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Original Research Article

Risk factors of miscarriage among pregnant women attending Omdurman maternity hospital

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ABSTRACT

Background: Around 56 million miscarriages are performed each year in the world, with about 45% are done unsafely. Miscarriage poses great risks and complications that contribute to long-term physical and psychological problems. Good knowledge and practice related to pregnancy follow-up and avoiding the causes of miscarriage will reduce its risks significantly. Aim of current study was to determine and identify the rate and risk factors of miscarriage and the common causes of miscarriage among women in Omdurman Maternity Hospital, Sudan. In addition, to evaluate the level of awareness of the risks and complications of miscarriage among women attending the maternity hospital, Sudan.
Methods: A quantitative, cross sectional study using questionnaires (N=100) was used in this study to determine the risk factors of miscarriage in women attending the maternity hospital in Omdurman, Sudan
Results: The study revealed that miscarriages were not very frequent, and there was no significant family history of miscarriages. However, those who had a miscarriage were in the first trimester of pregnancy. One of the main causes of miscarriage is the presence of severe stress from work, illness and food poisoning.
Conclusions: The findings of this study suggest different interventions to reduce the risks of miscarriages such as educating mothers about antenatal care and to take precautions during the first trimester to avoid miscarriages and educating families about the risks of being in consanguineous relationships. In addition, raising awareness about contraceptive methods to reduce the rates of induced miscarriages.

Keywords: Miscarriages, Pregnant woman, Maternity hospital

INTRODUCTION

Miscarriage is the ending of a pregnancy by removal or expulsion of an embryo or fetus before it can survive outside the uterus. A miscarriage that occurs without intervention is known as a miscarriage or spontaneous miscarriage. When deliberate steps are taken to end a pregnancy, it is called an induced miscarriage. A similar procedure after which the fetus has potential to survive outside the womb is known as a late termination of pregnancy or a late term miscarriage. The world health organization (WHO) defined unsafe miscarriage and miscarriage as a procedure for terminating a pregnancy performed by persons lacking the necessary skills or in an environment, not in conformity with minimal medical standards, or both.[1] When properly done, miscarriage is one of the safest procedures in medicine, but unsafe miscarriage is a major cause of maternal death, especially in the developing world.[2,3] About 97% of all global miscarriages between 2010 and 2014 occurred in low-income countries. Making safe miscarriage legal and accessible reduces maternal deaths. It is safer than childbirth, which has a 14 times higher risk of death in the United States.[4] Modern methods use medication or surgery for miscarriages.[4]The percentage of unsafe miscarriages is higher in countries with highly restrictive miscarriage laws

when compared with countries with more liberal laws.[2] However, it must be noted that even in countries where miscarriage laws are liberal, some women still rely on unsafe miscarriages because of existing additional barriers such as onerous facility requirements, waiting periods, and parental consent laws.

Types of miscarriage

Induced: An induced miscarriage may be classified as therapeutic done in response to a health condition of the woman or the fetus or *elective* chosen for other reasons. Approximately 205 million pregnancies occur each year worldwide. Over a third are unintended and about a fifth end in induced miscarriage. Most miscarriages result from unintended pregnancies. In the United Kingdom, 1 to 2% of miscarriages are done due to genetic problems in the fetus. The manner selected to abort the fetus often depends upon the gestational age of the embryo or fetus. Specific procedures may also be selected due to legality, regional availability, and doctor or a woman's personal preference.[6]

Spontaneous: Spontaneous miscarriage, is the unintentional expulsion of an embryo or fetus before the 24th week of gestation. A pregnancy that ends before 37 weeks of gestation resulting in a live-born infant is called a premature birth or a preterm birth. When a fetus dies in utero after viability, or during delivery, it is termed stillbirth. Premature births and stillbirths are generally not considered to be miscarriages although usage of these terms can sometimes overlap.[7] The most common cause of spontaneous miscarriage during the first trimester is chromosomal abnormalities of the embryo or fetus, accounting for at least 50% of early pregnancy losses. Other causes include vascular disease (such as lupus), diabetes, other hormonal problems, infection, and abnormalities of the uterus. Advancing maternal age and history of previous spontaneous miscarriages are the two leading factors associated with a greater risk of spontaneous miscarriage. A spontaneous miscarriage can also be caused by accidental or intentional trauma; or stress.[8]

Methods of miscarriage

Medical: medical miscarriages are those induced by abortifacient pharmaceuticals. Medical miscarriage became an alternative method of miscarriage with the availability of prostaglandin analogs in the 1970s and the antiprogestogen mifepristone (also known as RU-486) in the 1980s.mThe most common early first-trimester medical miscarriage regimens use mifepristone in combination with misoprostol (or sometimes another prostaglandin analog, gemeprost) up to 10 weeks (70 days) gestational age, methotrexate in combination with a prostaglandin analog up to 7 weeks gestation, or a prostaglandin analog alone. Mifepristone–misoprostol combination regimens work faster and are more effective at later gestational ages than methotrexate–misoprostol combination regimens, and combination regimens are more effective than misoprostol alone. This regime is effective in the second trimester.[9] In very early miscarriages, up to 7 weeks gestation, medical miscarriage using a mifepristone–misoprostol combination regimen is considered to be more effective than surgical miscarriage (vacuum aspiration). If medical miscarriage fails, surgical miscarriage must be used to complete the procedure.[9] Early medical miscarriages account for the majority of miscarriages before 9 weeks gestation in Britain, France, Switzerland, and the Nordic countries. In the United States, the percentage of early medical miscarriages performed in non-hospital facilities is 31% as of 2014.[10]

Surgical: Up to 15 weeks gestation, suction-aspiration or vacuum aspiration are the most common surgical methods of induced miscarriage. Manual vacuum aspiration (MVA) consists of removing the fetus or embryo, placenta, and membranes by suction using a manual syringe, while electric vacuum aspiration (EVA) uses an electric pump. These techniques can both be used very early in pregnancy. MVA can be used up to 14 weeks but is more often used earlier in the US EVA can be used later.[11] MVA, also known as "mini-suction" and "menstrual extraction" or EVA can be used in very early pregnancy when cervical dilation may not be required. Dilation and curettage (D&C) refer to opening the cervix (dilation) and removing tissue (curettage) via suction or sharp instruments. The World Health Organization recommends sharp curettage only when suction aspiration is unavailable.[12] Miscarriage may also be performed surgically by hysterotomy or gravid hysterectomy through a smaller incision than a caesarean section and can be used during later stages of pregnancy. Gravid hysterectomy refers to removal of the whole uterus while still containing the pregnancy.[13]

Other methods: Historically, miscarriages have been attempted using herbal medicines, sharp tools, forceful massage, or through other traditional methods. Miscarriage laws and cultural or religious views of miscarriages are different around the world. In some areas miscarriage is legal only in specific cases such as rape, problems with the fetus, poverty, risk to a woman's health, or incest.[4]

METHODS

Study design

This cross sectional, quantitative study was conducted in Omdurman maternity hospital, Sudan on Sudanese pregnant women attending the hospital; it was conducted from July through October, 2020 in the academic year 2019-2020. The study sample included (n=100) pregnant women.

Inclusion criteria

Inclusion criteria for current study were; pregnant women and those willing to give consent and complete the questionnaire.

Exclusion criteria

Exclusion criteria for current study were; Not pregnant and not willing to give consent and complete the questionnaire

Data collection

Sociodemographic data were evaluated using personal information such as age, level of education, employment, and years of marriage. Six thematic categories were elicited from data collected. The categories are: relationship of kinship to the husband; background Knowledge about antenatal care; family history of previous miscarriage and association with chronic diseases; history of previous miscarriage and number of miscarriages; admission to hospital after miscarriage; knowledge about risks and associated complications of miscarriage. Written consent was obtained from those who agreed to participate in the study after explaining the objectives to them.

Statistical data analysis

Data collected using questionnaires about risk factors of miscarriage among women attending Omdurman maternity hospital. Quantitative data was analyzed using graphs. Data was analyzed using SPSS version 23.

RESULTS

Total 16% of the study sample were below 20 years, 41% were between 20 to 30 years old, and 43% were more than 30 years of age (Figure 1).

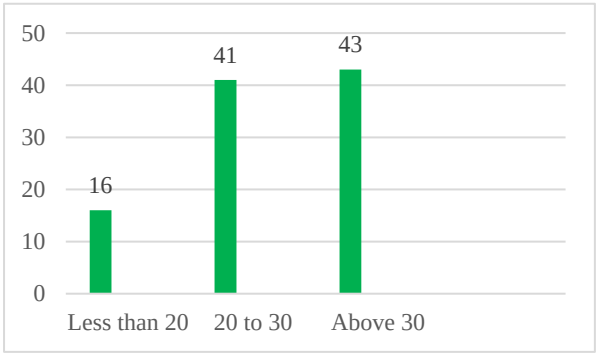

Figure 1: Age of the pregnant women.

Total 18% of the respondents had basic elementary education, 36% had secondary education, 37% attained university level education, and 9% had other education options (Figure 2). The majority of the respondents 59% are housewives, 26% of the respondents were employed and 15% are unemployed (Figure 3). Total 43% of the study sample are married for less than 10 years, whereas 38% have been married between 10 to 20 years, and 19% have been married for more than 20 years (Figure 4). Total 29% of the study sample were cousins, 14% were far distant cousins and 33% had no relationship of kinship to their husbands (Figure 5).

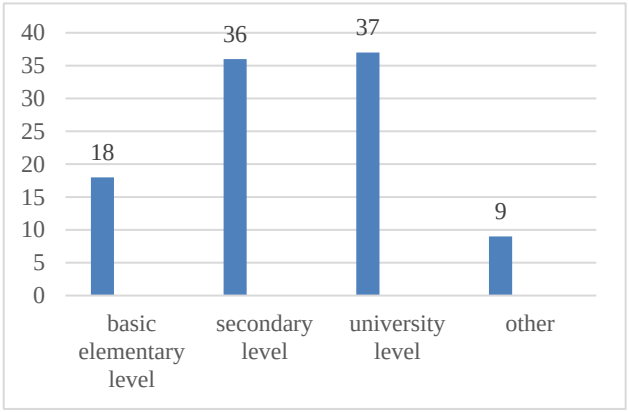

Figure 2: Level of education.

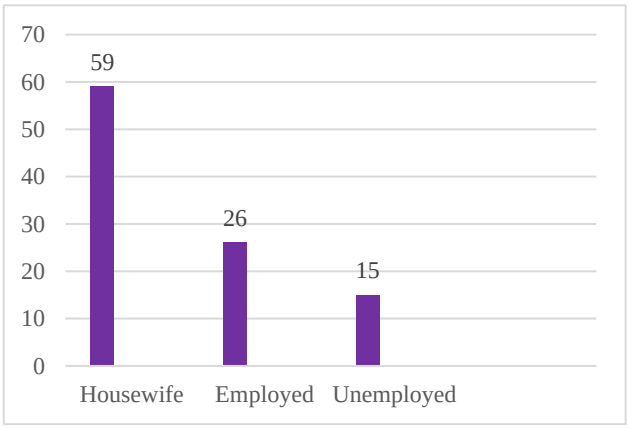

Figure 3: Employment.

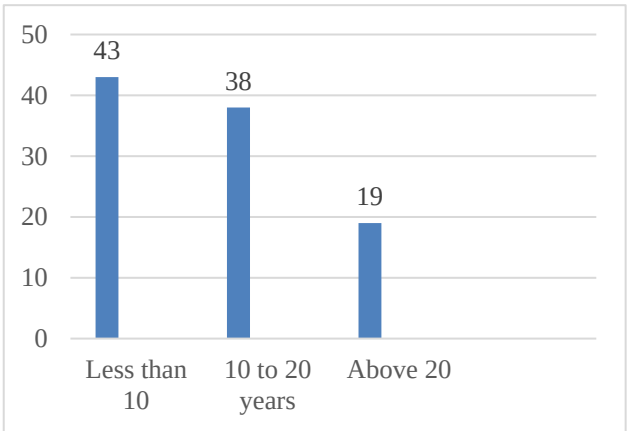

Figure 4: Years of marriage.

Total 91% of the study sample have knowledge about pregnancy antenatal care methods whereas 9% have no knowledge about antenatal care (Figure 6). Total 76% had no family history of miscarriage and only 24% had family history of miscarriage. Consequently, 79.2% of the study sample had a history of miscarriage in their families linked

to diseases such as diabetes, hypertension, and heart disease, and 20.8% were not related to any disease.

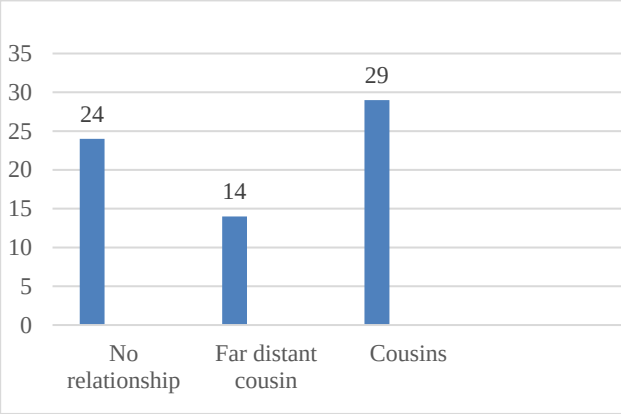

Figure 5: What is the relationship of kinship to your husband?

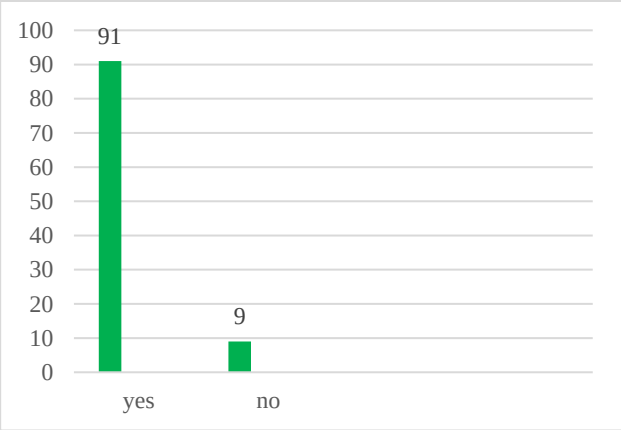

Figure 6: Do you have a background knowledge about pregnancy antenatal care methods?

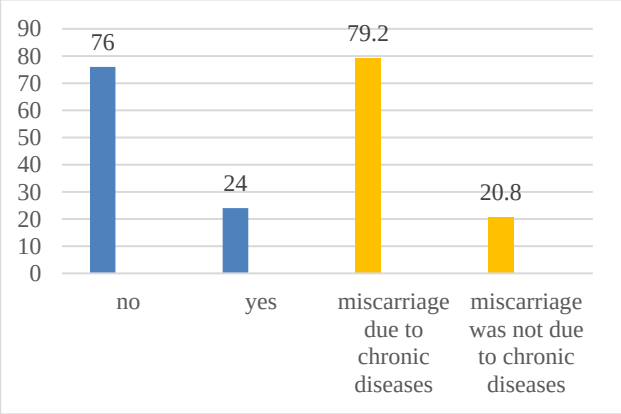

Figure 7: Do you have family history of repeated miscarriages? If the answer is yes, are these cases related to chronic diseases (diabetes, pressure, heart disease, anemia, etc)?

Total 21% of the study sample had previously been subjected to miscarriage, and 79% had not been subjected to miscarriage. 76.2% of the respondents had a miscarriage once, and only 23.8% had a miscarriage two to three times (Figure 8).

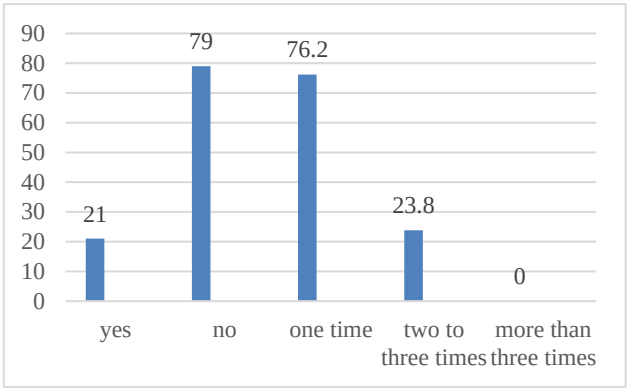

Figure 8: Have you ever had a history of previous miscarriage? If yes, how many times?

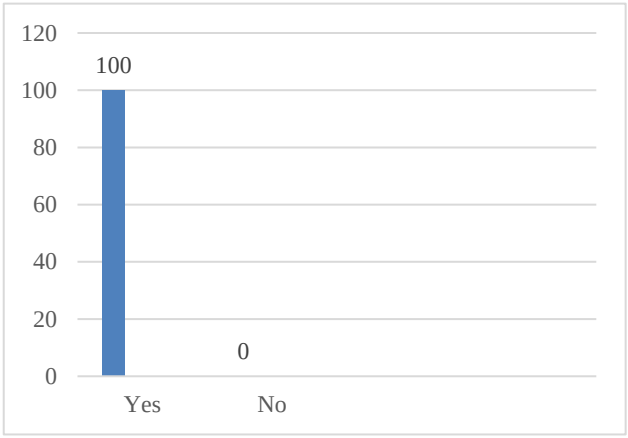

Figure 9: Have you been admitted to hospital after miscarriage?

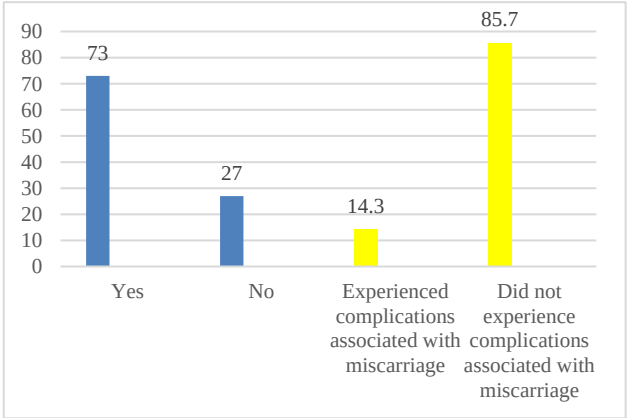

Figure 10: Knowledge about the risks of marriage, Do you know what are the risks of miscarriage? Have you experienced any of the complications associated with miscarriage?

In which month of pregnancy was the miscarriage? Most respondents had the miscarriage within the first trimester

except for one case in the second trimester. The majority of the respondents who had a miscarriage were admitted to the hospital after the miscarriage (Figure 9). What were the causes of miscarriage? The majority of the causes of miscarriage were stress at work or at home or outside the home, as well as the occurrence of sudden illnesses and food positioning.

Total 73% of the study sample know the risks of miscarriage, and 27% do not know the risk factors of miscarriage. Additionaly,14.3% of the study sample had complications associated with miscarriage, and 85.7% had no complications associated with miscarriage (Figure 10). If the answer is yes, what are the risks that you know? The answers varied among those who know the dangers that follow miscarriage. Some answered that some of the risks are; endometriosis, infections, cancer, while some believe that the risks are difficulty in conceiving and acute bleeding episodes that greatly affect women's health and increase weakness and fatigue. What were the complications experienced? Complications of miscarriage resulted in frequent infections and prolonged bleeding.

DISCUSSION

The study revelated that the majority of the respondents were over 30 years of age. The majority of the participants in the study were university graduates (37%) and high school graduates (36%). In a previous study compared to women with secondary education, women with basic level education and women without education were less likely to have a miscarriage.[14]

In this study, 59% of the sample were housewives and only 26% were employed. In a previous study, unemployed women of reproductive age were found to be 0.35 times less likely to seek induced miscarriage compared with their employed counterparts. 29% of the sample were in a consanguineous relationship. In a previous study, the abortion rate is significantly higher in consanguineous couples compared to non- consanguineous couples.[15] In a previous study, it was observed that women pregnant for the second time were 3.8 times more likely to seek induced miscarriage and women with more than two pregnancies were 6.6 times were at higher risk of an induced miscarriage. 91% of the study sample had knowledge about pregnancy antenatal care methods. According to women without knowledge of contraceptive methods were 4.6 times more likely to seek an induced miscarriage. It was found that a lack of knowledge about contraception was associated with an increased likelihood of miscarriage.[16]

In this study, 24% of the participants had family history of miscarriages with 79.2% of these miscarriages being related to chronic diseases. Therefore, 21% of the study sample had a miscarriage and it was mostly in the first trimester of pregnancy and occurred mostly once (76.2%). Stressful work at home or outside the home is the main common cause of miscarriages along with food poisoning and other illnesses during pregnancy. 73% of the respondents know the risks of miscarriage ranging from endometriosis, infections, cancer, difficulty conceiving and acute bleeding episodes. In a previous study, lack of knowledge on safe miscarriage services, poor socio-economic conditions, cultural and religious beliefs, stigma of unplanned pregnancies, a desire to bear children only after marriage, and a desire to pursue education were situations that contributed to unsafe miscarriage practices. Improvement in family planning education needs to be considered in order to reduce the rate of unwanted pregnancies among women in general.[17] According to Klutsey et al unintended pregnancy was one of the most important risk factors for induced miscarriage.

CONCLUSION

Most of the women had no family history of miscarriage although there is strong association of the miscarriages with chronic diseases. Most of the women who had a miscarriage were in the first trimester of pregnancy. One of the common causes of miscarriage are the presence of severe stress from work at home or within a specific job, certain illnesses and food poisoning. Relevant knowledge about risk factors and complications of miscarriages was observed.

Recommendations

Testing for recurrent miscarriages to study the risk factors and develop solutions. Educating mothers to take care during the first trimester to avoid any complications. Educating families about the risks of being in consanguineous relationships. Educating pregnant women about antenatal care and to avoid severe stress during pregnancy and thereby reducing the burden of work. Dissemination of knowledge and to raise awareness of contraceptive methods to reduce the rates of induced miscarriages.

ACKNOWLEDGEMENTS

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Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Grimes DA, Stuart G. Abortion jabberwocky: the need for better terminology. Contraception. 2010;81(2):93-6.
2. Grimes DA, Benson J, Singh S, Romero M, Ganatra B, Okonofua FE, Shah IH. Unsafe abortion: the preventable pandemic. Lancet. 2006;368(9550):1908-19. "
3. Preventing unsafe miscarriage. Available at: www.who.int. Accessed on 20 November 2022.
4. Faúndes A, Shah IH. Evidence supporting broader access to safe legal abortion. Int J Gynaecol Obstet. 2015;131(1):S56-9.
5. Shah I, Ahman E. Unsafe abortion: global and regional incidence, trends, consequences, and challenges. J Obstet Gynaecol Can. 2009;31(12):1149-58.
6. Safe miscarriage: technical and policy guidance for health systems. Available at: https://fctc.who.int/publications/i/item/safe-abortion-technical-and-policy-guidance-for-health-systems. Accessed on 20 November 2022.
7. Sedgh G, Bearak J, Singh S, Bankole A, Popinchalk A, Ganatra B, et al. Abortion incidence between 1990 and 2014: global, regional, and subregional levels and trends. Lancet. 2016;388(10041):258-67.
8. Worldwide, an estimated 25 million unsafe miscarriages occur each year. Available at: https://www.guttmacher.org/. Accessed on 20 November 2022.
9. Sedgh G, Singh S, Shah IH, Ahman E, Henshaw SK, Bankole A. Induced abortion: incidence and trends worldwide from 1995 to 2008. Lancet. 2012; 379(9816):625-32.
10. Sedgh G, Henshaw SK, Singh S, Bankole A, Drescher J. Legal abortion worldwide: incidence and recent trends. Perspect Sex Reprod Health. 2007;39(4):216-25.
11. Boland R, Katzive L. Developments in laws on induced abortion: 1998-2007. Int Fam Plan Perspect. 2008; 34(3):110-20.
12. Paola A, Walker R, LaCivita L. Medical ethics and humanities. Sudbury, MA: Jones and Bartlett Publishers; 2010:249.
13. What do 55 million people have in common?. Available at: https://www.foxnews.com/opinion/what-do-55-million-people-have-in-common. Accessed on 20 November 2022.
14. Mote CV, Otupiri E, Hindin MJ. Factors associated with induced abortion among women in Hohoe, Ghana. Afr J Reprod Health. 2010;14(4):110-6.
15. Bachir S, Aouar A. Study of the impact of consanguinity on abortion and mortality in the population of Beni Abbes (southwestern Algeria). Egypt J Med Hum Genet. 2019;1:20.
16. Frederico M, Michielsen K, Arnaldo C, Decat P. Factors Influencing Abortion Decision-Making Processes among Young Women. Int J Environ Res Public Health. 2018;15(2):329.
17. Klutsey EE, Ankomah A. Factors associated with induced abortion at selected hospitals in the Volta Region, Ghana. Int J Womens Health. 2014;6:809-16.

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