancy and labor delivery are 4.85 and 9.94 times more likely to develop adverse birth outcomes than mothers who did not have complications during pregnancy and labor-delivery respectively[4]. This is also similar with study done in Gondar university hospital which showed that Obstetric emergencies such as postpartum hemorrhage (PPH), antepartum hemorrhage, cord prolapse and cord presentation, uterine rupture are significantly associated with poor pregnancy outcomes[7].

Multiple birth affects the occurrence of adverse pregnancy outcomes by 7.59 folds compared to singleton pregnancies. This finding is supported by study done in Gondar university hospital which showed that, which showed that, mothers with multiple pregnancy are 2.26 times more at risk to give low birth weight baby and

Stillbirth is significantly associated with preterm and low birth weight with AOR= 4.47 CI (1.39–14.32) and AOR = 18.21 CI (6.06 - 55.34) respectively[7]. This might be, multiple fetuses growing in the uterus will share the same supply form the mother and are at risk to be low birth weight. Additionally, multiple pregnancies are usually leading to preterm birth which is also associated with development of stillbirth.

In Contrary to the above birth outcome predictors; gravidity, residence, complication during previous pregnancy, history of abortion, history of adverse pregnancy outcomes, pre-existing medical conditions, having tetanus injection, medication taken during current pregnancy, modes of delivery and partograph use were significant predictors by the bivariate analysis which are not significant during the multiple logistic regression analysis. This finding is different from findings of studies conducted on adverse pregnancy outcomes in other areas where these independent factors were identified to be predictors of adverse pregnancy outcomes [5,7,4,10]. This deviation may be due to differences in study settings which includes, time, place and study design.

Table 1: Multiple logistic regression output for socio demographic factors associated with adverse pregnancy outcomes at Jimma University specialized hospital, Jimma, Ethiopia, 2015

		Controls n=258(%)	Cases n=86(%)	COR 95 %(CI)	AOR 95 %(CI)
Gravidity	One	134(51.9)	32(37.2)	1.0	1.0
	2-4	111(43.0)	43(50.0)	0.28(0.12-0.69)*	0.92(0.255-3.32)
	≥five	13(5.0)	11(12.8)	0.46(0.19-1.1)	0.74(0.21-2.61)
Mothers residence	Urban	174(67.4)	28(32.6)	1.0	1.0
	Rural	84(32.6)	58(67.4)	4.29(2.55-7.22)*	0.48(0.12-1.88)
Medical Illnesses	No	254(98.4)	74(86.0)	1.0	1.0
during current	Yes	4(1.6)	12(14.0)	10.29(3.23-32.88)*	7.22(1.65-31.58)**
pregnancy					
Medical illness	No	254(98.4)	78(90.7)	1.0	1.0
before pregnancy	Yes	4(1.6)	8(9.3)	6.51(1.91-22.21)*	2.55(0.45-14.36

Table 2: Multiple logistic regression output for obstetric and gynecologic factors associated with adverse pregnancy outcomes at Jimma University specialized hospital, Jimma, Ethiopia, 2015.

characteristics		Controls n=258(%)	Cases n=86(%)	COR 95 %((CI)	AOR 95 %((CI)
Any history of abortion?	No	243(94.2)	72(83.7)	1.0	1.0
	Yes	15(5.8)	14(16.3)	3.15(1.45-6.83) *	2.18(0.67-7.06)
APOs history	No	247(95.7)	74(86.0)	1.0	1.0
	Yes	11(4.3)	12(14.0)	3.64(1.54-8.59) *	1.85(0.45-7.59)
ANC follow-up	No	11(4.3)	17(19.8)	1.0	1.0
	Yes	246(95.3)	68(79.1)	0.179(0.08-0.40) *	0.17(0.06-0.49) **
Received TT injection?	No	12(4.7)	21(24.4)	1.0	1.0
	Yes	154(59.7)	43(50.0)	0.93(0.87-0.99) *	0.94(0.86-1.02)
Medication taken during	No	256(99.2)	83(96.5)	1.0	1.0
this pregnancy(recorded)	Yes	2(.8)	3(3.5)	4.63(0.76-28.16)	0.45(0.04-5.4)
Anemia status	non-anemic	249(96.5)	59(68.6)	1.0	1.0
	anemic	9(3.5)	27(31.4)	12.66(5.66-28.35) *	7.29(2.85-18.67) **
Obstetric Emergency	No	252(97.7)	67(77.9)	1.0	1.0
at current pregnancy	Yes	6(2.3)	19(22.1)	11.9(4.58-31.0) *	18.40(6.12-55.37) **

Table 3: Multiple logistic regression output for delivery related factors associated with adverse pregnancy outcomes at Jimma University specialized hospital, Jimma, Ethiopia, 2015

characteristics		Controls n=258(%)	Cases n=86(%)	COR(CI)	AOR(CI)
Referred from					
other facility for	No	187(72.5)	24(27.9)	1.0 1.0	
delivery service	Yes	71(27.5)	62(72.1)	6.80(3.95-11.73) *	5.49(2.80-10.76) **
mode of current	SVD	183(70.9)	49(57.0)	1.0 1.0	
delivery	instrumental	10(3.9)	2(2.3)	0.497(0.30-0.84) *	2.06(0.81-5.23)
	C/S	65(25.2)	35(40.7)	0.37(0.08-1.79)	0.40(0.04-3.60)
Complications	No	177(68.6)	38(44.2)	1.0 1.0	
during delivery?	Yes	81(31.4)	48(55.8)	2.76(1.67-4.55) *	2.65(1.38-5.11) **
partograph use	No	244(94.6)	85(98.8)	1.0 1.0	
	Yes	14(5.4)	1(1.2)	0.21(0.03-1.58)	0.15(0.01-1.73)
multiple birth	No	255(98.8)	81(94.2)	1.0 1.0	
	Yes	3(1.2)	5(5.8)	5.25(1.23-22.44) *	7.59(1.49-38.65) **
Gender of the	female	100(38.8)	42(48.8)	1.0 1.0	
new born	male	158(61.2)	44(51.2)	0.66(0.41-1.08) *	0.61(0.31-1.20)

NB: * shows significant in bivariate logistic regression and ** indicates variables found to be predictor of the outcome variable in multiple logistic regression.

Limitation of the study

- Unavailability of some independent variables on records which may have impact on the dependent variable (educational status, occupation, income, religion…).
- Exclusion of participants who do not have complete information could have resulted in selection bias and thus impacted on the results. Selection bias could have affected the accuracy of the data collected as the participants were sampled from hospitals.

CONCLUSION AND RECOMMENDATION

In conclusion, this study indicates that; possibly late referral of mother with complication, illness during current pregnancy, having ANC attendance, anemia during current pregnancy, complication during labor-delivery, multiple pregnancy and having obstetric emergencies were found to be statistically significant and these factors were possible predictors of adverse pregnancy outcomes. Having ANC attendance is determinant factor identified as preventive factor to adverse pregnancy outcomes.

On the other hand; gravidity, residence, complication during previous pregnancy, history of abortion, history of adverse pregnancy outcomes, pre-existing medical illnesses, having tetanus injection, medication taken during current pregnancy, modes of delivery and partograph use were not found to be associated with adverse pregnancy outcomes.

Based on the findings from our study we forward the following recommendations

- To Jimma zone health department; to monitor provision of quality focused ANC within the health facilities found in the zone and Monitor early referral in case of complications.
- For Jimma university specialized hospital; Creating good referral linkage with health facilities within its catchment areas including feedbacks provisions and Providing the most quality service for mothers coming for delivery service to decrease delay
- To researchers; to do similar research using primary data supported with qualitative findings by addressing health facility related factors contributing to adverse pregnancy outcomes.

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REFERENCES

1. B. vibal chaiba, determinants of adverse pregnancy outcomes in Mutare district clinics, International Journal of Obstetrics and Gynaecology ,15 October 2014.
2. World Health Organization, the incidence of low birth weight: an update, Wkly Epidemiol Rec [Weekly Report] 1984.
3. Althabe F, Bhutta Z, Blencowe H, Chandra-Mouli V, Chou D, Costello A,Cousens S, Davidge R, Johnson JG: In Born too soon: The global action report on preterm birth, Edited by Christopher Howson MK, Joy L. Geneva,Switzerland: WHO; 2012
4. Kent, H., Johnson, K., Curtis, M., Hood, J.R. and Atrash, H. (2006) Atlanta, GA: National center on birth defects & developmental disabilities. Proceedings of the Preconception Health and Health Care Clinical, Public Health, and Consumer Workgroup Meetings, Atlanta, 27-28 June 2006.
5. Joyce Jebet C. Poor pregnancy outcomes in public health facilities in Kenya, AFRICAN journal of midwifery and women's health, October–December, 2012.
6. Hailemariam B. factors associated with patterns of birth outcomes at public hospitals in mekele town, Ethiopia, International Journal of Therapeutic Applications, Volume 12, 39-46 (2013).
7. A. Eshete, Birth outcomes among laboring mothers in selected health facilities of North Wollo Zone A. Eshete et al./ Health 5:1141-1150, (2013)
8. Adane A. adverse birth outcomes among deliveries in Gondar university hospital, 2014,14:90 http://www.biomedcentral.com/1471-2393/14/90
9. Nybo Andersen AM, Wohlfahrt J, Christens P, Olsen J, Melbye M), maternal age and fetal loss: population-based register linkage study. BMJ 2000
10. Ziyo FY, Matly FA, Mehemd GM, Dofany, EM Relation between Prenatal care and Pregnancy Outcome at Benghazi, Sudanese Journal of Public Health, Vol. 4, No. 4, (2009)

A CROSS SECTIONAL STUDY OF THE REFERRAL STATUS OF EMERGENCY OBSTETRICS AND GYNECOLOGICAL PATIENTS IN A TERTIARY HOSPITAL OF NORTHWEST ETHIOPIA

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ABSTRACT

BACKGROUND: Referral is an important component of the hierarchical health care delivery system to ensure that all people receive appropriate care. Weak referral system is identified to be a major reason for the unacceptably high maternal mortality and morbidity in Ethiopia. However, there is limited information on the details of referral system in Ethiopia particularly in emergency obstetrics and gynecological patients.

OBJECTIVE: The objective of this study is to assess the status of referral compliance and referral components of emergency obstetrics and gynecological patients

METHODS: A hospital based cross sectional study was conducted by reviewing the referral letters and patients' charts of 426 emergency obstetric patients referred to Felege Hiwot Referral Hospital from January 1 to February 30, 2017 G.C.

RESULT: The standard referral letter was used only in 28.2% of the cases. More than two- third (70%) of the referrals were directly from primary health care units to tertiary hospital. The major reason (81.28%) for referral was for better investigation and/or management. Time of referral was included in only 5.2%, priority of the referral in 33.09%, vital signs in 38.7%, basic investigations in 43.2%, and the pre-referral managements in 47.7%. The most neglected component in this study was feedback written for only one case (0.23%).

CONCLUSION: This study showed a high rate of noncompliance; disparity in the components of referral letter and high rate of missing of the vital components of the referral letters. Improving the weak referral system as identified in this study can have strong impact to strengthen the existing hierarchical health care delivery system. This can strongly contribute to advance the delivery of appropriate health care, particularly the reduction of maternal mortality and morbidity.

KEY WORDS: Emergency obstetrics referral, referral system, referral letter

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INTRODUCTION

Health care delivery system is one of the major determinants of the level of health in the society. The ideal health care delivery system should be able to provide both the type and options of care to meet the needs of people at all levels of society. In the hierarchy health care delivery system where health care facility differs both in the level of care and the level of experts, an effective referral system is an important part in ensuring that people receive appropriate care. It is of particular importance for the lower socio-economic strata1. Successful referral systems must include: an adequately resourced referral center; should be a two-way process that requires coordination and information exchange between referral levels and across sectors; formalized communication and transport arrangements; agreed setting-specific protocols for referrer and receiver; affordable service costs; the capacity to monitor effectiveness and a policy support[3].

Referral is a set of activities undertaken by a health care provider or facility in response to its inability to provide the quality and/or type of intervention suitable to the need of the patient[2]. To improve the health status of the nation, Ethiopia recently implemented Business Process Reengineering of the health sector. This has introduced a three-tier health care delivery system (hierarchical health care delivery system) connected to each other by a referral system[4]. Due to major national efforts in Ethiopia, MMR has declined, but the figure is still among the highest in the world. Weak referral system is one of the major reasons for the unacceptably very high MMR in this country[4].

Literature showed that referral is a problem everywhere but the problems are different in different parts of the world. Studies of referral system in the developed country focus on effectiveness, low rate referral and the abuse of the referral[5]. Few studies from resource poor countries focused on appropriateness of the referral6, Self-referral and its determinants[2,7,8], absence of referral sheet and referral feedback[7,9].

Generally, there are very few of the studies evaluate the referral sheet components and only few of them study specifically the emergency obstetrics and gynecology patients' referrals. The same is true regarding this issue in Ethiopia. More studies are crucially important to improve the quality referral system. The main objective of this study is to assess the status of the referral letters and referral compliance and aims to identify the potential area of intervention in the referral system.

METHODS AND MATERIALS

A hospital based cross sectional study was conducted by reviewing the referral letters and patients' charts from January 1, 2017 G.C to February 30, 2017 G.C. It was designed to provide a snapshot of the variables to see gaps and lapse of the referral system without manipulating the study population in any way. The study was done in Felege Hiwot Referral Hospital which is found in Bahir Dar city located 565 kilometers North West of Addis Ababa, the capital city of Ethiopia.

The sample size for this study was determined using single population proportion formula. Assuming a 50% estimated proportion of timely referral, at a 95% confidence level with 5% margin of error, a minimum sample size was found to be 426 including 10% for illegible referral letters. In the study period, there were a total of 1048 emergency obstetrics admissions and 174 emergency gynecologic admissions to the hospital; among these 189 women had antenatal care at least once in the hospital and 106 were without referral letter attached to the chart. The remaining 927 women were sample population from which the samples of 426 were taken by taking every other patient on the sample frame until sample size reached. All emergency obstetrics and gynecology patients referred to the hospital in the study period is an inclusion criterion and the exclusion criteria were patients who were managed in other departments, patients who came without referral letters and patients who were managed in cold outpatient department. The data were collected by trained data collectors using tested

data extraction sheet (checklist) which was prepared based on different literature review and using standard referral sheets and respecting patients' confidentiality. In addition, one supervisor was assigned for the general supervision of data collection and data entry. Data entry had been done daily following data collection. The collected data was checked for completeness, consistency and it was coded and entered into SPSS Version 16.0 and MS-Excel 2007. Descriptive statistical methods were used to summarize findings.

OPERATIONAL DEFINITIONS

- Correct diagnosis - Diagnosis was made based on their history and physical examination on the referral letter and according to national guidelines.
- Appropriate management - Management is according to the diagnosis and based on national guidelines.
- Referral sheet illegible - If it is difficult to read for data collectors (if so ask for help).
- Appropriate referral - It is a referral of women that were high risk who cannot be managed at the primary and secondary health care units.
- Vital sign included - At least two of the following components included in the referral sheet (blood pressure, temperature, respiratory rate, pulse rate, oxygen saturation.)
- Timely referral - If the referral done according to the national guideline and no delay model three.

RESULTS

As to the compliance to the referral system in this study, 82.1% (346) of referral letters were legible and easy to understand for immediate interventions but the standard referral letter were used only 28.2% (120) of the cases, the rest were referred with different format with different components. The other criterion of referral system compliance is the level of referring health facilities; In this study 30% (124) of the referrals were from primary and private hospitals, the remaining 70% (296) were directly from health centers and special maternity clinics (see figure-1), among these 29% (124) were from health centers and special maternity clinics inside Bahir Dar city and 41% (172) from health centers outside Bahir Dar city.

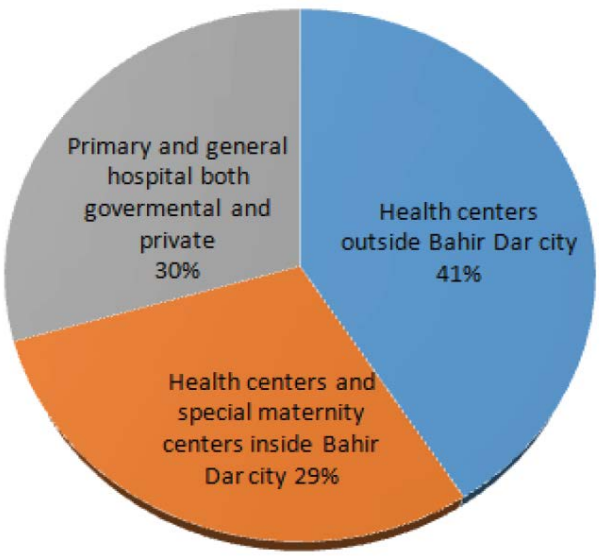

Figure-1:- Proportion for levels and locations of the referring health facilities to Felege Hiwot Referral Hospital from January 1, 2017 G.C to February 30, 2017 G.C.

Referral diagnosis were recorded in 94.8% (404) of the cases and Obstetrics cases were accounting 78.7% (318) and gynecologic were 21.3% (86). Abnormal labor was the most common pre-referral diagnosis accounts 20.8% (84), antepartum hemorrhage 12.9% (52), and hypertension disease in pregnancy 9.9% (40) of all cases (see figure-2). But when we assess the diagnosis included with their evaluations based on national guideline it was correct in 58.9% (251) of the cases.

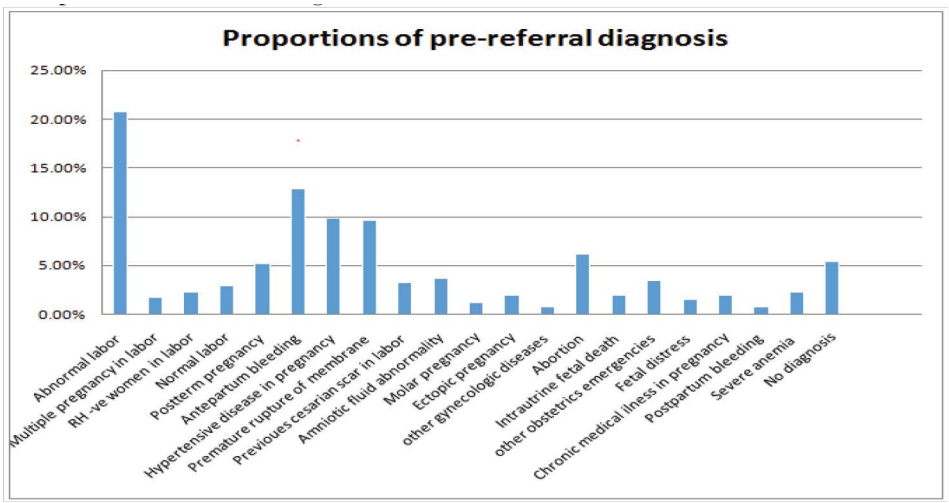

Figure-2: Proportions of the pre-referral diagnoses to Felege Hiwot Referral Hospital from January 1, 2017 G.C to February 30, 2017 G.C.

Reasons for referral were included in 87.8% (374). Among the stated reasons for referral; for further/better management was stated in 55.3% (207), for further investigation and management was stated 25.9% (97), self-referral was stated in 6.1% (23) and others 12.9% (see table-1).

The stated pre-referral managements were appropriate in 43.2% (184) of the time and the overall referrals were found to be timely in about 60.8% (259) of the cases otherwise delayed. Maternal complications of different levels of severity were found at admission in 16.3% (69) of the referred cases and fetal complications were found in about 9.4% (40). Non reassuring fetal heart rate pattern were found in 1.5% (5) and IUFD 2% (8) of the referred women in labor.

Referral details

Referral details are vital parts of referral letter that describe the referral and serves to trace information back to the referring clinicians or institutions which in this study includes name of referring health facility, which were recorded in 98.6% (420) of the cases, date of referral were recorded in 94.6% (403) of the cases, time of referral recorded in 5.2% (22) of the cases, priority of the referral (urgent/emergent) were written in 33.09% (141) of the cases, whereas phone number of the referring health facility were recorded in 15.72% (67) of referrals

Referral destinations were included in 76.99% (328) of the cases. Full name and signature of the referrer were recorded in 82.2% (350) of the cases, phone numbers of the referrers were written in 3.99% (17) of the referred cases (see figure-3).

Table:1 Proportions of reasons for referral among those referred with recorded referral reason to Felege Hiwot Referral Hospital from January 1, 2017 G.C to February 30, 2017 G.C.

No.	Reason for referral	Proportion % (n)
1.	For further/ better managements	55.34% (207)
2.	For further investigation and managements	25.93% (97)
3.	Self referral	6.15% (23)
4.	For neonatal ICU	4.01% (15)
5.	For better evaluation	3.47% (13)
6.	No bed for delivery	2.67% (10)
7.	For financial reason	2.14% (8)
8.	No light to do cesarean section	0.27% (1)

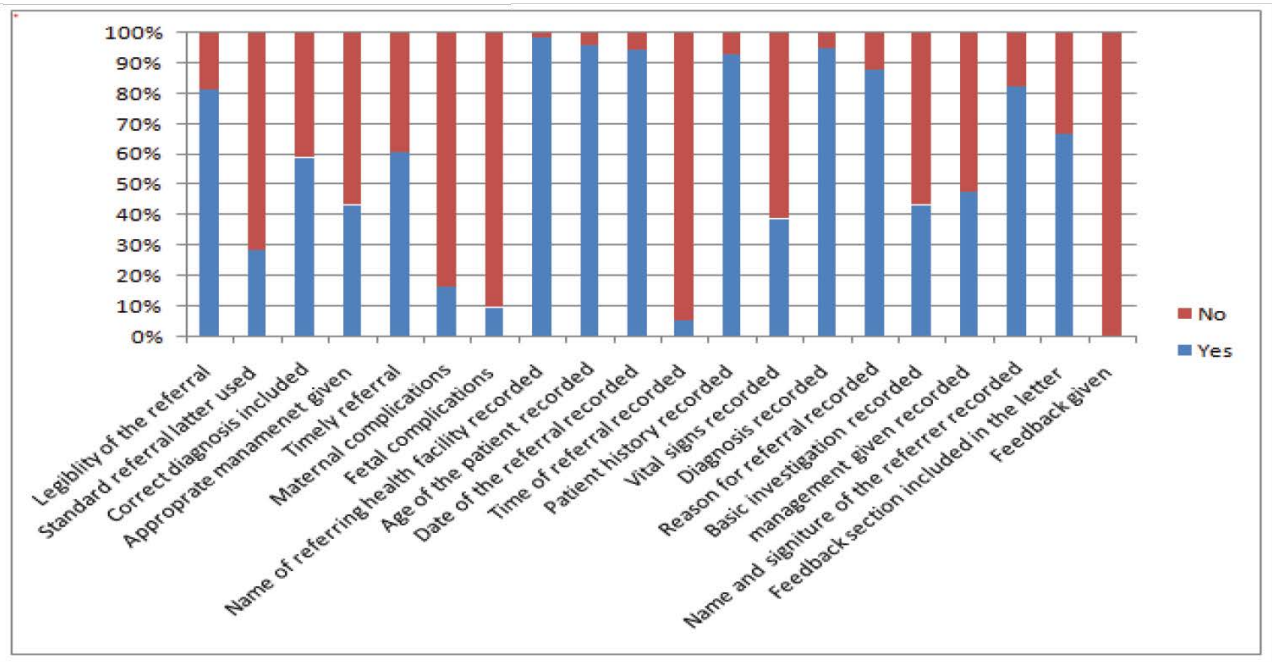

Figure-3: - Proportions of components of referral letters and compliances with the referral system of cases referred to Felege Hiwot Referral Hospital from January 1, 2017 G.C to February 30, 2017 G.C.

Patient details and clinical information

Patient details are parts of referral letter that contain patient's identification data. It includes Patient's full name which were recorded in 100% (426) of the cases, age of the patient found in 96.2% (410), Next of kin or mobile/ telephone numbers of the patient or next of kin was not a part of any referral letters. Whereas clinical information is part of the referral letter which gives brief but pertinent information about the referred case. It includes brief history and physical examinations which were recorded in 93% (396), vital signs immediately before the referral which were recorded in 38.7% (165) of the referred cases. Basic investigation was reported in 43.2% (184) of the cases where as the management given were found in 47.7% (203) of the referrals (see figure-3).

FEEDBACK SECTION FOR RECEIVING FACILITY

Feedback section is a part of the standard referral letters that contain the patient details, final diagnosis, management given, course of the patient, recommendations and follow up plan. In this study feedback as a component of the referral letters was included in 66.90% (285) of the referral letters, the remaining 33.09% (141) of cases had no place for feedback. However, feedback was written back for only one case (0.23%).

DISCUSSION

Compliance with the referral system

The study assessed the compliance with the referral system using different variables and non-compliances were seen in most of the variables. The standard referral letter was used only in 28.2% of the cases. This is comparable with the result found in multicenter study in Amhara region, Ethiopia (2012) where that standard referral slips were used for only 19% of the cases[11]. Unlike previous studies from Japan and Honduras where the standard letter was used in 70-80% at the Hospital level and 60% at health centers5, this study identified majority of patients (71.8%) referred with letters of different format with different components. The use of standard letter helps to avoid missing of important information for the transferred patients. A previous study from Denmark clearly described that, lack of adequate data makes the management at a specialty level difficult if not impossible. As a result, patients cannot be assured of timely access to services[12].

As far as the level of referring health facilities is concerned 70% (296) were directly from health centers and special maternity centers, among these 29% (124) were facilities located inside Bahir Dar city (see figure-1). This shows that majority of the patients seen in the tertiary hospital could have been managed at lower level of health care facilities. Almost similar result was found from the study done in South Africa (2008) where 57% of women inappropriately delivered at hospital level of care[13]. This may be an evidence of inappropriate use of human and other resources contributing to poor quality of health services. Delay to receive appropriate care is one of the major reasons to the high level of maternal mortality and morbidity in Ethiopia.

The rate of self-referral in this study is 6.15%, which is lower than previous studies from western Ethiopia 82%[8], Nigeria 92.9%[14], Tanzania 72.5%[7] and Kenya 27.7%[2]. The exclusion of patients without referral letters and those who had follow-up in the hospital can explain the low rate of self-referral in this study.

In this study, the pre-referral diagnosis was recorded in 94.8% (404) which is higher than what was found in the study done in South Africa 26%[13]. The commonest pre-referral diagnoses were abnormal labor 21% (84), antepartum bleeding 13% (52) and hypertension disease in pregnacy 10% (40), premature rupture of membrane 9.65% (39) of the cases (see figure-2). This was similar to previous multicentric report from 71 health centers in Amhara, Oromiya, SNNPR, and Tigray which found that, bleeding 38%, prolonged labor 30%, abnormal presentation 13%, retained placenta 9% and hypertensive disease of pregnancy 5%[11] were the commonest pre-referral diagnoses. Hence, these clinical conditions need to be given attention to improve the quality of health care delivery system.

COMPONENTS OF THE REFERRAL LETTERS

This study shows the common components of most referral letters included in more than 80% of the cases. These were (see figure-3) the names of referring facilities, date of referral, patient's full name, age of the patient, sex of the patient, brief history and physical examinations, pre-referral diagnoses, reasons for referral, name and signature of the referrer. Almost similar results were found in a cross-sectional study in Iran. In this study patients name were recorded in100%, descriptions of the chief compliant and associated symptoms were recorded in 86.5%- 92.3%. Nevertheless, reasons for referral were recorded in 71.1%, pre-referral diagnosis or clinical impressions were recorded in 53.3% of the cases which is lower than our findings[15]. Otherwise, there is a rarity of literatures in developing countries to compare the components of the letters.

However, there are vital components which were missed in most of the referral letters. These include the time of referral which were found only in 5.2% (22), the referrer mobile/phone number were recorded only in 3.99% (17), priority of the referral (urgent/ emergent) was written in 33.09% (141) of the cases, phone number of the referring health facility were recorded in 15.72% (67), vital signs of the patient immediately before the referral were recorded only in 38.7% (165), basic investigation were reported in 43.2% (184), whereas the management given were found in 47.7% (203) of the referrals. Name of next of kin or mobile/ telephone number of the patient or their next of kin was not a part of any referral. The above components are very important in patient's management but neglected in more than two third of the cases. Comparable results were found in the study done in Iran (2017) relevant clinical physical finding were recorded in 55.7%, up to date investigations were recorded in 35.5%[15]. Studies done in Africa showed that those patients who did not get laboratory investigations and those who did not get drug prescriptions were more likely to self-refer or by pass the referral system than those who obtained laboratory investigations and drugs[2,8]. The alarming very high rate of the missing of the above vital components of the referral system shows the need for improvement in the referral system to strengthen the hierarchical health care delivery system in Ethiopia.

Receiving feedback or information about the referred patient from the receiving facility is one characteristic of a good referral system and has several functions[11].

The referral is said to be complete when feedback was sent to the referring facility. In this study feedback as a component of the referral letter was included in only 66.90% of the cases. Failure to write feedback was the most neglected component of the referral system which was not done in nearly all cases. Only one health institution received feedback in our study. The level of neglect in this area can be clearly understood when we compare to the national target of 80%[4]. The finding in this study also showed the deterioration of writing feedback as compared to a previous report from Amhara region which was 13%[11].

LIMITATIONS OF THE STUDY

The main limitation of this study was its methodology as a hospital-based referral study which focuses on the referral letters and the patients' outcome. But many other components should be assessed for accurate and complete evidences. The study also excludes those who did not have referral letters and those who had follow up in the hospital but in reality, they should be compliant with the referral system.

STRENGTH OF THE STUDY

The study was able to identify a lot of important and specific gaps in the referral compliance and referral letter components. In addition, the study was conducted within short period of time with very low cost.

CONCLUSIONS

Assessment of the referral letter components can give a lot of evidences about referral system statues. In this study high level of disparities were seen in the proportion of referral letter components. This study also shows that there was high rate of non-compliance in the referral system for different referral sheets being used by different health facilities, hierarchy of health care facilities were not respected, and feedback was totally neglected.

There are a lot of evidences which show limitations of knowledge, skills and/or resources among the referring health facilities for appropriate referrals. It was manifested through their incorrect diagnosis, inappropriate managements, inappropriate referrals, incomplete workup of the patients and lastly the fact that the majority of the referrals were for inappropriate reason.

ACKNOWLEDGEMENTS

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CONFLICT OF INTEREST

We don't have any conflict of interest to report.

ETHICAL ISSUE

Ethical approval was given from Bahirdar University, College of Medicine and Health Science, research and ethical review committee (ERC) and approval letter was found.

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REFERENCES

1. Sweeny B (1994) The Referral System', British Medical Journal, Vol. 309 pp. 1180-1181.
2. Wambui M. (2013), Determinants of self directed referral of patients at Kenyata National Hospital, Nairobi, Kenya; www.google.com.et.
3. Murray Sf, Pearson Sc. Maternity referral systems in developing countries: current knowledge and future research needs. Soc Sci Med, 2006; 62: 2205–2215.
4. Federal Ministry of Health. Health service Development program IV. Addis Ababa Ethiopia 2010.
5. Omaha, K., Melendez, V., Uehara, N. & Ohi, G. 1998. Study of a patient referral system in the Republic of Honduras. Health Policy Plan, 13, 433-445.
6. Sanders, D., Kravitz, J., Lewin, S. & Mckee, M. 1998. Zimbabwe's hospital referral system: does it work? Health Policy Plan, 34, 359-370.
7. Daudi O. Simba, referral pattern of patients received at the national referral hospital: challenges in low income countries; East African Journal of Public Health Volume 5 Number 1 April 2008.
8. Wolkite Olani Abdi, Waju Beyene Salgedo, Gebeyehu Tsega Nebeb. Magnitude and Determinants of Self-Referral of Patients at a General Hospital, Western Ethiopia. Science Journal of Clinical Medicine. Vol. 4, No. 5, 2015, pp. 86-92. doi: 10.11648/j.sjcm.20150405.12
9. Abrahaley T., improving referral feedback for patients transfer from other health facility among health care providers in Mearge hospital Tigray region northern Ethiopia, 2013 www.google.com.
10. Kim Cervantes, René Salgado, Misun Choi, and Henry D. Kalter. Rapid Assessment of Referral Care Systems: A Guide for Program Managers. Published by the Basic Support for Institutionalizing Child Survival Project (BASICS II) for the United States Agency for International Development. Arlington, Virginia, November 2003.
11. Emergency referral for pregnant women and newborns: A Rapid Community and Health System Assessment, JSI Research and Training Institute: The Last 10 Kilometers (L10K), June 2012, Addis Ababa.
12. Cannaby S, Wanscher CE, Pederson CD, Voss H. The cost benefit of electronic patient referrals in Denmark. ACCA and Medcom in collaboration with the European Commission Information Society Directorate General; 2004.
13. Mashisha M. assessment of referral at district hospital maternity unit South Africa, 2012, final report to school of public health, www.google.com .
14. Akande T. M.,Referral system in Nigeria. Annals of African Medicine Vol. 3, No. 3; 2004: 130 – 133.
15. Janati A., Amini A., Adham D., Naserias M., Assessing the quality of referral letters written by general practitioners: a cross-sectional study in rural Iran, Cad. Saúde Pública 2017; 33(2):e00043016.

CASE REPORT: AN INCOMPLETE MOLAR PREGNANCY WITH UNUSUAL COMPLICATIONS

Namus Muhajir Nur, MD[1], Mahlet Yigeremu Gebremariam, MD[1]

ABSTRACT

INTRODUCTION:

Gestational trophoblastic diseases (GTD) are a heterogeneous group of gestational and neoplastic conditions arising from the trophoblast. It is uncommon for gestational trophoblastic disease to present with Preeclampsia and syndrome prior to 24 weeks gestation.

CASE PRESENTATION

We present an unusual case of partial molar pregnancy which was diagnosed with severe preeclampsia and Partial HELLP associated with Severe anemia, Sepsis, Hyperthyroidism, Thrombocytopenia & CHF at 03 months of amenorrhea with ultrasound and Histopathology confirmed an incomplete molar pregnancy.
Evacuation of the Uterus resulted in rapid resolution of signs, symptoms, and laboratory abnormalities.

CONCLUSION

This case demonstrates the acuteness in which life-threatening maternal conditions can arise with this uncommon complication of pregnancy, and the importance of early & correct identification of the characteristic laboratory & ultrasonographic findings associated with a molar pregnancy.

KEY WORDS: Molar pregnancy, Preeclampsia, HELLP syndrome

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INTRODUCTION

Usually patients with partial hydatidiform mole will not have the dramatic clinical features characteristic of complete molar pregnancy and is uncommen to present with with Preeclampsia and syndrome. We present here an unusual case of partial molar pregnancy which was diagnosed with severe preeclampsia and Partial HELLP associated with Severe anemia, Sepsis, Hyperthyroidism, Thrombocytopenia & CHF at 03 months of amenorrhea. Histopathology confirmed an incomplete molar pregnancy. The case summary followed by a brief discussion of the case is presented.

CASE SUMMARY

A 20-year-old primigravida lady from Addis Ababa, Ethiopia presented with vaginal bleeding of one-week duration following 03 months of amenorrhea. The bleeding was stated to be profuse during the initial 03 days then becomes intermittent and spotting. She also gave history of a progressively increasing abdominal distention especially over later three weeks prior to presentation. She had also nausea & Vomiting for about 2months prior to presentation with associated diarrhea of 2weeks duration. She noted intermittent fever, Palpitation, dizziness & easy fatigability which was associated with Cough, shortness of breath, orthopnea of 02 pillows & paroxysmal nocturnal dyspnea for 10days. She had no antenatal care in the index pregnancy. Her previous medical and obstetrical history was unremarkable. The pregnancy was uneventful until her presentation.

On examination she was in cardiorespiratory distress and looked very pale. Her Pulse rate ranged between 130 and 136 bpm, Respiratory rate ranged between 26 and 28, Blood pressure was ranging 140/70 -140/100 mg, and Body temperature was ranging between 37.2-37.5oC. There was a 3x4cm non-tender and firm anterior neck mass which moves with deglutition. On the chest examination dullness to percussion and decreased air entry bilaterally and basally noted. The pericardium was active with S3 gallop and ejection systolic murmur. The abdominal examination revealed a uterine size of 20 weeks of pregnancy with no clear palpable fetal parts, with tender hepatomegaly. The vulva was blood soaked with the Cervix admitting one finger, 50%effaced, posterior & soft, and friable tissue was palpable above the cervical Os. There was a Grade -II pedal & Pretibial edema.

She was resuscitated and investigated with a multidisciplinary team. Laboratory examinations demonstrated hemoglobin 4.70g/dL; hematocrit 14.5%; white blood count 11.400cells/mL, platelets 51,000 cells/mL. Serum BUN, creatinine, SGOT, SGPT and ALP were normal, serum β- human chorionic gonadotropin (bhCG) >1500mU/ml (Fig. 5) and Urine dipstick revealed ++ proteinuria.

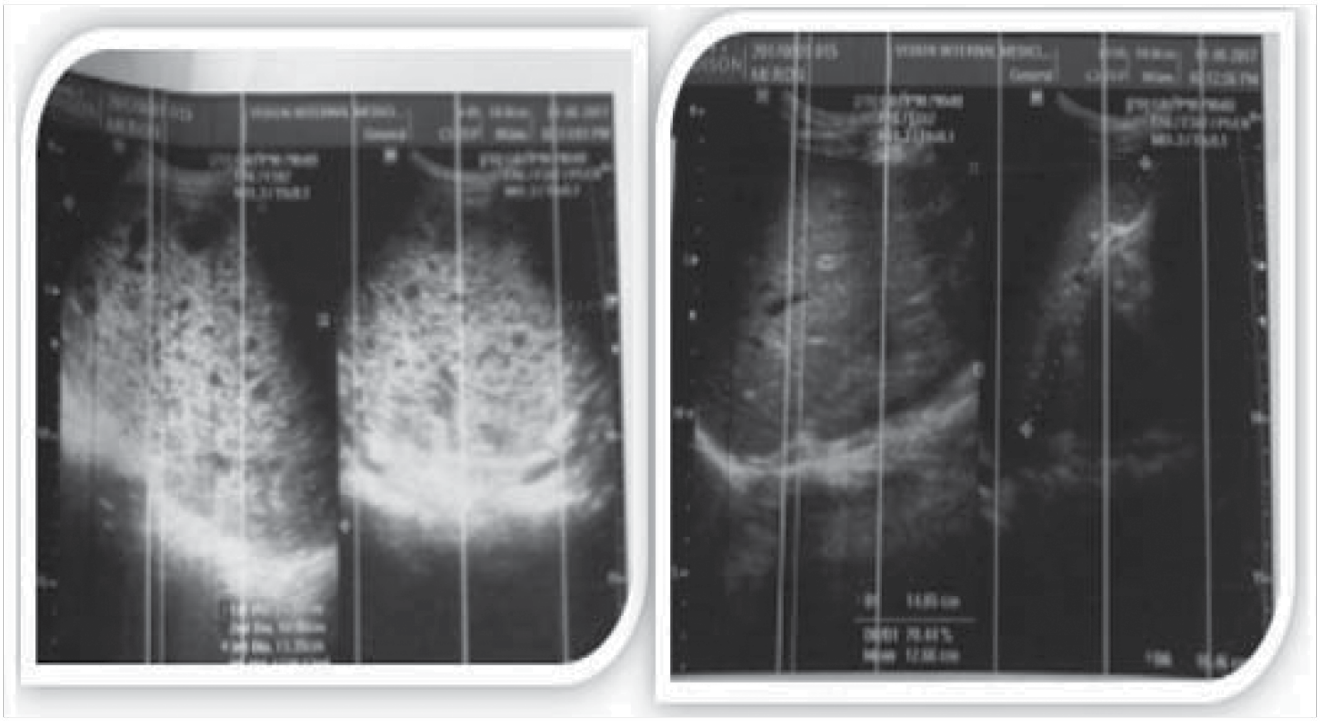

Figure 1: Trans abdominal ultrasound showed a molar pregnancy with minimal pleural effusion
ECHO revealed a normal study.

Trans abdominal Ultrasound Hydatidiform Mole

With the diagnosis of severe preeclampsia, GI onset sepsis, severe anemia, hyperthyroidism, NYHA class III CHF and a probable complete molar pregnancy, the patient received MgSo4 for seizure prophylaxis, antibiotics and Packed RBCs and was admitted to the ward planning management options including evacuation of the uterine content after stabilization of the patient and securing blood and blood products. About 12 hours after the admission to the ward, she spontaneously expelled about 1500cc of grape like tissues and vesicles mixed with blood (fig 2). Suction & curettage was done to evacuate the uterus under general anesthesia. Evacuation of the Uterus was associated with rapid resolution of symptoms, and normalization of blood pressure and laboratory abnormalities.

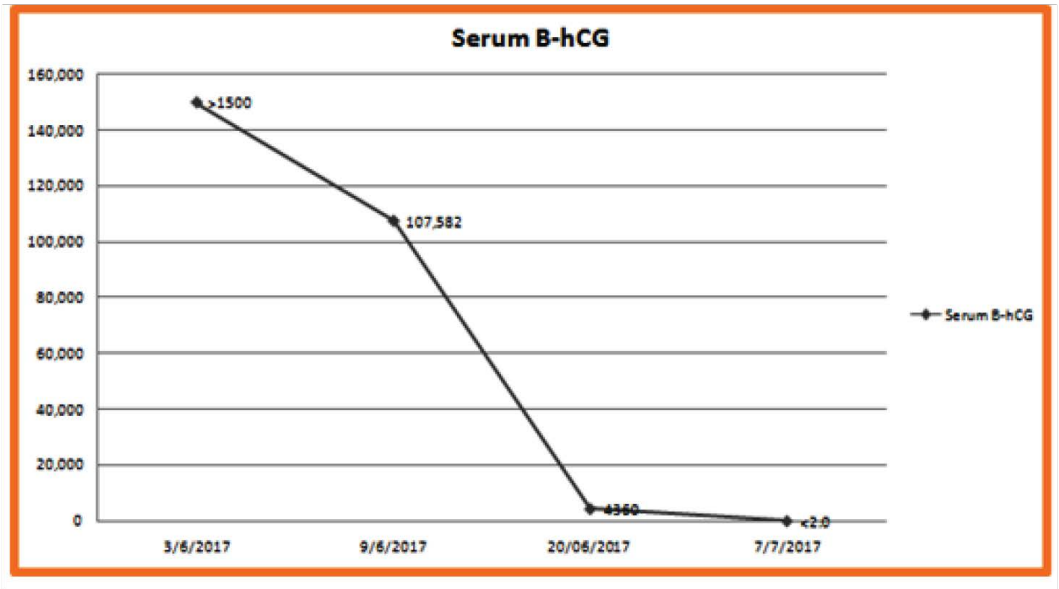

Fig-5: Trends of Serum B-HCG

The histopathology of the specimen showed it to be of incomplete molar pregnancy with no evidence of malignancy (fig 3). After 09days of stay in the hospital she was discharged in stable condition.

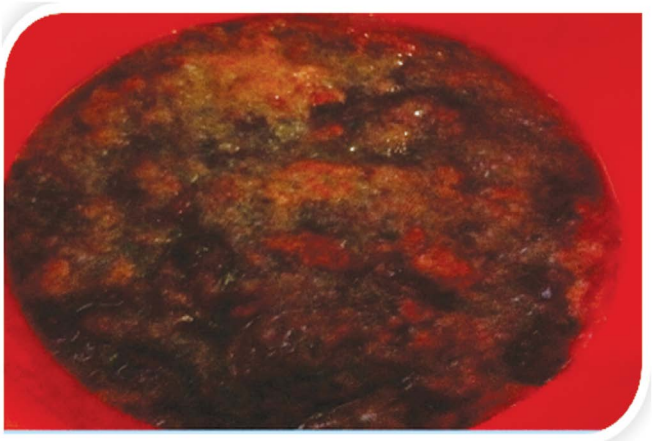

Fig. 2: The grapelike vesicles mixed with blood spontaneously expelled

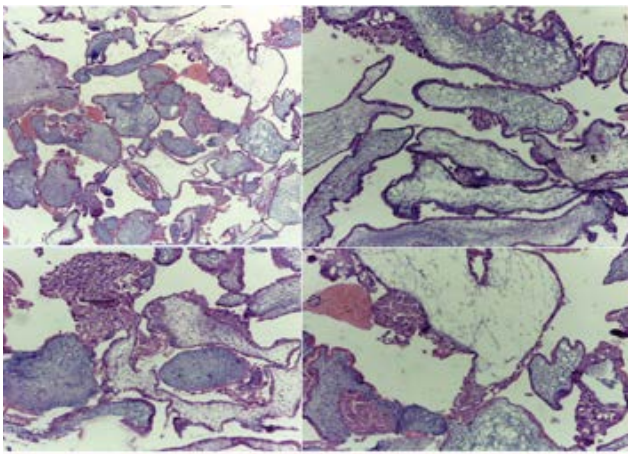

Fig. 3: The microscopic features of partial hydatidiform mole

Final Diagnosis was partial mole complicated by severe preeclampsia, partial HEELP and hyperthyroidism.

DISCUSSION

Gestational trophoblastic diseases (GTD)[1,2,3,4] are a heterogeneous group of gestational and neoplastic conditions arising from the trophoblast. They include molar gestations and trophoblastic tumors(fig.4). GTD varies widely among various populations with occurrences as high as 1/120 pregnancies in some areas of Asia and South America, compared to 0.6–1.1 per 1000 in the United States[5]. The incidence in Addis Ababa, Ethiopia is 2.8/1000 pregnancies[6]. The incidence of hydatidiform moles is greater in women older than 40 years and younger than 20 years[7].

Hydatidiform moles arise from abnormal conceptions. Molar pregnancies can be subdivided into complete (CM) and partial moles (PM) based on genetic and histopathological features. In a partial mole, there is usually evidence of a fetus or fetal red blood cells8. Most hydatidiform moles regress after suction evacuation, and the serum and urine HCG levels rapidly return to normal. Approximately 5–15% of patients with a hydatidiform mole progress to gestational trophoblastic neoplasia (GTN)[9].

The Clinical manifestations of GTD include, in decreasing order of frequency: Vaginal bleeding, Enlarged uterus, Pelvic pressure or pain, Theca lutein cysts, Anemia, Hyperemesis gravidarum, Hyperthyroidism, Preeclampsia before 20 weeks of gestation & Vaginal passage of hydropic vesicles. Very rarely, women can present with acute respiratory failure or neurological symptoms such as seizures; these are likely to be due to metastatic disease[8]. Sometimes symptoms of hyperthyroidism are seen, due to extremely high levels of hCG which can mimic the thyroid stimulating hormone [TSH]. Conflicting evidence exists with respect to whether hCG is the thyrotropic factor responsible for stimulating thyrotoxicosis[10,11].

Pulmonary insufficiency is associated with about 2% of cases of complete hydatidiform mole[12,13]. In these case, acute respiratory distress occurs after molar evacuation and is almost invariably associated with marked uterine enlargement, or trophoblastic embolization, and also due to pulmonary hemorrhage[14]. Extensive pulmonary disease leads in some cases to cardiac enlargement and prominent pulmonary conus as a result due to acute cor-pulmonale. Other conditions include high output cardiac failure secondary to anemia and hyperthyroidism, eclampsia or fluid overload[12].

Patients with partial hydatidiform mole usually do not have the dramatic clinical features characteristic of complete molar pregnancy. In general, these patients have the signs and symptoms of incomplete or missed abortion, and partial mole can be diagnosed after histologic review of the tissue obtained by curettage. Fever or evidence of a bleeding diathesis should be investigated which is present because of uterine infection and disseminated intravascular coagulation are variably associated with molar pregnancy.

Ultrasound examination is helpful in making a pre-evacuation diagnosis but the definitive diagnosis is made by histological examination of the products of conception. The mole grossly represents a bunch of grapes [cluster of grapes, honeycomb uterus or snow storm appearance[22]. [fig.2]. In one study, the accuracy of pre-evacuation diagnosis of molar pregnancy increased with increasing gestational age, 35–40 % before 14 weeks increasing to 60% after 14 weeks15. A further study suggested a 56% detection rate for ultrasound examination[16]. The ultrasound diagnosis of a partial molar pregnancy is more complex; the finding of multiple soft markers, including both cystic spaces in the placenta and a ratio of transverse to anterioposterior dimension of the gestation sac of greater than 1.5, is required for the reliable diagnosis of a partial molar pregnancy [17,18]. Estimation of β levels may be of value in diagnosing molar pregnancies: β levels greater than two multiples of the median may help[16].

Severe preeclampsia is extremely uncommon prior to 24 weeks gestation[15-19]. The occurrence of HELLP syndrome prior to 20 weeks gestation has been reported only twice previously[19,20]. In the case reported by Stefos

et al,[15], diagnosis of a partial hydatidiform mole was suspected at 13.5 weeks gestation due to the sonographic appearance of the placenta and the maternal serum β- level of 200,000 mU/mL. At 18 weeks gestation, severe HELLP syndrome was diagnosed, with abnormal liver enzymes and platelet count < 50,000cells/mL. In the other case reported by Sherer et al21 the diagnosis is made with the ultrasound findings at 17 weeks gestation, and within 24 hours of the patient's initial symptomatology, her condition worsened significantly, with the development of severe HELLP syndrome with overt hemolysis and severe thrombocytopenia with a platelet count of 20,000cells/ml.

The case we present is unusual in that concurrent with the ultrasound findings at the 3rd month of amenorrhea, and within seven days of the patient's initial symptoms her condition worsened significantly, with the development of severe Preeclampsia with HELLP syndrome with high blood pressure and thrombocytopenia with severe anemia, sepsis and hyperthyroidism. This third report of HELLP syndrome occurring in conjunction with a partial mole at less than 20 weeks gestation associated with the above complications emphasizes that clinicians should be aware of the established as well as the unusual diagnostic characteristics of a partial mole. In addition, this case demonstrates the acuteness in which life-threatening maternal conditions may arise with this uncommon complication of pregnancy.

Suction curettage is the method of choice of evacuation for partial molar pregnancies except when the size of the fetal parts deters the use of suction curettage and then medical evacuation can be used[8].

CONCLUSION

Early and proper diagnosis and management of the molar pregnancy and its complications is of utmost importance despite the unusual type of molar pregnancy. Ventilator support, cardiac failure correction and treatment of septicemia are the supportive treatment required until recovery in few cases23. Strict follow up and contraception is advised to prevent confusion between normal pregnancy and recurrent molar pregnancy. In summary GTD may present in diverse and rare but life-threatening condition at unexpected time in the life span of a pregnancy.

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REFERENCES

1. Management Guideline on Selected Topics in Obstetrics and Gynecology, Department of obstetrics and gynecology Faculty of medicine Addis Ababa University. Feb, 2004
2. F. Gary Cunningham, et al: Williams obstetrics, Mc Graw Hill Pub comp.; 24edition,2014
3. Jonathan S, Berek, Berek's& Novak's Gynecology,Lippincott Williams & Wilkins, a Wolters Kluwer business,15th ed,2012.
4. Pratap Kumar,Jeffcoat's principles of Gynecology, Jaypee Brothers medical publishers, 8th ed,2008
5. K. Hayashi, M. B. Bracken, D. H. Freeman Jr., and K. Hellenbrand, "Hydatidiform mole in the United States (1970–1977): a statistical and theoretical analysis,"American Journal of Epidemiology, vol. 115, no. 1, pp. 67–77, 1982.
6. Dereje N. et.al, Profile of HTD in two teaching hospitals, Addis Ababa, Ethiopia, Ethiopian J. Health Sci, Vol 17 No 4, march 2008
7. K. D. Bagshawe, J. Dent, and J. Webb, "Hydatidiform mole in England and Wales 1973–83," The Lancet, vol. 2, no. 8508, pp. 673–677, 1986.
8. The management of Gestational Trophoblastic Disease, RCOG Green Top Guideline, No.38, Feb 2010
9. J. R. Lurain, J. I. Brewer, E. E. Torok, and B. Halpern, "Natural history of hydatidiform mole after primary evacuation," American Journal of Obstetrics and Gynecology, vol. 145, no. 5, pp. 591– 595, 1983.
10. Curry SL, Hammond GB, Trey L, et al. Hydatidiform molar: diagnosis, management, and long term follow up of patients. ObstetGynaecol. 45; 1-8.
11. Amir SM, Osathonond R, Berkowitz RS, et al. Human chorionic gonadotrophin and thyroid function in patients with hydatidiform mole. American journal of Obstet and Gynaecol. 1994; 150:723-8.
12. Nisula BC and Taliadouros GS. Functions in gestational trophoblastic neoplasia; Evidence that the thyroid activity of human chorionic gonadotrophin mediates thyrotoxicosis of choriocarcinoma. Journal of Obstet Gynaecol.1980; 138:77-85.
13. Twiggs LB, Morrow CP, Schlaerth JB. Acute pulmonary complications of molar pregnancy. American J ObstetGynaecol. 138:77-85.
14. Kohorn EI. Clinical management and the neoplastic sequel of trophoblastic embolisation associated with hydatiform mole. 1978, ObstetGynecolSurv. 1987 Aug;42(8):484-8
15. Fowler DJ, Lindsay I, Seckl MJ, Sebire NJ. Routine pre-evacuation ultrasound diagnosis of hydatidiform mole: experience of more than 1000 cases from a regional referral center. UltrasoundObstetGynecol 2006; 27:56–60.
16. Johns J, Greenwold N, Buckley S, Jauniaux E. A prospective study of ultrasound screening for molar pregnancies in missed miscarriages. Ultrasound ObstetGynaecol2005; 25:493–7.
17. Fine C, Bundy AL, Berkowitz R, Boswell SB, Berezin AF, Doubilet PM. Sonographic diagnosis of partial hydatidiform mole. ObstetGynecol 1989; 73:414–18.
18. Benson CB, Genest DR, Bernstein MR, Soto-Wright V, Goldstein DP, Berkowitz RS. Sonographic appearance of first trimester complete hydatidiform moles. J Ultrasound ObstetGynecol2000; 16:188–91.
19. Stefos T, Plachouras N, Mari G, Cosmi E, Lolis D. A case of partial mole and atypical type I triploidy associated with severe HELLP syndrome at 18 weeks' gestation. Ultrasound ObstetGynecol 2002; 20:403–404
20. Craig K, Pinette MG, Blackstone J, Chard R, Cartin A. Highly abnormal maternal inhibin and beta-human chorionic gonoadotropin levels along with severe HELLP (hemolysis, elevated liver enzymes, and low platelet count) syndrome at 17 weeks' gestation with triploidy. Am J ObstetGynecol 2000; 182:737–739
21. sherer.et.al. Acute Onset of Severe Hemolysis, Elevated Liver Enzymes, and Low Platelet Count Syndrome in a Patient with a Partial Hydatidiform Mole at 17 Weeks Gestation. American Journal of perinatology/Volume 23, number 3/ 2006
22. Dr. Purnima deb, et al.: Molar pregnancy with multiple organ dysfunction, an interesting case report. Int. J. Med. Public health [www.ijmedph.org] | January-March 2011 | Vol 1 | Issue 1
23. Hankins C, Wendel GD, Snyder RR, et al. Trophoblastic embolization during molar evacuation: Central haemodynamic observations. Obstetrics and gynaecology.1987; 7:247-51.
24. Szulman AE: Trophoblastic disease: Clinical pathology of hydatidiform moles. ObstetGynecolClin North Am 15: 433, 1988
25. Szulman AE, Surti U: The syndromes of hydatidiform moles: I. Cytogenetic and morphologic correlations. Am J ObstetGynecol 131: 665, 1978
26. Szulman AE, Surti U: The syndromes of hydatidiform moles: II. Morphologic evolution of the complete and partial mole. Am J ObstetGynecol 132: 20, 1978
27. Szulman AE, Surti U: The clinicopathologic profile of the partial hydatidiform mole. ObstetGynecol 59: 597, 1982

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

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

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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.

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