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POST ABORTION CARE IN GHANA: ANALYSIS OF THE GHANA MATERNAL HEALTH SURVEY, 2017

BY

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DECLARATION

I, Abena Antwiaa Adom-Asomaning, declare that except for other works which have been duly acknowledged, this work is the result of my own original research, and that as far as I am aware, this dissertation, either in whole or in part, has not been presented elsewhere for another degree.

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ABSTRACT

Introduction: A significant proportion of women continue to die from unsafe abortion. Post Abortion Care (PAC) is an important public health intervention to reduce unintended pregnancies and unsafe abortion. The purpose of this study was to determine PAC services in Ghana using the Ghana Maternal Health Survey (GMHS), 2017.

Methodology: Data on socio-demographic characteristics, complications and treatment and contraception were extracted from the GMHS, 2017. Analysis was done using STATA version 16. Frequencies and percentages were used to describe categorical variables in the study whilst mean and standard deviation were used to summarize continuous variables. The Rao Scott's chi square and logistic regression were used to measure the association between the independent and dependent (Post Abortion Care and Complications) variables.

Results: Out of 1,880 women who had induced an abortion, 61.7% were unsafe. Prevalence of unsafe abortion was highest among women 15-19 years (69.6%). Majority of the women (65.4%) lived in urban areas. There was a significant association between the age group of the women and the prevalence of unsafe abortion. (χ^2= 3.73, p = 0.011). Pain (11.4%) and bleeding (8.3%) were the commonest complications reported. More than half (57.5.%) of women received treatment for various complications with 41.5% receiving antibiotics. Family planning and contraceptive counselling after abortion was 26% higher among women who had abortion from a safe provider (aOR: 0.26, 95% CI: 0.11-0.60, p=0.002) compared to those who used an unsafe provider.

Conclusion: The rate of unsafe abortion continues to be high among Ghanaian women especially young women. Factors influencing unsafe abortion include age, marital status, level of education and wealth index quintile.

Provision of FPC services was low with majority being provided by safe providers. Effective implementation of PAC will significantly reduce maternal mortality and morbidity from unsafe abortion. Circumstances under which abortion can be sought needs to be made clearer through public education to make safe abortion available and easily accessible.

DEDICATION

I dedicate this work to my husband, Sam Aryee and to my son Obrempon Kwabena Aryee.

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I thank God almighty for seeing me through this programme. To my supervisor, Prof. Kwasi Torpey I am grateful for your teaching and guidance. I also thank my husband for all his support. To my friends, Forzia Osman, David Owiredu and Rebecca Serwaa Keddey, thank you for your assistance. My deepest gratitude also goes to the Adu-Amoako family. To Dr. Abena Kwafo-Armah, thank you for your encouragement.

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LIST OF ABBREVIATIONS

D&C - Dilatation and Curettage

D&E - Dilatation and Evacuation

DHS - Demographic Health Survey

EVA - Electric Vacuum Aspiration

FPC - Family Planning and Contraceptive Counselling

GHS - Ghana Health Service

HIV - Human Immunodeficiency Virus

GMHS - Ghana Maternal Health Survey

GSS - Ghana Statistical Service

ICPD - International Conference on Population and Development

MVA - Manual Vacuum Aspiration

PAC - Post Abortion Care

WHO - World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

At the first International Conference on Population and Development (ICPD) in 1994, it was recognized that every woman had the right to freely decide responsibly the number of children they would want to have, their timing and spacing. They also have the right to information and the means by which they would achieve this and have the highest standard of sexual and reproductive health. A quarter of all pregnancies end in abortion and the availability and accessibility to legal and safe abortion is a core component if these rights are to be realized (United Nations, 1995).

Abortion refers to any means by which a pregnancy is terminated irrespective of whether it is viable or not, which results in the death or expulsion of the fetus. It could be spontaneous or induced. In Ghana, the age of viability is set at 28 weeks and therefore any termination within the first 28 weeks from the last menstrual period is termed as an abortion. The means by which an abortion is performed, whether safe or unsafe has implications on the woman's health (Francome, 2004; Morhee & Morhee, 2006)

An abortion is considered safe if it is performed as recommended by the World Health Organization (WHO) and the method used is suitable for the duration of the pregnancy. However, most women resort to unsafe methods when terminating a pregnancy (Rasch, Sørensen, Wang, Tibazarwa, & Jäger, 2014; WHO, 2016).

Although unsafe abortion is entirely preventable, it remains a serious issue of public health concern globally. Unsafe abortion is an important cause of maternal morbidity and mortality (Ganle, Obeng, Yeboah, Tagoe-Darko, & Mensah, 2016). The WHO defines unsafe abortion 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" (World Health Organization, 2011).

Limited access to safe abortion, increases the recourse to unsafe termination procedures. Stigmatization by community and service providers undermines provision of quality post abortion care services (Mutua, Manderson, Musenge, & Achia, 2018).

Unsafe abortions accounted for 13% of maternal deaths globally between the year 2010 to 2016 (World Health Organization, 2016). Unsafe abortions lead to a number of short- and long-term complications. Almost 21.9 million unsafe abortions are performed globally each year with 97% occurring in low-income countries. Africa accounts for the highest proportion of unsafe abortions with estimates of 44% (18-39 per 1000 women) (Grimes et al., 2006; Rasch, 2011; World Health Organization, 2011). Abortion when performed by a trained health worker in a safe and legal setting is one of the safest medical procedures with mortality rates reported to be less than 1 per 100,000 (Hu et al., 2010).

Women in developing countries are most at risk of unsafe abortion because abortion is highly restricted by law in most of these countries. In some countries, safe abortion though legally permitted, is not easily accessible (Grimes et al., 2006).

A study conducted by Ganle et al., (2016), in Ghana revealed that majority (53%) of abortions occurred outside the healthcare facility. More than half of the women (57%) in the study either ingested herbal concoctions or inserted other herbs or foreign bodies into their vagina to terminate their pregnancy.

Factors contributing to the high incidence of unsafe abortions include poor knowledge of safe abortion services, perception of abortion as a religious and cultural taboo in Ghana, social stigma associated with an unplanned pregnancy and avoidance of parental disappointment and neglect following an unplanned pregnancy (Atakro et al., 2019).

Complications from unsafe abortions include sepsis, retained products of conception, hemorrhage, and organ damage. Other long term consequences are pelvic inflammatory disease, tubal blockage and secondary infertility (Shah & Ahman, 2009).

These complications require high quality post abortion care services to treat clinical symptoms and break the cycle of subsequent unintended pregnancies and the demand for abortions. There is a substantial evidence base for post abortion care comprising of the clinical management of complications from both spontaneous and induced abortion using manual vacuum aspiration (MVA) and misoprostol as appropriate methods of uterine evacuation. In addition post abortion contraceptive counseling should be offered (Huber, Curtis, Irani, Pappa, & Arrington, 2016).

To reduce maternal morbidity and mortality due to unsafe abortions, development of post abortion care is critical. Post abortion care has been integrated in public health systems around the world since the 1994 ICPD (Kalu, Umeora, & Sunday-Adeoye, 2012). Nevertheless, the provision of quality post abortion care in health facilities across Africa is still scarce with access hindered by

restrictive laws, provider's negative attitudes and inability of some health-care systems to provide the needed service (Mutua et al., 2018).

A study done by Kalu, Umeora, & Sunday-Adeoye (2012) showed that in some referral facilities in Nigeria, quality of post abortion care services was poor. Some of the service delivery areas in the post abortion care model had also not been effectively implemented and integration of emergency post abortion care with other reproductive health services was non-existent.

Post Abortion Care (PAC) is defined as an approach to reducing mortality and morbidity from incomplete and unsafe abortions and improving women's sexual and reproductive health (Post Abortion Care (PAC) Consortium, 2015). Post Abortion Care refers to a group of essential emergency interventions which must be provided to all women who present with complications arising from unsafe or incomplete abortions. Post abortion care is also indicated in cases of spontaneous and safely induced abortions although the complications from these two are usually low (Owolabi, Biddlecom, & Whitehead, 2019).

Post Abortion Care consists of both curative treatment of incomplete abortion and associated complications as well preventive care which consist of contraceptive counselling services. These two components are essential to ensure that women who require such services are recipients of high quality care (Owolabi et al., 2019). The central point of post abortion care is to prevent complications and to prevent further occurrence of unwanted pregnancies. This will directly contribute to the reduction of maternal mortality.

PAC services that meet high quality standards and are accessible is important in advancing women's health and rights (Ponce de Leon, Billings, & Barrionuevo, 2006). PAC is especially relevant in countries where abortion is restricted. (Ramarao, Townsend, Diop & Raifman, 2017).

The essential elements of PAC are service provider and community partnership, post-abortion counseling, treatment, contraceptive and family planning services (Adinma, Ikeako, Adinma, Ezeama, & Ugboaja, 2010).

The effective implementation and integration of these five components of PAC will ensure prevention of maternal mortality, unwanted pregnancy and unsafe abortion, which are the cardinal focus of reproductive health (Kalu et al., 2012). Unfortunately, PAC is the least emphasized aspect of reproductive health in Sub-Saharan Africa where unsafe abortion contributes significantly to maternal morbidity and mortality (Chudi, 2003)

Availability of high quality post abortion care significantly reduces the morbidity and mortality associated with unsafe or incomplete abortions (Post Abortion Care (PAC) Consortium, 2015). Emphasis should be placed on post abortion care as an important intervention to address problems of unsafe abortion in most developing countries where quality standards are still deficient (Chudi, 2003).

During the ICPD conference in 1994, unsafe abortion was acknowledged as a major public health concern and established in the Programme of Action that regardless of the means by which a pregnancy is terminated it is recommended that every woman has access to PAC.

PAC ensures that all women receive timely, holistic and appropriate care (World Health Organization, 2011).

1.2 Problem statement

Recent estimates showed that 45% out of the 56 million induced abortions worldwide annually are unsafe, with 31% being less safe (World Health Organization, 2016). They were induced either without using a WHO recommended method appropriate for the gestational age or by an unskilled person. Fourteen percent are classified as least safe involving both inappropriate methods and untrained providers. An estimated 44% of abortions across Africa are considered as least safe (Ganatra et al., 2017).

Although safe methods for terminating pregnancy such as MVA and access to medical abortion are currently available in many countries, there are still quite a number of abortions that are being done worldwide each year that are unsafe (Ganatra et al., 2017).

It has been observed in general that public health systems in Africa have neglected post abortion care and failed to ensure widespread availability and quality care (Adinma et al., 2010). There is also little evidence on the improvement of access to quality PAC by women in Africa as the ability of national health systems to provide this quality care is almost non-existent (Owolabi et al., 2019)

In Ghana, there is a significant association between abortion and maternal mortality. Unsafe abortion is a proximate cause of maternal mortality and complications from abortion has been seen to be part of the leading causes of death among Ghanaian women (Sundaram, Juarez, Bankole, & Singh, 2012). Twenty percent (20%) of all women in the reproductive age group (15-49 years) have had an abortion. Out of this, about fifty seven percent (57%) had used non-medical methods. (Ganle et al., 2016; Ghana Statistical Service (GSS), Ghana Health Service (GHS), 2017)

As a leading cause of maternal mortality, unsafe abortion accounts for more than 1 in 10 (11%) of maternal deaths. The Sustainable Development Goals (SDGs) aims to reduce maternal mortality ratio to less than 70 per 100,000 live births. For Ghana to achieve this target, effective implementation of post abortion care services will reduce the contribution of unsafe abortions and consequent complications to maternal mortality (Sedgh, 2010).

The complications associated with unsafe abortions have serious public health implications for the country because apart from increasing maternal mortality and morbidity there is a further diversion of the limited health resources (Mills, Williams, Wak, & Hodgson, 2008).

Compared to other African countries, Ghana's abortion law is said to be liberal. Poor knowledge about the law by health care providers coupled with inadequate resources leads to poor provision of post abortion care increasing further the number of women presenting annually to health facilities with complications from unsafe abortion (Aniteye & Mayhew, 2013; Morhee & Morhee, 2006).

The Ministry of Health and the Ghana Health Service has made significant strides to reduce the mortality and morbidity associated with abortion over the years. Strategies put in place include an interpretation of the abortion law to allow more women access the service. Furthermore, there has been an integration of reproductive health services through a combination of abortion services with contraception as part of a comprehensive package of services. Other measures include training of more health workers especially midwives to provide manual vacuum aspiration and medical abortion. However, many women still resort to unsafe abortion because women in need of abortion care do not fully understand when they truly qualify. In addition, because of shortage of health

workers in many parts of the country, they resort to non-medical means (Chavkin, Baffoe, & Awoonor-Williams, 2018).

1.3 Justification

Most studies conducted on abortion focus primarily on the determinants contributing to unsafe abortion practices with little emphasis on post abortion care. Implementation of post abortion care has also largely focused on treatment of complications following abortion with little emphasis on family planning and contraception failing to address the unmet need for contraception

The study would help address the paucity of information on PAC in Ghana. The study would also aid in rectifying lapses in the provision of PAC services to women who need to have an abortion especially the need for family planning and contraception. It would improve reproductive health services, prevent recurrent unplanned pregnancies and complications in order to reduce the rates of maternal mortality.

1.4 Research questions

1. What are the demographic characteristics of women who had an unsafe abortion?
2. What complications occurred after an unsafe abortion and what treatment was provided?
3. What proportion of women were provided with contraception counselling after an abortion?
4. What form of contraception counselling was given to women after an abortion?

1.5 Objectives of the study

1.5.1 General Objective

To determine post abortion care services offered to women after an abortion in Ghana.

1.5.2 Specific Objectives

1. To determine the demographic characteristics of women who had an unsafe abortion
2. To determine type of complications following unsafe abortion and the treatment provided for the complications
3. To determine the proportion of women who received contraception counselling after an abortion
4. To determine the form of contraception counselling offered to women after an abortion

1.6 Conceptual framework narrative

Sociodemographic factors such as the age, level of education and religion usually determine where a woman seeks an abortion. A young unmarried woman is more likely to resort to unsafe methods because of stigmatization. Unsafe abortion generally has been recognized to be more predominant among the young and the poor (Arambepola, Rajapaksa, & Galwaduge, 2014). Most religions also frown on pregnancy out of wedlock increasing the risk of an unsafe abortion which would result in complications for which care in a health facility would be sought (Lithur, 2004). The higher the level of education, the more knowledgeable the woman will be about the risks of an unsafe abortion and therefore opt for termination within a health facility where treatment for complications and contraception would be offered. Women with some form of employment have financial access to quality healthcare and will opt for safer methods for termination (Rasch et al., 2014).

The method, place of abortion and service provider determines whether the abortion is safe or unsafe and the likely complications. The provider of an abortion could be a health worker but if the person lacks the basic skills or terminates the pregnancy under conditions lacking the basic medical requirements or both, it is considered as unsafe (World Health Organization, 2011). From this definition, relatives, friends, pharmacists or chemical sellers who provide abortion services are all considered as unsafe. The risk of complications such as pelvic infections, bleeding and perforation is high under these circumstances.

A service provider who is well trained in provision of comprehensive post abortion care is also more likely to provide appropriate treatment for complications. This further reduces maternal mortality and morbidity associated with poorly treated complications (Oppong-Darko, Amponsa-

Achiano, & Darj, 2017).The provision of family planning and contraception is also increased when the provider of abortion has adequate knowledge on the importance of this component of post abortion care (Tang et al., 2017).

Some women who desire to terminate an unwanted pregnancy resort to traditional methods such as use of herbs. These herbs are administered orally or intravaginally. Others include ingestion of beverages mixed with high concentration of sugar, heavy massage and excessive physical activity (Rasch et al., 2014). Safe abortion methods recommended by WHO are either medical or surgical. The medical methods are use of uterotonics such as misoprostol (Cytotec) or a combination of misoprostol and mifepristone (Medabon) tablets. The approved surgical methods are vacuum aspiration and dilatation and curettage/evacuation (World Health Organization, 2014).

A woman who is offered comprehensive post abortion care services should receive at least treatment for any complication and contraceptive counselling to avoid recurrence of an unwanted pregnancy (Post Abortion Care (PAC) Consortium, 2015). Treatment offered depends on the type of complications reported. Common treatments include antibiotics for pelvic infections, analgesics for pain and blood transfusion for severe bleeding. Others include evacuation of the uterus when the abortion is incomplete, and administration of intravenous fluids (Bankole et al., 2018).

1.6.1 Conceptual framework

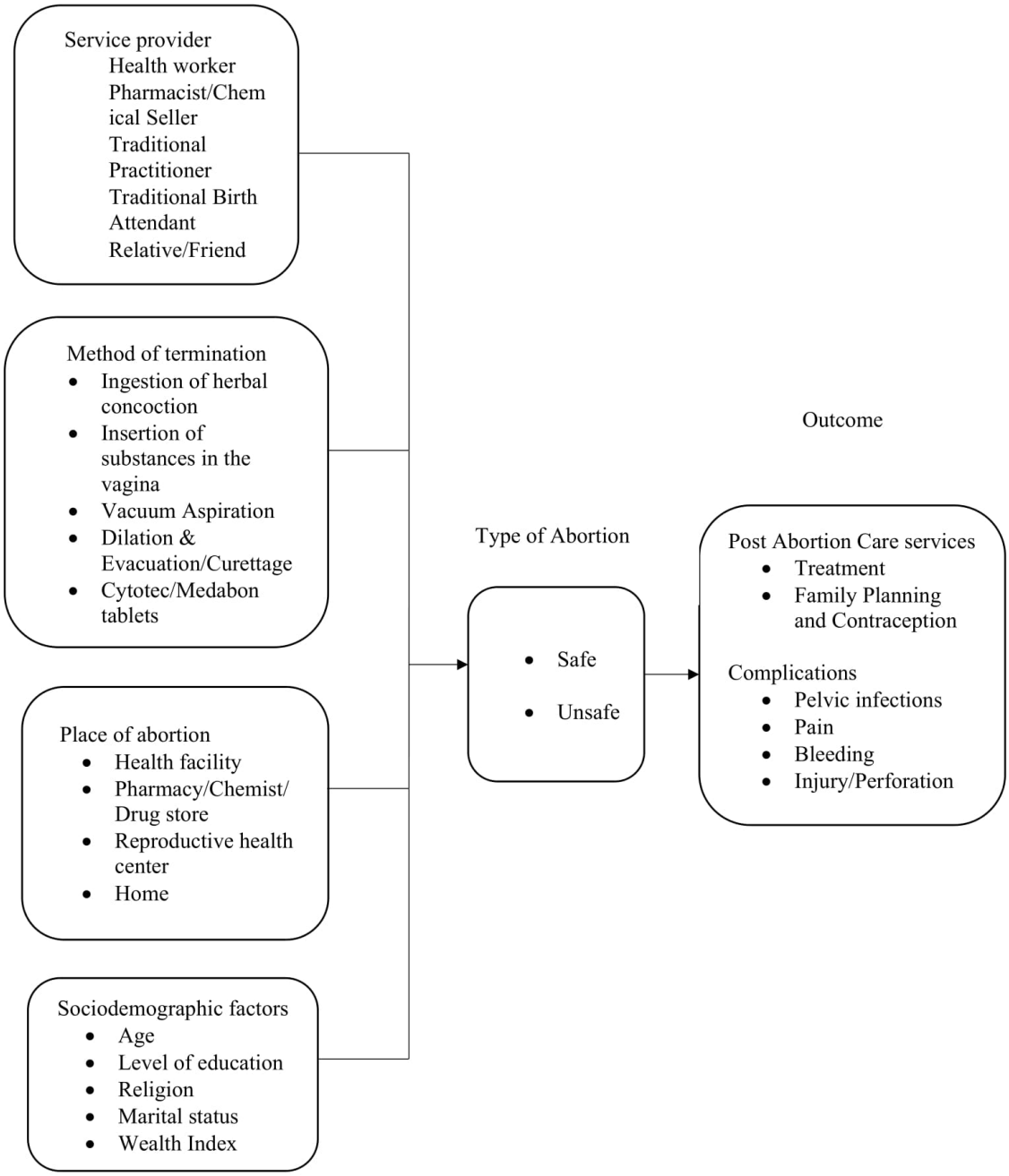

Fig. 1: Conceptual Framework for Post Abortion Care

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview of PAC services

PAC is an integral part of maternity care, and all the components are essential. PAC is a unique public health service delivery model. It has both curative and preventative components-curative in treating incomplete abortion and the symptoms of haemorrhage and sepsis; preventive in providing family planning services to address an unmet need for contraception and minimize unintended pregnancies and repeat abortions (Huber et al., 2016).

Standard PAC entails provision of emergency care which includes resuscitation using intravenous lines, transfusion with blood and blood products when indicated, and administration of antibiotics. This should be available at all district hospitals with well laid down protocols for service delivery and training of providers to assure quality of service. It also encompasses treatment of sexually transmitted infections, Human Immunodeficiency Virus (HIV) counselling and testing, family planning and contraceptive use and community empowerment (Curtis, 2007).

It is estimated that approximately 75 million women require PAC services annually after safe or unsafe induced abortions and miscarriages (Huber et al., 2016). In 2014, an estimated 9% representing 16,000 of all maternal deaths were due to unsafe abortion. Regional estimates for West Africa in 2008, indicated that almost 12% of all maternal deaths resulted from unsafe abortion (Singh, Darroch, & Ashford, 2014; World Health Organization, 2011).

A study in Tanzania by Keogh, Kimaro and Muganyizi, (2015) found that for every woman who received PAC for complications, another six did not seek or receive care after an abortion. Another

study reported that unsafe abortion accounted for 38% of hospitalizations for obstetric complications. According to other hospital statistics, unsafe abortion caused approximately one-quarter of all maternal deaths (Price, Hawkins, & Ezekiel, 2003; Sorensen et al., 2010).

Due to the lapses in provision of PAC services as indicated above it is of utmost importance that quality PAC services be incorporated within health systems globally.

2.2 Sociodemographic factors and PAC

Factors such as age, marital status, level of education determine knowledge and access to reproductive health care such as abortion and post-abortion care.

2.2.1 Age

Almost 60% of unsafe abortions in Africa occur among young girls below 25 years. Complications from unsafe abortions worldwide are commonly seen among adolescents (World Health Organization, 2011). They also present with repeat abortions and are less likely to be given contraceptive counselling or be prescribed a method upon discharge (African Population and Health Research Centre, IPAS, 2013; Mohamed et al., 2015). A study conducted in Kenya by Mutua, Maina, Achia, & Izugbara (2015) to determine delays in seeking PAC showed that over 70% of the women in the study were below 25 years old with a majority between 20 and 24 years. Patient's reports by health workers in the provision of abortion services in the Volta Region of Ghana by Adde, Kofuor, Darteh, Kumi-Kyereme, & Amu, (2018), estimated that 80% of women who reported for treatment of abortion and its complications were in their 20s while 15% were aged 30–39 years.

Young women in comparison to their older counterparts also tend to experience more severe complications of induced abortion. They are also unfortunately managed with lower quality abortion care procedures (African Population and Health Research Centre et al., 2013). Hospital data from developing countries suggest that 38–68% of women treated for abortion related complications are below 20 years of age with majority being adolescents.

Young women especially those aged between 15-29 years women are more likely to report negative experiences of post-abortion care. They expressed deficiencies in several services, including disrespectful treatment by the health care staff, receipt of inadequate care and support. There were also issues with non-administration of effective analgesia during uterine evacuation procedures (Girvin, 2004; Lundell et al., 2015).

2.2.2 Education

Education has a positive association with access and use of reproductive health services including abortion (Osur, Orago, Mwanzo, & Bukusi, 2015; Say & Raine, 2007). Higher level of education is associated with greater access to safe abortion and quality post abortion care (Diaz, 2014).

Women with a lower level of education most often resort to unsafe abortions increasing their risk of complications. Seventy one percent of women reporting to health facilities for treatment due to unsafe abortions in Zimbabwe had attained only partial or complete secondary schooling (Izugbara, Egesa, Kabiru, & Sidze, 2017). These findings are consistent with those found in China by Wang, Liu, & Xiong (2020). In their study, approximately 79% of the participants with complications from unsafe termination procedures had the highest level of education to be secondary. Similar findings were obtained for women receiving post-abortion care in a teaching hospital in Nigeria. Fifty-nine per cent of the women had attained only secondary education and

approximately 20% had the highest level of education to be tertiary. Another 19% had completed only primary school and 2% had no formal education (Kalu et al., 2012). In Ethiopia however, the findings were contrary. The number of women who had completed just secondary school was 23.3%. Thirty-three per cent had received only primary school education and 16.6% had their highest level of education to be tertiary (Hagos et al., 2018).

The higher a woman's level of education, the more empowered she is to make informed decisions about her health. Education also makes them more aware of complications resulting from abortion making them more likely to present early for treatment (Jejeebhoy, Kalyanwala, Zavier, Kumar, & Jha, 2010).

Education is also associated with delays in decision making when seeking safe abortion services. A study in Ethiopia on decision making and determinants of safe abortion revealed that women with no education were 2.4 times more likely to delay when making the decision to seek safe abortion than women who had attained education above secondary level. Similarly, those who had completed only secondary school were 2.2 times more likely to delay compared to those with education above secondary school. This was because women without formal education could not readily access information on reproductive health issues, making them more ignorant of the consequences of delayed abortion care (Mizana, Woyecha, & Abdu, 2020).

2.2.3 Religion

Religious affiliation, beliefs and practices contribute to opinions on abortion. Abortion and its related issues remain a contentious subject for many religions. Abortion in most religions is perceived as sinful and is largely unpermitted. Religious groups in Africa have been seen to be strongly opposed to abortion. Women who have abortion, providers of abortion services and those

who advocate for it are therefore condemned and stigmatized. Women with some religious affiliation who find themselves with an unwanted pregnancy are therefore more likely to resort to high-risk procedures when terminating a pregnancy (Lithur, 2004; Rominski & Lori, 2014).

A study in Ghana and Nigeria sought the views of respondents on abortion. From the study, those who belonged to a religion and attended services were opposed to abortion whilst those who had no religious affiliation believed abortion in some cases was justified. Generally, participants belonging to both Christian and Islamic faith were not in support of abortion because it was doctrinally disapproved (Adisah-Atta & Dim, 2019). Similar views were expressed by respondents (89 out of 111) in Ashanti region who viewed abortion whether safe or unsafe as a sacrilegious act. Abortion was interpreted as an offence against God and portrayed those who sought abortion as murderers (Atakro et al., 2019). Due to this religious stance against abortion, women most often choose to have termination done secretly and privately albeit it unsafe rather than in a health facility where their confidentiality is not assured (Payne et al., 2013).

Religion also influences service providers' decision on providing abortion services and the quality of care given. A study among Ghanaian midwives revealed that despite their awareness of the illegal and unsafe methods women used for abortions, they were still unwilling to provide safe abortion services because of their religion. Some of them, however, did not object to PAC. This was because in their estimation, the abortion had already been initiated and they were trying to save the women from the consequent complications (Oppong-Darko et al., 2017). Similar opinions were expressed by midwives in Uganda on issues related to abortion and religion. Midwives who were against the liberalization of abortion laws cited religious beliefs to conclude that a more liberal law would increase sexual immorality leading to more abortion-related deaths. They also

explained that although providing abortion and PAC was an obligation, caring for women whom they suspected or knew to have induced abortion was difficult because it was against their religious beliefs (Cleeve, Nalwadda, Zadik, Sterner, & Klingberg-Allvin, 2019).

2.2.4 Marital status

Single and young women face challenges when seeking abortion and PAC. These challenges are attributed to reasons such as immorality and defiance of norms on sexual abstinence. Shame and disgrace were the main problems single and unmarried women had to overcome when seeking PAC. Due to these two factors, there were significant delays in seeking PAC increasing risks of severe complications and death. For those that ultimately sought care, they hide the fact that they are presenting due to complications from unsafe abortion which further delays appropriate treatment (Osur et al., 2015). A study in two states in India revealed that unmarried women were more likely to face barriers when seeking abortion care compared to their married colleagues. They were also more likely to face delays in treatment when they presented at health facilities (Jejeebhoy et al., 2010).

In China, married women were found to be significantly more likely to use PAC compared to unmarried women. This was contrary to findings in Ethiopia by Hagos et al., (2018), where married women were less likely to patronize PAC services. The difference in utilization of PAC services could be due to the extent to which husbands influence the woman's access to services. In patriarchal societies, married women have less control over decisions pertaining to their health and would be less likely to seek services. However, when women make such decisions independently, they will be more likely to seek care (Wang et al., 2020).

2.2.5 Wealth index

The brunt of inequities in accessing safe abortion and post-abortion care services are borne by poor women and girls. Women who are well to do generally can afford safe abortion care from qualified health care providers and health facilities and are more likely to receive some form of post-abortion care (Izugbara et al., 2017).

Bankole et al., (2018), in their study on severity and management of post-abortion complications in Kinshasa, reported that single and poor women often lacked access to information on where to obtain safe abortion procedures. This invariably resulted in them presenting with complications from unsafe methods.

Ganle et al., (2016) in their study of disparities in abortion-related care categorized wealth quintiles from the highest to the lowest. Approximately 23% of women in the study with access to safe abortion care were in the highest quintile with 5.8% in the lowest quintile. The disparities were attributed to factors such as poverty and high cost of abortion-related care as well as other social costs.

Another study in Haiti ranked wealth index as poor, middle and rich. Abortion rates were seen to be higher among women in the middle and rich quintile. Wealthier women were also more likely to use safe methods of termination because they have better access to information on safe abortion care services and can afford better care (Meffen, Burkhardt, & Id, 2018).

2.3 Provider and method of termination

Majority of the morbidity linked to unsafe abortion is determined by the provider and method of abortion. When women are confronted with an unwanted pregnancy, women either self-induce or

seek a provider to terminate the pregnancy. Factors contributing to the choice of abortion provider and method varies from one setting to the other. It depends on the legal status of abortion, traditional methods known, the providers present in the setting and the availability of skilled health personnel. Providers include traditional healers, relatives, friends or the woman herself. The type of provider in some cases is determined by whether a previous attempt to terminate a pregnancy resulted in a serious complication.

Results from a study on abortion providers and methods conducted in Nigeria revealed that women who developed mild or moderate complications from a previous attempt were most likely to go to a chemist whilst those who had serious complications were most likely to seek abortion care from a doctor (Henshaw et al., 2008; Rasch & Kipingili, 2009). In Pakistan, 80% of women had abortions done by health personnel who were either doctors or nurses (Shaikh, Abbassi, Rizwan, & Abbasi, 2010). Similar results were documented in Burkina Faso, where 61% of abortions had been performed by a health professional (Singh, Wulf, Hussain, & Bankole, 2009). Traditional healers were the main service providers as documented in a study done in Guatemala where 49% had been induced by a traditional provider (Rossier, Guiella, Ouedraogo, & Thieba, 2006).

Another study in Tanzania to ascertain unsafe abortion methods and providers showed that over 50% of the women presenting with complications from an unsafe abortion had the pregnancy terminated by traditional healers. The other half had visited a health facility for termination. Commonly used traditional methods were in some herbal formulation used either alone or in combination as tea or inserted into the vagina to cause the uterus to contract (Rasch & Kipingili, 2009). In Kenya, reported providers of abortion commonly were owners of chemist shops, traditional birth attendants (TBAs), traditional healers, partners, relatives and teachers. Many of

the providers terminated the pregnancy by insertion of sharp objects such as sticks into the vagina, ingestion of herbal concoctions, pumping of cold air through the cervix and blunt trauma such as repeated jumping on the abdomen (Izugbara et al., 2017).

Results from a survey in Nigeria on abortion complications revealed that 35% of women who reported to a health facility had attempted to induce the abortion at least once before reporting with complications. Twenty-nine per cent had seen a doctor for the first attempt whilst 12% had the first attempt by an unqualified provider or one with less training before reporting to a doctor to treat the consequent complications or because the first attempt had been unsuccessful (Oyeniran et al., 2019). The commonest service providers for women in a community based survey at Hohoe by Payne et al., (2013), were mainly doctors constituting 65.5%. Thirty one percent had the pregnancy terminated by partners and relatives. The abortion was carried out in the hospital (61%) or at home (29%).

The method provided was provider dependent. Physicians in 55% of the cases performed D&C or MVA (20%) whilst pills were usually given by chemists (56%). Other cadres of health workers like nurses and midwives used D&C, injections, MVA and pills. Traditional healers often used herbs or inserted objects. Attempts by women or friends and relatives were with pills or traditional remedies. Traditional healers often used herbs or inserted objects (Henshaw et al., 2008).

In Ghana, Aniteye & Mayhew (2011), conducted a study on the attitudes and experiences of women admitted with abortion complications. From the study, the commonest method used to terminate a pregnancy was herbal preparations (30%), administered in various forms such as oral formulations or insertion into the vagina. Some respondents combined herbal preparations with alcoholic beverages. Other methods used were ingestion of high concentrations of sugar or salt

mixtures (22%) and insertion of sticks vaginally to dilate the cervix (11%). Doctors (although it could not be ascertained whether they were qualified or not) and herbalists were the most common service providers making up 42% and 24% respectively. Other service providers were friends (20%), relatives (5%) and pharmacists (4%). Similar methods were documented in another study by Oppong-Darko et al., (2017). This included use of pills mostly taken as a single dose or in combination with other over the counter medications and illegal use of misoprostol (Cytotec®). Some also ingested ground-up bottles mixed with Guinness beer and others inserted cassava sticks into the vagina.

2.4 Complications resulting from unsafe abortions

A significant proportion (20%-50%) of women with unsafe abortion develop complications that are severe leading to hospital admission (Grimes et al., 2006). Abortion related complications are numerous and may be life-threatening, affecting the woman's health and quality of life. Post-abortion complications are usually determined by the choice of method used to terminate the pregnancy. Complications develop as a result of three reasons; infection, retained products due to incomplete evacuation and pelvic injuries. Although abortion-related complications are more common with unsafe methods, it may also occur in health facilities where trained personnel are available. The severity of complications may be determined by whether the abortion was induced or not. Complications from induced abortions are usually more severe than those from spontaneous ones (Adler, Filippi, Thomas, & Ronsmans, 2012). For example, women presenting with more serious symptoms usually present with an indication of mechanical injury or foreign objects in the cervix (Cleeve et al., 2019).

The sequelae of abortion are usually not anticipated by women. Women terminating unwanted pregnancies use substandard medication or do not use the correct dosage of drugs or use them inappropriately. This affects the effectiveness of the medication resulting in incomplete abortion. They present to the hospital with bleeding, abdominal pain, fever and dizziness. However, in seeking treatment, they prefer to go back to the original abortion service providers rather than reporting to the hospital. When they eventually report to a health facility, the complications are severe and their condition deteriorated (Oyeniran et al., 2019).

Major life-threatening complications include incomplete abortion, haemorrhage, infection, injury to the genital tract and pelvic organs. Others are pelvic peritonitis, shock and even death (Ishoso, Tshefu, & Coppieters, 2018; World Health Organization, 2019). Complications reported by women seeking treatment after an abortion in a study done in Nigeria were pain (52%) and bleeding (44%). Others were fever and pelvic injuries. Pain (71%) and bleeding (59.5%) were higher among those who had inserted objects (Henshaw et al., 2008). These findings were consistent with those reported by Aniteye & Mayhew (2011) in Ghana. About 75% of women in their study who sought treatment, reported having abdominal pain with mild or profuse bleeding.

In Thailand, out of 462 women who reported for treatment after an abortion, 170 had undergone an unsafe abortion and 27 (16%) women had severe complications. Sixty-seven per cent were cases with haemorrhage requiring blood transfusions. Seventeen women (63%) came in with shock and another 22% had acute renal failure. Two cases had sepsis with disseminated intravascular coagulation and there were two reported deaths (Srinil, 2011).

Women who experience abortion-related complications sometimes do not seek care in a health facility. Those who do may provide false information about the cause of symptoms they present

with, delaying treatment. Some resort to treatment from unskilled personnel thus worsening the severity of the complications (Bankole et al., 2018; Mayi-Tsonga et al., 2009).

2.5 Essential elements of PAC

The Essential Elements of PAC model, endorsed by the PAC Consortium in 2002, reflects, from both a provider and a client perspective, an improved concept of high-quality sustainable services. The model's five elements emphasizes a public health approach that tackles women's broader sexual and reproductive health needs (Post Abortion Care (PAC) Consortium, 2015).

2.5.1 Treatment

Treatment remains a critical part of PAC, because women who have had an incomplete, spontaneous or unsafe abortion, in most cases, need uterine evacuation and other lifesaving medical interventions to prevent complications. This also includes providers' knowledge that complications may not always life-threatening but could be if swift and appropriate medical attention is not provided. It further recognizes that safe, effective treatment involves the use of either manual vacuum aspiration (MVA) or electric vacuum aspiration (EVA) whenever possible and infection prevention using standard prevention precautions (Ponce de Leon et al., 2006). Timely and appropriate treatment for abortion-related complications greatly improves the chances of survival. (Mayi-Tsonga et al., 2009).

The two methods of uterine evacuation recommended by WHO are vacuum aspiration using either manual or electric means and use of mifepristone and misoprostol for incomplete abortions in the first trimester. For the second trimester, dilatation and evacuation (D&E) or mifepristone and misoprostol are recommended (Riley, Madzyire, Owolabi, Sully, & Chipato, 2016). The

combination of mifepristone and misoprostol is the drug of choice in the medical management of incomplete abortions. It can easily be administered by nurses and midwives either through the oral or sublingual routes once they receive training and should be available to women who need PAC (Ponce de Leon et al., 2006).

A cross-sectional study done in Zimbabwe by Madziyire et al., (2018), to determine severity and management of abortion complications indicated that dilatation and curettage (D&C) or dilatation and evacuation (D&E) were the commonest procedures for uterine evacuation among the women who sought PAC. Evacuation using MVA and misoprostol constituted 12% and 11% respectively. Other treatment offered included administration of antibiotics (97%), analgesics (78%) and intravenous fluids (67%).

Contrary findings were reported in a study in Kenya where manual and electrical vacuum aspiration was used to manage 65% of the cases (Mohamed et al., 2015). The remaining 35% were managed with other evacuation methods such as D&C/D&E, medical evacuation and digital evacuation. In another study by (Bankole et al., 2018), D&C was the commonest method used for uterine evacuation (49%), followed by digital curettage (23%) and MVA/EVA (14%).

2.5.2 Family Planning and Contraceptive Services

Post-abortion contraception includes counselling and provision of a method at the time of or immediately following an abortion and is an important component of quality PAC (Post Abortion Care (PAC) Consortium, 2015). Mohamed et al., (2015) indicated that approximately 70% of women who sought PAC in Kenya were not on any form of contraception before getting pregnant.

In populations with limited contraceptive use, women tend to resort to abortion as a means of birth control. The availability, consistent and correct use of contraceptives would significantly reduce maternal deaths because it reduces the utilization of unsafe abortion methods. Data analysed from 172 countries revealed that in one year, contraception and family planning prevented close to 272,000 maternal deaths and subsequently resulted in a 40% reduction in pregnancy-related deaths (Ahmed, Li, Liu, & Tsui, 2012).

Women requiring PAC, therefore, need family planning and contraception. During counselling on the choice of method, it is necessary to incorporate the reproductive wishes of the woman and partner (Huber et al., 2016). Women who are not given contraception following an abortion are at risk of getting pregnant again. Following an abortion, ovulation can occur as early as in six days compared with a month after childbirth. It is therefore important that contraception is provided on time. Also, women who have had an abortion are more likely to have a repeated abortion. Counselling and provision of contraceptive services within the period and location of emergency treatment for abortion-related complications, and before discharge would avert this cycle. Providing contraception following uterine evacuation can increase acceptance by the woman and improve the chances of modern contraception usage (Bigelow & Bryant, 2015; Zhu, Zhang, & Cheng, 2009).

A study in India revealed that almost 75% of women who received some form of PAC were not offered any form of contraception. This was attributed to the reason that unlike general contraception choice that was influenced by the woman or the couple, post-abortion contraception is primarily dependent on the service provider (Banerjee & Andersen, 2012). Similar results were seen in a study in Kinshasa where about 85% of women reporting for treatment for complications

post-abortion were not given any form of contraception counselling or contraception (Bankole et al., 2018). Different results were obtained in Guinea where out of 426 women who visited two health facilities for PAC, most of them (91%) after contraceptive counselling chose a method and about 97% were given the adopted method before discharge (Millimouno et al., 2020).

In cases when a facility is unable to provide contraception at the time of abortion-related treatment, this opportunity may be lost. Women may not return to that facility or seek similar services in another (Corbett & Turner, 2003). Also, if the facility is not the usual facility that a woman would go to for restock of her method, or if her method of choice is unavailable, providers need to link her to a referral site. Ideally, the woman should leave the treatment facility with an interim method pending a visit to the referral centre. This is possible when facilities have adequate infrastructure, and providers have the requisite knowledge about which methods are appropriate. (Ramarao et al., 2017).

2.5.3 Reproductive and Other Health Services

This component encourages the provision of all health services at the time women receive post-abortion care, ideally within the same facility. When a facility is unable to provide these services, it should have practicable mechanisms for making referrals either within it or to another one, and receive feedback from referral sites or providers (Berer, 2009).

Other services to be provided are:

i. education on prevention of sexually transmitted infections, including HIV screening, diagnosis and treatment;

ii. services addressing gender-based violence, diagnosis, counselling and treatment of infertility
iii. nutrition screening, education, and treatment of nutritional deficiencies
iv. hygiene education
v. screening, counselling and treatment for reproductive- related cancers (Ramarao et al., 2017)

2.5.4 Community and Service Provider Partnerships

This element of the model emphasizes community members' vital role in reducing unsafe abortion through the improvement of women's sexual and reproductive health. Community health, education and mobilization are key strategies to combat unsafe abortion, increase access to and improve quality of post-abortion care. The partnership requires a team of health workers, community leaders, advocacy groups and traditional leaders.

Components of this partnership include the following:

i. Prevention of unwanted pregnancy, unsafe abortions and birth spacing through education to increase contraceptive use
ii. Community members participating and contributing to decisions that have to do with availability, accessibility and cost of services
iii. Education about obstetric emergencies and appropriate care-seeking behaviours
iv. Mobilization of community resources, to enhance timely interventions for women
v. Increasing access to services for special groups of women, including adolescents, women with HIV, women who are victims of violence or genital mutilation, refugees, commercial sex workers, and women with cognitive or physical impairment

vi. Advocacy for holistic reproductive health policies and services that addresses community expectations, priorities and needs

vii. Sustainability planning (Corbett & Turner, 2003)

2.5.5 Counselling

Post-abortion care counselling offers women the opportunity to make choices about the method for uterine evacuation, contraception, express their feelings about the abortion, coping mechanisms, managing their fears and anxieties a well as helping them make informed decisions (Dennis, Blanchard, & Bessenaar, 2017). Counselling should focus on sex education, encourage safe sexual practices, provide information on the risks and complications of unsafe abortions and the contraception and family planning options available (Chudi, 2003).

The counselling provided further ensures that the PAC offered is not only curative but also preventive especially for women who need special care such as adolescents. It promotes mutual respect between the service provider and client, makes treatment more effective and less painful, and enhances women's understanding and use of other health services and improve their overall satisfaction with the healthcare provided. (Arambepola, Rajapaksa, & Galwaduge, 2014).

2.6 Challenges with the implementation of PAC services

Challenges that undermine the provision of quality PAC include the attitude of health professionals, accessibility and cost of the service, inadequate supplies, shortage of human resources and lack of provider training (Barot, 2014).

2.6.1 Shortage of human resource

Shortage of health personnel is common in low-income countries, particularly in remote areas where maternal mortality is high. (Chen et al., 2004). Most service providers are located in urban centres but women who live in rural and remote areas are more likely to present with abortion complications requiring quality PAC services (Kalu et al., 2012)

Implementation of task shifting/sharing -delegating tasks to mid-level health care providers has been identified as a means of improving productivity and efficiency within health systems and increasing accessibility of PAC to women (Berer, 2009; Dawson, Buchan, Duffield, Homer, & Wijewardena, 2013; Nabudere, Asiimwe, & Mijumbi, 2011).

2.6.2 Lack of resources

Apart from the issue of the lack of human resources, other barriers to PAC including non-availability of MVA instruments, sterilization equipment, misoprostol and contraceptives have been identified (Curtis, Huber, & Moss-Knight, 2010). The problems associated with non-availability of misoprostol in PAC are due to stringent drug policies limiting accessibility and affordability of the drug (Nabudere et al., 2011). Primary health centres which are the first point of call for women requiring emergency treatment for abortion complications lack uterine evacuation equipment, blood transfusion services and intravenous antibiotics for effective PAC (Riley et al., 2016).

Another example is, due to inadequate space and logistics, PAC and family planning are rarely provided in the same clinical unit. Midwives in a study conducted in Kenya complained about inadequate time and space to offer standardized PAC counselling, including contraceptive

counselling; neither were they equipped with resources to follow up discharged PAC patients. (Paul, Gemzell-Danielsson, Kiggundu, Namugenyi, & Klingberg-Allvin, 2014).

2.6.3 Lack of training

Although the concept of task sharing has been advocated as a means of improving accessibility and quality of PAC, training of other cadres of health workers such as midwives is lacking in many facilities. To improve the attitude of health workers and further improve the quality of PAC, it is essential to provide them with education and in-service training (Harries, Stinson, & Orner, 2009). Both doctors and midwives acknowledge the importance of training of other cadres of health workers to provide services especially uterine evacuation using either vacuum aspiration or misoprostol especially in a situation when doctors were unavailable (Paul et al., 2014). Findings from an Ethiopian study showed that service providers who had been properly trained were 2.5 times more likely to have a positive attitude towards provision of abortion services compared to those who had not been trained (Harries et al., 2009).

2.6.4 Service provider attitudes

The provision of post-abortion care is influenced by the attitude, beliefs and experience of health care providers (Kumi-Kyereme, Amu, & Darteh, 2017). Research in legally restrictive settings show that health service providers may be barriers to women seeking post abortion care services (Chiweshe & Macleod, 2017).

A study by Paul et al., (2014), showed that patronizing and judgmental behaviour was more common towards women who were suspected to have induced the abortion, and this had a negative impact on the quality of care. From the study, the service providers did not discriminate even in

situations where the women lacked funds. However, when the choice was given, a woman with spontaneous abortion was given priority over a woman with induced abortion, even in situations where their complications were equally severe. Atakro et al., (2019) conducted a study in the Ashanti Region to determine contributing factors to unsafe abortion. Some health professionals indicated that they did not know abortion was legal in the country under specific circumstances and were somewhat unwilling to provide post-abortion care to women who have induced abortion as they may be seen as accomplices.

Some providers of PAC also face stigmatization from their colleagues. Some are labelled as abortionists and in the case of the male providers, are said to be responsible for the pregnancy. The stigmatization prevents PAC providers from providing quality care and treating patients with courtesy which further prevents women from seeking PAC (Izugbara, Egesa, Kabiru, & Sidze, 2017).

Table 1: Summary of literature on Post Abortion Care in Africa

Reference	Country	Objectives	Research method	Thematic areas covered	Aspects not addressed
Keogh, Kimaro, & Muganyizi, 2015	Tanzania	-To provide estimates of the incidence of unsafe abortion in Tanzania -To determine safeness of method and resulting complications	Quantitative survey	-Incidence of unsafe abortion -Complications post abortion	-Treatment for complications -Family Planning and Contraception
Mohamed et al., 2015	Kenya	-To estimate the incidence of unsafe abortion in Kenya -To determine factors that influence unsafe abortion in Kenya	Quantitative survey	-Factors influencing unsafe abortion -Incidence of complications from unsafe abortion	-Treatment of complications -Family Planning and contraception
Adde, Darteh, Kumi-Kyereme, & Amu, 2018	Ghana	-To determine patient satisfaction with post abortion care services -To determine timeliness for treatment of complications	Qualitative	-Health personnel responsiveness to post abortion care -Treatment of complications	-Family planning and contraception

Osur, Orago, Mwanzo, & Bukusi, 2015	Kenya	-To trace the network that a woman consults when unwanted pregnancy happens -To find out how the people consulted influence the decision to terminate a pregnancy -To find out how a woman ends up terminating pregnancy using unsafe methods	Quantitative/Qualitative	-People who influence a woman's decision to terminate a pregnancy -Factors that influence a woman to resort to unsafe abortion	-Complications -Treatment of complications -Family planning and contraception
Kalu, Umeora, & Sunday-Adeoye, 2012	Nigeria	-To review PAC implementation in a Teaching hospital -To determine linkage of PAC with other reproductive health services	Quantitative	-Health provider knowledge and training on provision of PAC -Complications -Treatment for complications	
Hagos et al., 2018	Ethiopia	-To determine family planning utilization among women receiving abortion care -To determine family planning and contraception offered to women post abortion	Qualitative/ Quantitative	-Family planning and contraception	-Complications -Treatment of complications

Atakro et al., 2019	Ghana	-To determine factors that contribute to unsafe abortion methods -To determine common methods used to induce abortion	Quantitative	-Contributing factors to unsafe abortion -Methods used to induce abortion	Post Abortion Care
Oppong-Darko, Amponsa-Achiano, & Darj, 2017	Ghana	-To determine midwives' knowledge on the abortion law -To determine midwives' attitude towards providing abortion services	Qualitative	-Complications -Treatment	-Family planning and contraception
Cleeve, Nalwadda, Zadik, Sterner, & Klingberg-Allvin, 2019	Uganda	-To explore midwives' perspectives on post abortion care -To determine if midwives' religious beliefs affected quality of post abortion care	Qualitative	-Service provider attitudes towards post abortion care -Implications of abortion stigma on provision of post abortion care	-Complications -Treatment of complications -Family planning and contraception
Henshaw et al., 2008	Nigeria	-To determine severity of post abortion complications -To determine cost associated with treatment of abortion complications	Quantitative	-Complications -Treatment of complications	-Family planning and contraception

Oyeniran et al., 2019	Nigeria	-To find out the method used by women to induce an abortion -To determine the type of complications post abortion -To find out health seeking behavior for complications	Qualitative	-Choice of method to induce the abortion -Type of complications post abortion -Health seeking behavior for women seeking treatment for complications	-Family planning and contraception
Payne et al., 2013	Ghana	-To explore service provider perception on factors that determine complications post abortion -To determine association between timing of abortion and severity of complications	Qualitative	-Timing of abortion and severity of complications	-Family planning and contraception
Aniteye & Mayhew, 2011	Ghana	-To find out the experiences of women presenting with abortion induced complications -To determine family planning knowledge among women presenting with complications	Qualitative	-Experiences of women with abortion induced complications -Contraception knowledge	-Treatment

Bankole et al., 2018	Zaire	-To determine the severity of complications among post abortion patients -To determine management of post abortion complications	Quantitative/Qualitative	-Type and severity of complications reported -Management of complications	-Family Planning and Contraception
Riley, Madzyire, Owolabi, Sully, & Chipato, 2016	Zimbabwe	-To determine health systems' capability in provision of PAC -To find out the available logistics for PAC provision -To determine the type of PAC services offered in selected health facilities	Quantitative/Qualitative	-Quality of PAC offered -	-Complications -Family planning and contraception
Madziyire et al., 2018	Zimbabwe	-To determine the severity of complications among post abortion patients -To determine management of post abortion complications	Quantitative/Qualitative	- Complications post abortion -Management of complications	--Family planning and contraception

Millimouno et al., 2020	Guinea	-To assess patient satisfaction with PAC services in two health facilities -To determine waiting time between reporting to the hospital and being attended to -To assess satisfaction of management of pain by service providers	Quantitative/Qualitative	-Quality of post abortion care	-Family planning and contraception
Paul, Gemzell-Danielsson, Kiggundu, Namugenyi, & Klingberg-Allvin, 2014	Uganda	-To determine barriers to PAC -To determine facilitators of PAC	Qualitative	-Factors promoting and inhibiting PAC services	-Treatment of complications -Family planning and contraception
Chiweshe & Macleod, 2017	Zimbabwe	-To determine health care providers' attitude towards PAC -To determine how often contraception is offered to PAC patients	Qualitative	-Service provider attitude towards PAC	-Treatment for complications

The table above represents a summary of studies in the literature review on abortion and PAC in Africa. Determinants of induced abortion were age, marital status, religion, level of education and wealth index. Younger women were more likely to induce abortion using unsafe means compared to those in the older age group.

Also, women with a lower level of education, single and ranked middle or low in the wealth index were likely to induce abortion. Women with these characteristics were also more likely to have complications requiring treatment. Factors influencing a woman's decision to induce an abortion include young age, lack of partner support and financial constraints.

Methods used to induce abortions were generally unsafe. Some examples were insertion of substances into the vagina, ingestion of herbs and use of unprescribed medication. Most of the studies focused on unsafe abortion complications with little emphasis on family planning and contraception counselling. Common complications reported in these studies include pain, bleeding, incomplete abortion and infection.

Health care providers despite their religious beliefs were willing to provide PAC services to reduce maternal mortality and future unwanted pregnancies. Challenges with PAC services include minimal resources, lack of service provider training and attitude of service providers.

CHAPTER THREE

METHODOLOGY

3.1 Study design

The study is cross-sectional with analysis of data extracted from the 2017 Ghana Maternal Health Survey (GMHS) conducted by the Ghana Statistical Service (GSS). The survey data was collected using a questionnaire based on the Demographic Health Survey (DHS) model. The 2017 Maternal Health Survey was used because it is the most current survey on women's reproductive health. It also included all the regions of Ghana at the time making it nationally representative Three different sets of questionnaires were used for the GMHS: household, women and verbal autopsy questionnaires. The women's questionnaire was used to interview all women in the reproductive age 15-49 years from the selected households. For this study, the responses from the women's questionnaire was used. The focus was on all women aged 15-49 years who had had an abortion within the five years (2012-2017) preceding the survey, the methods and providers of abortion services. It also focused on the complications post-abortion, the treatment they received and whether they received contraception counselling after the abortion.

3.2 Study area

Ghana at the time of the survey had ten regions: Greater Accra, Eastern, Volta, Central, Western, Ashanti, Brong-Ahafo, Northern, Upper East and Upper West. Since the 2017 Maternal Health Survey was a nationwide survey with representation from all these ten administrative regions, this study covered the same geographical area.

The sampling frame for the survey was based on a two-stage design. The first stage consisted of mapping of 900 Enumeration Areas (EAs) with 466 in the urban and 434 in rural areas. The Enumeration Areas used in the survey were based on the 2010 Ghana Population and Housing Census. Stage two involved a systematic sampling of the households obtained from each cluster. Over 27,000 households were mapped out with 26,324 interviewed, out of which 25,304 women were eligible. Out of this, 25,062 completed the interview resulting in a 99% response rate.

3.3 Study population

The study population were women in the reproductive age between 15-49 years who had had an abortion within the five years preceding the survey.

3.3.1 Inclusion criteria

All women in the reproductive age who responded to have terminated a pregnancy five years preceding the survey

3.3.2 Exclusion criteria

Women in the reproductive age who had not had an abortion within the five years preceding the survey.

3.4 Women's questionnaire

The questionnaire collected information on women in the reproductive age group (15-49 years). Questions were based on these selected topics:

1. Socio-demographic characteristics: age, level of education, marital status, wealth index
2. Pregnancy history: number, outcome; live, stillbirth, abortion or miscarriage and the timing
3. Family planning and contraception: knowledge, current use and service provider
4. Care for most recent live birth or stillbirth: ante-natal, delivery and postnatal care. It also looks at complications experienced, and treatment sought at each stage of the pregnancy
5. Abortion: number, knowledge on abortion law, year of most recent abortion, method and provider, complications and post-abortion care
6. Miscarriage: perceived cause, complications, care after miscarriage
7. Marriage and sexual intercourse: age at first marriage, number of unions and age at sexual debut.

3.5 Data extraction

Although the survey involved 25,062 respondents, only data for women who reported to have terminated a pregnancy during the specified period was identified and extracted. Based on the variables of interest, a total of 1880 respondents were extracted from the dataset. The raw dataset downloaded was originally in Stata format. The data downloaded had undergone primary processing and cleaning through checks for inconsistencies and outliers on the field. Secondary editing had also been conducted through use of the CSPro software resolving further any missing values and outliers.

3.6 Study variables

There are two dependent variables; post-abortion care and complications were the primary and secondary outcome variable respectively. The two outcome variables were treated as separate variables. The components of post-abortion care in this study were treatment and contraceptive

counselling. Complications included bleeding, pain, fever, injury or perforation and foul-smelling vaginal discharge. Independent variables were the sociodemographic factors, service provider, method of termination and place of abortion.

3.6.1 Dependent variables

Whether or not an individual received some form of treatment was measured on the dichotomous response (yes or no) to the question "Did you get any treatment for the health problems you had because of the abortion?". 'Yes' and 'No' were scored as '1' and '0' respectively. The specific kind of treatment listed as antibiotics, blood transfusion, operation and other treatment were coded as '1', '2', '3' and '4' respectively.

Contraceptive counselling was measured as a binary response (yes or no) to the question "After this abortion, did a doctor or health worker give you a method of contraception, prescribe a method of contraception or refer you to a family planning clinic?"

Each complication was measured on the dichotomous response; 'yes' and 'no' and scored as '1' and '0' respectively. These complications were bleeding, pain, fever, injury or perforation and foul-smelling vaginal discharge.

3.6.2 Independent variables

- **Age**: this was a categorical variable and documented as age group in five-year intervals
- **Level of education**: this was considered as no education and attainment of education. For those that had attended school, further grouping was done based on the highest level of education attained.
- **Marital status:** considered as currently in union, co-habiting and not in any union

- **Wealth index:** ranked from lowest, second, middle, fourth and highest.
- Regions: these were the ten administrative regions at the time of the survery; Greater Accra, Western, Centrao, Volta, Eastern, Ashanti, Brong Ahafo, Northern, Upper East and Upper West regions.
- **Place of abortion**: considered as safe and unsafe location. Safe locations were health facility and reproductive health center. Unsafe locations were, pharmacy/chemist/drugstore and home
- **Provider of a method of abortion**: health workers such as doctors and midwives were considered as safe providers. Pharmacist/chemical seller, traditional practitioner, TBA, relative/friend were unsafe providers.
- **Method of termination**: this was grouped into unsafe and safe methods. Safe methods were vacuum aspiration, D&E/ D&C and Cytotec/medabon tablets. Unsafe methods were ingestion of herbal concoction and insertion of substances in the vagina.
- **Insurance coverage:** based on the dichotomous response of yes and no
- Place of residence: considered as urban or rural

3.7 Data analysis

Data was analyzed using Stata software (Stata Corp V.15, Texas, USA). Data on categorical variables was analysed using descriptive statistics and summarized into frequencies, percentages and proportions.

Chi-square test and logistic regression was used to assess the association between the independent and the dependent variables. The Rao-Scott chi square test which is an improvement of the Pearson

chi square test for survey data analysis was used in this study. All statistical analyses was carried out at 95% confidence level with the respective alpha level at 0.05.

3.8 Ethical clearance

Ethical clearance was not required for the study as it used secondary data obtained from the Maternal Health Survey. Ethical issues had been duly addressed by the Ghana Statistical Service prior to the survey.

Permission and access to the 2017 Maternal Health Survey data was sought from the proprietary owners (Ghana Statistical Service). Permission was granted after a request was submitted online via the Demographic Health Survey website indicating the dissertation title, objectives and proposed analysis was submitted. The dataset relevant to the study was downloaded from the Demographic Health Survey(DHS) website. The dataset was kept confidential after download on a password protected computer.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of study participants

A total of 1,880 women interviewed for the Ghana Maternal Health Survey in 2017 had had an abortion in the five-years preceding the survey (from 2012 to 2017 inclusive). The mean age of the women included in this study was 27.7 SD +/- 6.7 years. More than half of the women were in the age group 20-29 years (58.2%, n=1095/1880). Less than a tenth had no formal education (8.6%, n=162/1880) and 7.3% (n=136/1880) had attained education up to the tertiary level. Over a fifth were currently married (23.3%, n=438/1880), 36.3% (n=682/1880) were living with a man whilst 40.5% (n=761/1880) were not in a union. Majority of the women lived in urban settlements (65.4%, n=1230/1880). Approximately 13.6% (n=256/1880) had used multiple steps to end their last abortion (Table 2).

Table 2: Socio-demographic characteristics of women who had experienced abortion from 2012-2017

Variables	Frequency (N=1,880)	Percentage
Age group (mean ± SD)	27.7 ± 6.7	
15-19	145	7.7
20-29	1095	58.2
30-39	522	27.8
40-49	118	6.3
Highest educational level		
None	162	8.6
Primary	298	15.9
JHS/middle	874	46.5
SHS/SSS/VOC./Tech.	410	21.8
Tertiary	136	7.3
Religion		
Christian	1705	90.7
Islam	127	6.8
No religion	48	2.5
Ethnicity		
Akan	1133	60.3
Ga/Dangme	171	9.1

Ewe	285	15.2
Mole-Dagbani	144	7.6
Guan/Grusi/Gruma/others	148	7.9
Currently in union		
Yes, current married	438	23.3
Yes, living with partner	682	36.3
No, not in a union	761	40.5
Ever given birth		
Yes	1341	71.3
No	539	28.7
Covered by health insurance		
Yes	771	41.0
No	1109	59.0
Number of abortions		
Once	1269	67.5
Twice	456	24.2
Three or more	155	8.3
Multiple steps to end pregnancy		
Yes	256	13.6
No	1624	86.4
Wealth index quintile		
Lowest	101	5.4
Second	312	16.6
Middle	455	24.2
Fourth	548	29.2
Highest	464	24.7
Place of residence		
Urban	1230	65.4
Rural	650	34.6
Region		
Western	316	16.8
Central	157	8.3
Greater Accra	436	23.2
Volta	123	6.6
Eastern	157	8.4
Ashanti	452	24.1
Brong Ahafo	186	9.9
Northern	22	1.2
Upper East	13	0.7
Upper West	18	1.0

4.2 Prevalence of unsafe abortion among women in Ghana

The prevalence of unsafe abortion by method was 27.0% (n=508/1880), by provider, was 57.3% (n=1076/1880) and by location was 58.9% (n=1107/1880). The prevalence of unsafe abortion by at least one unsafe method, provider or location among the women was 61.7% (n=1159/1880). (Fig. 2)

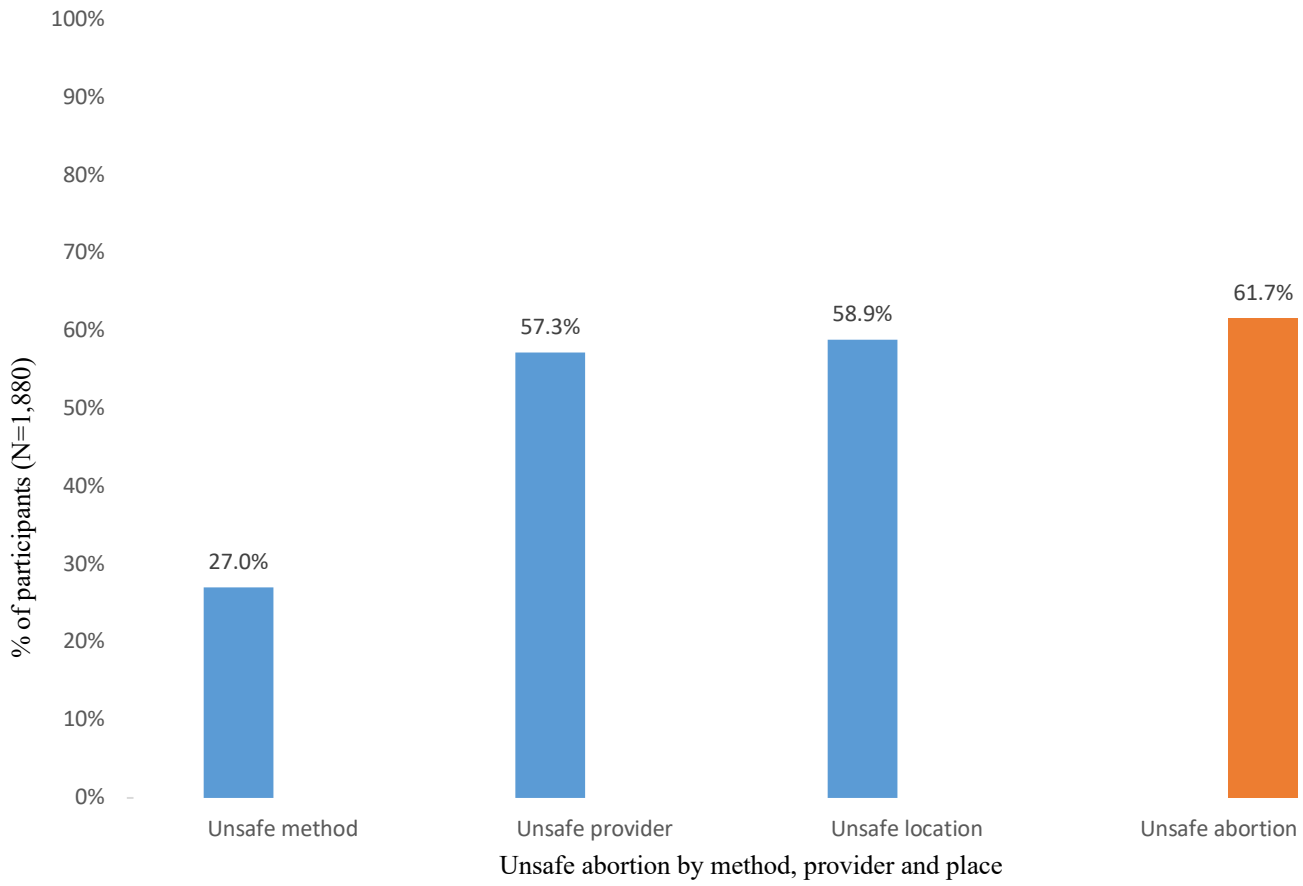

Fig. 2: Prevalence of unsafe abortion by method, provider and location

4.3 Methods, providers and locations for most recent abortion

Table 3 shows the frequency and percentage of details of the various methods, providers and locations used for the last abortion among the women. The commonest safe method used to induce an abortion was use of misoprostol and medabon tablets. Those who used unsafe methods used excessive physical activity. Most of the women resorted to unsafe providers and locations to induce an abortion compared to the safe ones.

Table 3: Detailed description of the methods, providers and locations for the last abortion

Variables	Frequency	Percentage
Methods		
Safe methods		
Cytotec tablets (misoprostol)	332	17.6
Mifepristone + misoprostol (medabon, etc.)	353	18.8
IV oxytocin	11	0.6
D&C / D&E	487	25.9
Vacuum aspiration	141	7.5
Injection in abdomen (saline instillation)	14	0.8
Catheter	1	0.1
Other injection	33	1.8
Unsafe methods		
Drank milk/coffee/alcohol/other liquid	49	2.6
Drank herbal concoction	78	4.2
Drank other home remedies	10	0.5
Used any herbal enema	37	2.0
Inserted herbs/object/other substance in	31	1.6
Excessive physical activity	0	0.0
Tablets (exact kind unknown)	273	14.5
Other	30	1.6
Providers		
Safe providers		
Doctor	681	36.2
Nurse /midwife	119	6.3
Community health officer/nurse	5	0.3
Unsafe providers		
Pharmacist /chemical seller	604	32.1
Traditional birth attendance	4	0.2
Community health volunteer	1	0.1
Relative /friend	223	11.9
Traditional practitioner	37	2.0
No one	188	10.0
Other	19	1.0
Location		
Safe locations		
Government hospital	303	16.1
Government health center/clinic	64	3.4
Government health post/CHPs	10	0.5
Private hospital/clinic	364	19.4
Private FP/PPAG clinic	20	1.1
Private mobile clinic/outreach	9	0.5
Private maternity home	4	0.2
Other private medical sector	7	0.4
Unsafe locations		
Pharmacy/chemist/drug store	408	21.9
Respondent's home	594	31.6
Other home	80	4.3
TBA's home	2	0.1
Other	17	0.9

4.4 Prevalence of unsafe abortion by socio-demographic characteristics

Table 4 shows the prevalence of unsafe abortion among women distributed across the various socio-demographic characteristics. The Rao Scott's chi-square test was used to assess the association between the socio-demographic characteristics and unsafe abortion among women.

The prevalence of unsafe abortion was highest among women in the younger age groups – 15-19 years (69.6%, n=101/145), 20-29 years (64.1%, n=702/1095), 30-39 years (57.6%, n=301/522) and 40-49 years (46.9%, n=55/118). There was a significant association between the age group of the women and the prevalence of unsafe abortion among women (χ^2= 3.73, p = 0.011). The prevalence of unsafe abortion was higher among women with lower level of education. There was a significant association between the highest level of education and the prevalence of unsafe abortion (χ^2=4.42, p=0.002). (Table 3)

Unsafe abortion was lower among married women (53.3%, n=233/438) compared to women who were cohabiting (62.4%, n=425/682) and those who were single (65.8%, n=501/761). The chi square test shows a significant association between the marital status of the women and the prevalence of unsafe abortion among women (χ^2=5.26, p=0.005).

The wealth quintile (χ^2=6.58, p<0.001) and region of residence (χ^2=3.16, p=0.003) were also significantly associated with the prevalence of unsafe abortion among women in Ghana. (Table 3)

Table 4: Prevalence of unsafe abortion among women in Ghana

		Prevalence of unsafe abortion by methods, provider and place					
	Total	Unsafe method	Unsafe provider	Unsafe location	Unsafe abortion		
						Rao Scott's	
Variables	**N**	**n (%)**	**n (%)**	**n (%)**	**n (%)**	**chi-square**	**P-value**
Total	1880	508 (27.0)	1076 (57.3)	1107 (58.9)	1159 (61.7)		
Age group						3.73	0.011*
15-19	145	40 (27.8)	90 (61.9)	92 (63.3)	101 (69.6)		
20-29	1095	285 (26.1)	659 (60.2)	675 (61.7)	702 (64.1)		
30-39	522	152 (29.1)	275 (52.7)	285 (54.7)	301 (57.6)		
40-49	118	31 (25.9)	52 (44.4)	55 (46.8)	55 (46.9)		
Highest educational level						4.42	0.002**
None	162	67 (41.3)	99 (60.9)	101 (62.1)	103 (63.8)		
Primary	298	106 (35.5)	184 (61.8)	191 (64.1)	206 (69.0)		
JHS/middle	874	248 (28.3)	524 (60.0)	536 (61.4)	555 (63.6)		
SHS/SSS/VOC./Tech.	410	77 (18.9)	215 (52.3)	225 (54.8)	237 (57.8)		
Tertiary	136	10 (7.6)	55 (40.3)	55 (40.2)	58 (42.3)		
Religion						0.02	0.980
Christian	1705	470 (27.6)	976 (57.2)	1002 (58.8)	1051 (61.7)		
Islam	127	25 (19.7)	70 (55.2)	75 (59.0)	78 (61.2)		
No religion	48	13 (26.9)	30 (63.3)	30 (63.3)	30 (63.3)		
Ethnicity						1.74	0.142
Akan	1133	304 (26.8)	672 (59.3)	684 (60.4)	711 (62.8)		
Ga/Dangme	171	47 (27.3)	106 (61.9)	112 (65.7)	114 (66.8)		
Ewe	285	71 (25.0)	128 (44.8)	135 (47.2)	151 (53.0)		
Mole-Dagbani	144	45 (31.1)	86 (60.1)	88 (61.2)	93 (64.4)		
Guan/Grusi/Gruma/others	148	42 (28.2)	84 (57.1)	89 (60.3)	91 (61.2)		
Currently in union						5.26	0.005**
Yes, current married	438	91 (20.8)	214 (48.9)	225 (51.3)	233 (53.3)		
Yes, living with partner	682	224 (32.8)	395 (58.0)	407 (59.6)	425 (62.4)		
No, not in a union	761	194 (25.5)	467 (61.4)	476 (62.6)	501 (65.8)		
Ever given birth						2.27	0.132
Yes	1341	382 (28.5)	753 (56.2)	772 (57.5)	807 (60.2)		
No	539	126 (23.3)	323 (60.0)	336 (62.3)	352 (65.3)		

Covered by health insurance						11.70	<0.001***
Yes	771	170 (22.1)	395 (51.3)	407 (52.8)	425 (55.1)		
No	1109	338 (30.5)	681 (61.4)	701 (63.2)	735 (66.2)		
Number of abortions						1.09	0.336
Once	1269	369 (29.1)	745 (58.8)	762 (60.0)	801 (63.1)		
Twice	456	99 (21.7)	247 (54.2)	258 (56.7)	267 (58.7)		
Three or more	155	40 (26.0)	84 (53.8)	88 (56.4)	91 (58.6)		
Multiple steps to end pregnancy						1.81	0.180
Yes	256	69 (27.0)	123 (48.0)	127 (49.5)	145 (56.6)		
No	1624	439 (27.0)	953 (58.7)	981 (60.4)	1014 (62.5)		
Wealth index quintile						6.58	<0.001***
Lowest	101	37 (36.8)	51 (50.6)	53 (52.3)	55 (54.4)		
Second	312	137 (44.0)	209 (67.0)	211 (67.5)	221 (70.9)		
Middle	455	128 (28.2)	291 (64.0)	300 (66.0)	311 (68.5)		
Fourth	548	119 (21.7)	306 (56.0)	318 (58.0)	335 (61.1)		
Highest	464	87 (18.9)	219 (47.2)	226 (48.7)	237 (51.0)		
Place of residence						0.21	0.647
Urban	1230	295 (24.0)	689 (56.0)	714 (58.1)	752 (61.2)		
Rural	650	213 (32.78)	387 (59.54)	393 (60.5)	407 (62.6)		
Region						3.16	0.003**
Western	316	101 (31.9)	183 (58.1)	188 (59.4)	195 (61.8)		
Central	157	38 (24.1)	103 (65.9)	109 (69.6)	112 (71.7)		
Greater Accra	436	91 (20.8)	208 (47.8)	223 (51.1)	240 (55.0)		
Volta	123	37 (30.2)	59 (48.1)	61 (49.6)	67 (54.4)		
Eastern	157	36 (22.9)	80 (50.8)	82 (52.2)	82 (52.2)		
Ashanti	452	130 (28.7)	300 (66.3)	302 (66.8)	312 (69.0)		
Brong Ahafo	186	60 (32.1)	117 (62.8)	116 (62.3)	122 (65.6)		
Northern	22	5 (23.7)	9 (42.8)	10 (45.8)	10 (47.9)		
Upper East	13	5 (39.8)	6 (46.8)	7 (52.4)	8 (60.3)		
Upper West	18	6 (31.7)	10 (55.8)	10 (55.8)	11 (59.3)		

P-value Notation: *: p<0.05. **: p<0.01. ***: p<0.001.

4.5 Prevalence of complications in the first month after abortion

Of the 1,880 women who last had abortion in the five years preceding the survey, bleeding in the first month after the abortion was prevalent among 8.3% (n=156/1880) of the women, pain was prevalent among 11.4% (n=214/1880), fever was 5.2% (n=97/1880), injury/perforation was 0.5% (n=9/1880), foul smelling vaginal discharge was 4.6% (n=87/1880) and other complications was prevalent among 4.1% (n=76/1880) of the women. Overall, the prevalence of at least one form of complication a month after the abortion was 14.3% (n=269/1880). (Fig. 3)

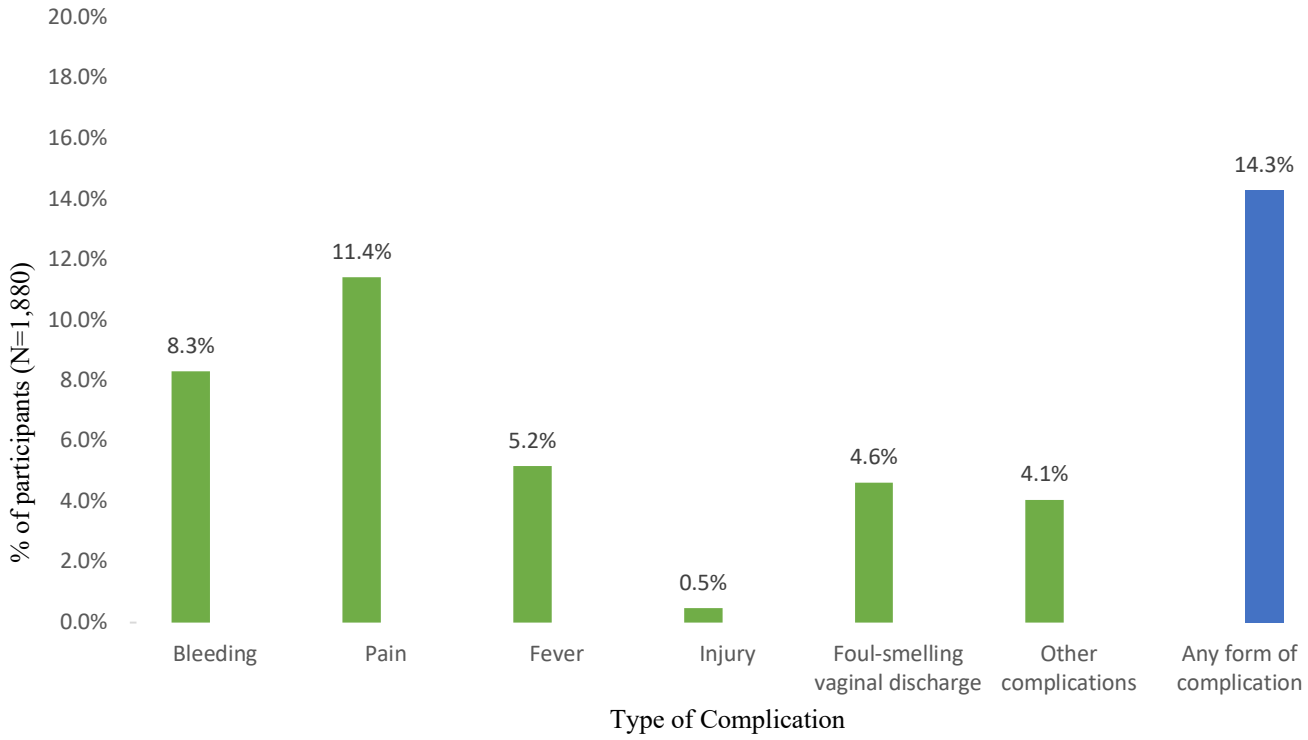

Fig. 3: Prevalence of complications within the first month after abortion

Table 5: Logistic regression model of factors associated with complications within a month after abortion

	Complications within a month after abortion			
	Unadjusted model		Adjusted model	
Variables	**cOR [95% CI]**	**P-value**	**aOR [95% CI]**	**P-value**
Age group				
15-19	2.83 [0.88-9.10]	0.081	2.50 [0.72-8.63]	0.148
20-29	3.23 [1.16-9.03]	0.025*	2.72 [0.92-8.10]	0.072
30-39	2.63 [0.87-7.93]	0.087	2.35 [0.74-7.49]	0.147
40-49	1.00 [reference]		1.00 [reference]	
Highest educational level				
None	0.75 [0.26-2.15]	0.593	0.92 [0.30-2.77]	0.879
Primary	0.71 [0.28-1.80]	0.467	0.78 [0.27-2.22]	0.635
JHS/middle	0.93 [0.42-2.07]	0.854	1.03 [0.42-2.56]	0.946
SHS/SSS/VOC./Tech.	1.42 [0.61-3.28]	0.415	1.38 [0.56-3.43]	0.482
Tertiary	1.00 [reference]		1.00 [reference]	
Religion				
Christian	1.00 [reference]		1.00 [reference]	
Islam	1.50 [0.93-2.41]	0.092	2.21 [1.15-4.23]	0.017*
No religion	0.95 [0.21-4.22]	0.943	0.98 [0.27-3.61]	0.979
Ethnicity				
Akan	1.00 [reference]		1.00 [reference]	
Ga/Dangme	0.67 [0.31-1.44]	0.302	0.71 [0.30-1.70]	0.444
Ewe	1.53 [0.96-2.43]	0.075	1.89 [1.08-3.33]	0.027*
Mole-Dagbani	1.06 [0.60-1.86]	0.842	0.71 [0.29-1.76]	0.458
Guan/Grusi/Gruma/others	0.77 [0.43-1.37]	0.374	0.53 [0.26-1.08]	0.080
Currently in union				
Yes, currently married	0.87 [0.53-1.43]	0.583	1.04 [0.57-1.92]	0.891
Yes, living with partner	1.01 [0.66-1.56]	0.955	1.11 [0.71-1.73]	0.649
No, not in a union	1.00 [reference]		1.00 [reference]	
Ever given birth				
Yes	0.65 [0.45-0.95]	0.027*	0.70 [0.46-1.07]	0.103
No	1.00 [reference]		1.00 [reference]	
Covered by health insurance				
Yes	1.48 [1.01-2.15]	0.042*	1.48 [0.96-2.27]	0.076
No	1.00 [0.00-0.00]		1.00 [reference]	
Number of abortions				
Once	0.71 [0.39-1.26]	0.241	0.61 [0.34-1.12]	0.111
Twice	0.71 [0.35-1.42]	0.329	0.66 [0.33-1.31]	0.234
Three or more	1.00 [reference]		1.00 [reference]	
Multiple steps to end pregnancy				
Yes	1.52 [0.99-2.34]	0.055	1.50 [0.96-2.35]	0.073
No	1.00 [reference]		1.00 [reference]	
Wealth index quintile				
Lowest	1.00 [reference]		1.00 [reference]	
Second	1.04 [0.50-2.17]	0.914	1.09 [0.48-2.51]	0.831
Middle	0.97 [0.46-2.04]	0.941	1.03 [0.44-2.43]	0.942
Fourth	0.99 [0.50-1.96]	0.972	0.94 [0.40-2.21]	0.894
Highest	1.05 [0.51-2.14]	0.904	0.98 [0.38-2.51]	0.959

Place of residence				
Urban	1.00 [reference]		1.00 [reference]	
Rural	1.17 [0.81-1.68]	0.397	1.23 [0.77-1.96]	0.393
Region				
Western	1.17 [0.57-2.37]	0.670	1.43 [0.61-3.33]	0.406
Central	0.94 [0.39-2.26]	0.895	1.30 [0.49-3.47]	0.601
Greater	1.09 [0.52-2.28]	0.822	1.69 [0.74-3.86]	0.212
Volta	1.00 [reference]		1.00 [reference]	
Eastern	1.61 [0.75-3.44]	0.219	1.89 [0.81-4.41]	0.138
Ashanti	1.19 [0.56-2.51]	0.649	1.66 [0.65-4.21]	0.287
Brong Ahafo	1.01 [0.48-2.12]	0.986	1.24 [0.51-3.01]	0.640
Northern	1.73 [0.58-5.14]	0.320	2.02 [0.53-7.70]	0.301
Upper East	0.89 [0.33-2.45]	0.828	1.25 [0.33-4.64]	0.743
Upper West	2.15 [0.85-5.41]	0.104	2.63 [0.75-9.18]	0.129
Type of abortion				
Safe abortion	1.00 [reference]		1.00 [reference]	
Unsafe abortion	0.95 [0.65-1.38]	0.791	1.12 [0.75-1.67]	0.578
Receipt of FPC				
No	1.00 [reference]		1.00 [reference]	
Yes	1.52 [0.99-2.33]	0.057	1.42 [0.90-2.24]	0.132

cOR: crude odds ratio. aOR: adjusted odds ratio. CI: confidence interval.

P-value notation: *: p<0.05. **: p<0.01. ***: p<0.001.

Logistic regression model of factors associated with complications within a month after abortion

The simple and multiple logistic regression model was used to assess respectively, the crude and adjusted odds ratios of the socio-demographic factors associated with complications within the first month after abortion (Table 5).

From the unadjusted model, there was 3 times increase odds of complications within the first month among women aged 20-29 years (cOR: 3.23, 95% CI: 1.16-9.03, p=0.025) compared to women in the age group 40-49 years. However, there odds of complication a month after abortion was not significantly different across the age groups in the adjusted logistic regression model.

From the unadjusted logistic regression model, there was a 35% decrease in the odds of complication a month after abortion among women who had ever given birth (cOR: 0.65, 95% CI: 0.45-0.95, p=0.042) and a 48% increase in odds of complications after abortion among women

covered by health insurance (cOR: 1.48, 95% CI: 1.01-2.15, p=0.042). However, these estimates were not significant from the adjusted model (Table 5).

4.6 Treatment received for complications

Over half (57.5%, n=155/269) of the 269 women who experienced some form of complications received treatment. Treatments included surgery (5.2%, n=14/269), blood transfusion (1.5%, n=4/269), antibiotics (41.5%, n=119/269) and other treatments (21.1%, n=57/269) (Fig.)

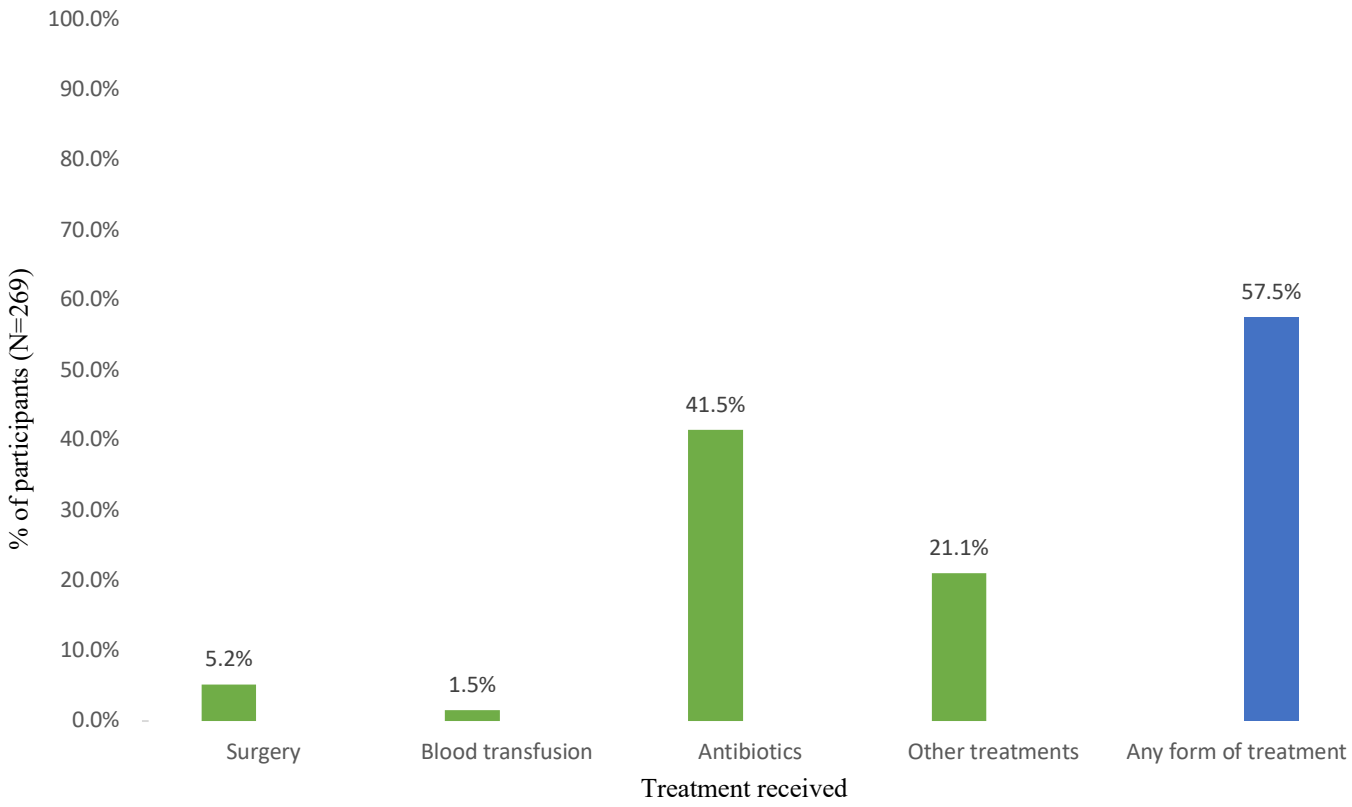

Fig. 4: Treatment received for abortion complications

Table 6: Logistic regression model of factors associated with treatment after abortion complications

	Receipts of treatment due to complications			
	Unadjusted model		Adjusted model	
Variables	**cOR [95% CI]**	**P-value**	**aOR [95% CI]**	**P-value**
Age group				
15-19	1.00 [reference]		1.00 [reference]	
20-29	0.69 [0.22-2.17]	0.526	0.77 [0.18-3.33]	0.726
30-39	1.88 [0.47-7.62]	0.372	2.10 [0.31-14.42]	0.448
40-49	2.54 [0.22-28.94]	0.449	2.51 [0.26-24.33]	0.424
Highest educational level				
None	1.71 [0.23-12.92]	0.601	1.32 [0.13-13.07]	0.811
Primary	1.38 [0.22-8.61]	0.729	1.73 [0.27-11.02]	0.558
JHS/middle	1.23 [0.22-7.03]	0.812	1.29 [0.20-8.23]	0.785
SHS/SSS/VOC./Tech.	0.75 [0.14-3.97]	0.732	1.18 [0.20-7.06]	0.855
Tertiary	1.00 [reference]		1.00 [reference]	
Religion				
Christian	1.00 [reference]		1.00 [reference]	
Non-Christians	1.23 [0.47-3.20]	0.670	0.88 [0.27-2.84]	0.824
Ethnicity				
Akan	1.33 [0.32-5.56]	0.697	1.07 [0.20-5.79]	0.939
Ga/Dangme	1.00 [reference]		1.00 [reference]	
Ewe	3.10 [0.61-15.85]	0.173	3.20 [0.65-15.79]	0.153
Mole-Dagbani	1.69 [0.31-9.12]	0.540	1.94 [0.23-16.28]	0.541
Guan/Grusi/Gruma/others	1.98 [0.37-10.55]	0.419	2.49 [0.26-24.18]	0.429
Currently in union				
Yes, currently married	1.00 [reference]		1.00 [reference]	
Yes, living with partner	0.48 [0.19-1.26]	0.135	0.44 [0.16-1.20]	0.108
No, not in a union	0.51 [0.20-1.28]	0.150	0.65 [0.24-1.80]	0.405
Ever given birth				
Yes	1.64 [0.85-3.16]	0.142	1.06 [0.44-2.55]	0.894
No	1.00 [reference]		1.00 [reference]	
Covered by health insurance				
Yes	0.85 [0.44-1.64]	0.629	0.80 [0.38-1.69]	0.552
No	1.00 [reference]		1.00 [reference]	
Number of abortions				
Once	1.00 [reference]		1.00 [reference]	
Twice	1.10 [0.51-2.39]	0.808	0.80 [0.32-1.99]	0.630
Three or more	0.78 [0.26-2.34]	0.660	0.30 [0.08-1.21]	0.091
Multiple steps to end pregnancy				
Yes	0.84 [0.37-1.89]	0.667	0.75 [0.33-1.68]	0.479
No	1.00 [reference]		1.00 [reference]	

Wealth index quintile				
Lowest	1.00 [reference]		1.00 [reference]	
Second	1.11 [0.28-4.38]	0.881	1.65 [0.29-9.53]	0.571
Middle	2.07 [0.55-7.81]	0.282	3.44 [0.59-20.10]	0.168
Fourth	1.25 [0.33-4.70]	0.739	1.87 [0.29-11.96]	0.506
Highest	2.47 [0.59-10.46]	0.216	3.80 [0.59-24.67]	0.160
Place of residence				
Urban	1.00 [reference]		1.00 [reference]	
Rural	0.94 [0.46-1.90]	0.855	1.11 [0.44-2.83]	0.820
Region				
Western	1.00 [reference]		1.00 [reference]	
Central	0.82 [0.24-2.85]	0.759	0.68 [0.17-2.69]	0.580
Greater Accra	0.91 [0.27-3.14]	0.883	0.36 [0.07-1.93]	0.229
Volta	3.67 [0.50-27.00]	0.200	1.22 [0.13-11.57]	0.863
Eastern	1.22 [0.34-4.39]	0.758	0.97 [0.22-4.33]	0.963
Ashanti	1.23 [0.42-3.58]	0.706	0.90 [0.26-3.07]	0.860
Brong Ahafo	0.37 [0.10-1.35]	0.131	0.30 [0.06-1.40]	0.125
Northern	0.71 [0.08-6.25]	0.759	0.28 [0.02-3.36]	0.316
Upper East	0.37 [0.04-3.51]	0.388	0.16 [0.01-2.55]	0.191
Upper West	0.45 [0.10-1.93]	0.278	0.35 [0.03-3.51]	0.367
Type of abortion				
Safe abortion			1.00 [reference]	
Unsafe abortion	0.66 [0.35-1.26]	0.208	0.77 [0.38-1.59]	0.484
Receipt of FPC				
No	1.00 [reference]		1.00 [reference]	
Yes	0.88 [0.38-2.05]	0.774	1.00 [0.43-2.32]	0.991

cOR: crude odds ratio. aOR: adjusted odds ratio. CI: confidence interval.

P-value notation: *: p<0.05. **: p<0.01. ***: p<0.001.

Logistic regression model of factors associated with treatment after abortion complications

The simple and multiple logistic regression model were used to assess respectively, the crude and adjusted odds ratios of the socio-demographic factors associated with treatment after abortion complications within the first month. From both the crude and adjusted model, none of the factors showed a significant odds of treatment after abortion complications within the first month of abortion (Table 6).

4.7 Prevalence of family planning and contraceptive counselling after abortion

Among the 1,880 women who last had an abortion 5 years preceding the survey (2012-2017), 19.7% (371/1880) received family planning and contraceptive counselling (FPC) after their abortion. Less than a tenth of the women were given a family planning or contraceptive method (6.9%, n=130/1880), 11.5% (n=216/1880) were prescribed a method and 1.2% (n=23/1880) were given a referral. (Fig. 4).

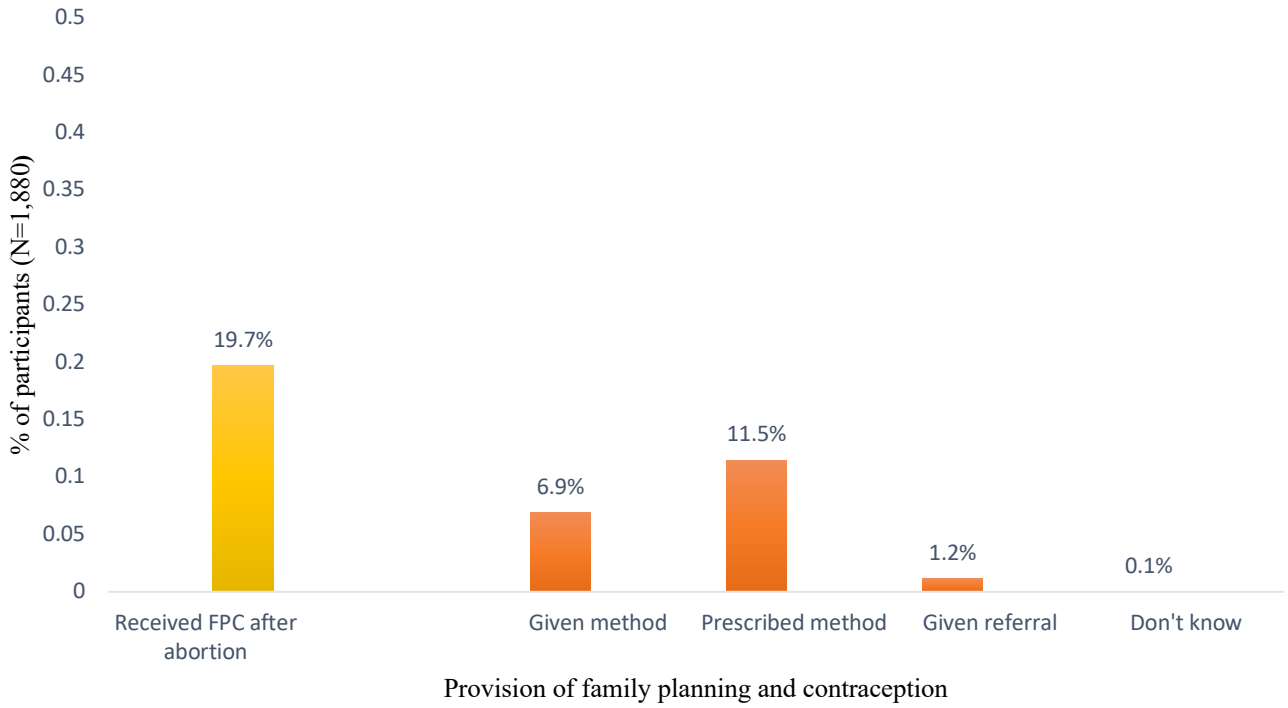

Fig. 5: Prevalence of family planning and contraceptive counselling after abortion

4.8Association between safeness of abortion and prevalence of family planning/contraceptive counselling

Family planning and contraceptive counselling was higher among respondents who had safe abortion compared to those with unsafe abortion. For women who used a safe method of abortion,

the prevalence of 21.5% of FPC was significantly higher than the 15.1% among those with unsafe abortion (χ^2=6.11, p=0.014).

Generally, the 30.6% prevalence of FPC among women who used a safe method, provider and also location was significantly higher than the 13.0% prevalence of FPC of women who used at least one unsafe method, location or provider (χ^2=61.3, p<0.001) (Fig. 5).

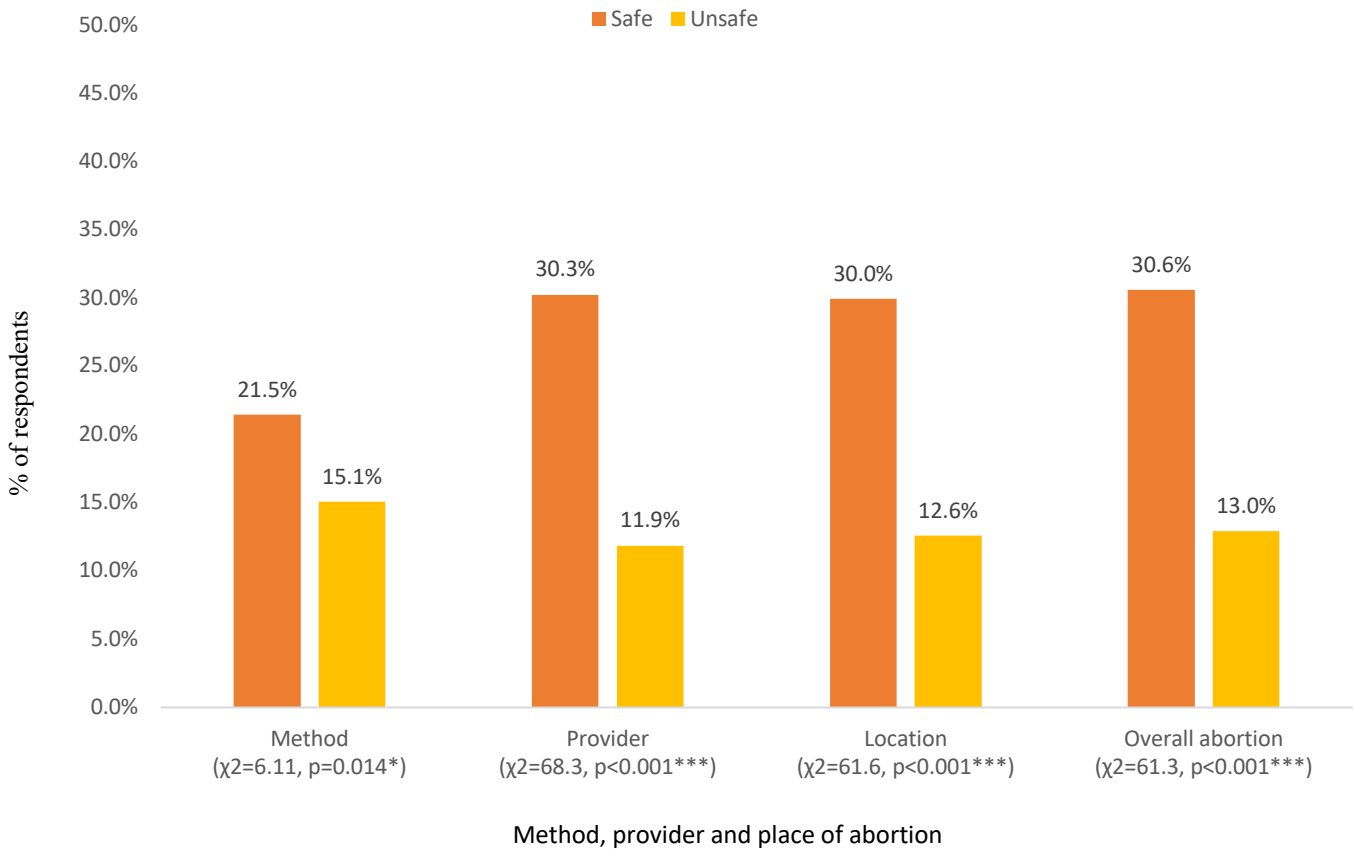

Fig. 6: Association between safeness of abortion and prevalence of FPC

4.9 Logistic regression model of factors associated with family planning and contraceptive counselling after abortion

The simple and multiple logistic regression models were used to assess respectively, the crude and adjusted odds ratios of the factors associated with family planning and contraceptive counselling after abortion among women. (Table 5)

From the adjusted model, the odds of family planning and contraceptive counselling was over 2-folds significantly higher among women in the age groups 20-29 years (aOR: 2.19, 95% CI: 1.10-4.36, p=0.026), and 30-39 years (aOR: 2.00, 95% CI: 1.02-3.90, p=0.043) compared to women in the age group 40-49 years. Also, there was a 78% increase in the odds of family planning and contraceptive counselling among women in the rural areas (aOR: 1.78, 95% CI: 1.24-2.55, p=0.002) compared to those from the urban areas. (Table 5)

Family planning and contraceptive counselling after abortion was 74% lower among women who had abortion from an unsafe provider (aOR: 0.26, 95% CI: 0.11-0.60, p=0.002) compared to those who used a safe provider for abortion (Table 5).

Table 7: Logistic regression model of factors associated with family planning and contraceptive counselling after abortion

	Receipt of FPC after abortion			
	Unadjusted model		Adjusted model	
Variables	**cOR [95% CI]**	**P-value**	**aOR [95% CI]**	**P-value**
Age group				
15-19	1.15 [0.51-2.61]	0.734	1.65 [0.60-4.56]	0.331
20-29	1.56 [0.86-2.84]	0.147	2.19 [1.10-4.36]	0.026*
30-39	1.68 [0.89-3.16]	0.107	2.00 [1.02-3.90]	0.043*
40-49	1.00 [reference]		1.00 [reference]	
Highest educational level				
None	1.00 [reference]		1.00 [reference]	
Primary	0.87 [0.42-1.82]	0.710	0.79 [0.38-1.64]	0.522
JHS/middle	1.05 [0.56-1.96]	0.887	0.99 [0.53-1.87]	0.978
SHS/SSS/VOC./Tech.	1.28 [0.65-2.51]	0.472	1.16 [0.55-2.42]	0.697
Tertiary	1.07 [0.45-2.53]	0.880	0.78 [0.33-1.85]	0.571
Religion				
Christian	1.00 [reference]		1.00 [reference]	
Islam	1.01 [0.63-1.63]	0.966	1.30 [0.71-2.37]	0.399
No religion	0.87 [0.28-2.72]	0.814	0.92 [0.28-2.98]	0.885
Ethnicity				
Akan	1.00 [reference]		1.00 [reference]	
Ga/Dangme	1.07 [0.62-1.86]	0.812	0.76 [0.40-1.45]	0.406
Ewe	1.06 [0.66-1.68]	0.813	0.86 [0.49-1.52]	0.614
Mole-Dagbani	0.77 [0.49-1.22]	0.261	0.55 [0.28-1.10]	0.090
Guan/Grusi/Gruma/others	1.10 [0.63-1.93]	0.739	0.90 [0.46-1.74]	0.747
Currently in union				
Yes, current married	1.00 [reference]		1.00 [reference]	
Yes, living with partner	1.15 [0.74-1.80]	0.527	1.23 [0.78-1.96]	0.369
No, not in a union	0.84 [0.53-1.34]	0.466	1.03 [0.62-1.73]	0.897
Ever given birth				
Yes	1.21 [0.84-1.75]	0.301	1.23 [0.78-1.93]	0.368
No	1.00 [reference]		1.00 [reference]	
Covered by health insurance				
Yes	1.13 [0.83-1.54]	0.443	0.95 [0.67-1.34]	0.757
No	1.00 [reference]		1.00 [reference]	
Number of abortions				
Once	1.00 [reference]		1.00 [reference]	
Twice	1.00 [0.66-1.51]	0.997	1.01 [0.66-1.52]	0.977
Three or more	1.31 [0.79-2.17]	0.300	1.24 [0.71-2.16]	0.455

Multiple steps to end pregnancy				
Yes	0.96 [0.62-1.49]	0.862	0.87 [0.54-1.40]	0.557
No	1.00 [reference]		1.00 [reference]	
Wealth index quintile				
Lowest	1.00 [reference]		1.00 [reference]	
Second	1.00 [0.56-1.79]	0.992	1.31 [0.65-2.63]	0.451
Middle	0.58 [0.32-1.05]	0.073	0.74 [0.38-1.45]	0.381
Fourth	0.74 [0.42-1.31]	0.300	0.98 [0.49-1.98]	0.965
Highest	0.83 [0.45-1.50]	0.531	0.99 [0.46-2.13]	0.982
Place of residence				
Urban	1.00 [reference]		1.00 [reference]	
Rural	1.50 [1.11-2.02]	0.008**	1.78 [1.24-2.55]	0.002**
Region				
Western	1.41 [0.73-2.74]	0.307	1.52 [0.64-3.63]	0.344
Central	1.07 [0.52-2.18]	0.861	1.25 [0.52-3.02]	0.622
Greater Accra	1.85 [1.02-3.36]	0.043*	2.75 [1.26-6.01]	0.011*
Volta	1.00 [reference]		1.00 [reference]	
Eastern	2.58 [1.33-4.99]	0.005**	2.79 [1.24-6.26]	0.013*
Ashanti	0.85 [0.44-1.66]	0.639	1.13 [0.47-2.69]	0.784
Brong Ahafo	1.39 [0.72-2.68]	0.322	1.84 [0.80-4.22]	0.151
Northern	2.84 [1.30-6.18]	0.009**	3.44 [1.22-9.68]	0.019*
Upper East	2.52 [1.07-5.91]	0.034*	3.29 [1.07-10.19]	0.039*
Upper West	1.72 [0.69-4.29]	0.241	2.75 [0.87-8.70]	0.085
Unsafe abortion (ref: safe abortion)	0.34 [0.26-0.45]	<0.001***	0.60 [0.20-1.73]	0.341
Unsafe method (ref: safe method)	0.65 [0.46-0.92]	0.014*	1.27 [0.79-2.04]	0.328
Unsafe provider (ref: safe provider)	0.31 [0.23-0.41]	<0.001***	0.26 [0.11-0.60]	0.002**
Unsafe location (ref: safe location)	0.34 [0.25-0.44]	<0.001***	1.78 [0.50-6.31]	0.371

cOR: crude odds ratio. aOR: adjusted odds ratio. CI: confidence interval.

P-value notation: *: p<0.05. **: p<0.01. ***: p<0.001.

CHAPTER FIVE

DISCUSSION

5.1 Sociodemographic characteristics of women who had an unsafe abortion

Out of the 25,062 women in the reproductive age who completed the Ghana Maternal Health Survey in 2017, a total of 1,880 had had an abortion in the five years preceding the survey. More than half of the women (61.7%) had had an unsafe abortion. This was higher compared to a study by Sundaram et al., (2012) in Ghana which was 55%. The higher prevalence is because in this study, the place of abortion was considered in the definition of unsafe abortion. From the study, women in the age groups 15-19 (69.6%) and 20-29 (64.1%) years had the highest prevalence of unsafe abortion. The association between age and unsafe abortion was found to be statistically significant. According to WHO (2011), more than half of unsafe abortions in Africa are among women below the age of 25 years. Similar findings were documented in a study by Mutua, Maina, Achia, & Izugbara, (2015) in Kenya, where over 70% of women who had an unsafe abortion were aged between 20-24 years. These results were also consistent with data on abortion in low and middle income countries by Chae, Desai, Crowell, Sedgh, & Singh, (2017). From their data, women below 20 years constituted more than half of those who had an unsafe abortion. In Ethiopia however, a study on abortion among adolescents documented that adolescents were less likely compared to women in the other age groups to have an unsafe abortion. The difference could be due to the reason that the abortion law in Ethiopia acknowledges an adolescent girls' inability in

most cases to carry a pregnancy to term. An age criterion is therefore included making safe and legal abortion available to girls below the age of 18 years. This implies that they in comparison to their peers in Ghana have better access to safe and legal abortion services (Sully, Dibaba, Fetters, Blades, & Bankole, 2018).

Adolescents and young people are most at risk of unintended pregnancies in sub-Saharan Africa including Ghana. This is because they are unable to negotiate safe sexual practices including contraceptive use. They also do not have adequate access to information and services on reproductive health (Ushie, Izugbara, Mutua, & Kabiru, 2018). Although the abortion law in Ghana is fairly liberal, young women who need to terminate pregnancies, still use unsafe means. This can be attributed to the fact that they do not know about the conditions permitting access to safe and legal abortion care. Another reason could be lack of financial resources to seek appropriate care making them resort to poorly equipped facilities with unskilled providers or self-induce the abortion (Ibrahim & Onwudiegwu, 2012; Payne et al., 2013). , The risks associated with having an unsafe abortion are outweighed by fear of parental and societal disapproval, burden of childbearing and truncation of their education for many young girls (Akande, 2001).

Educational level was a significant predictor of unsafe abortion (χ^2=4.42, p=0.002). Prevalence of unsafe abortion was higher among women with lower level of education. There was a steady decline in the prevalence of unsafe abortion as a woman attained more education. These findings are comparable to those in Nigeria where more than half of women who had had an unsafe abortion had the highest educational level as secondary (59%) compared to 20% with tertiary education.

Also in Ethiopia, more educated women were less likely to have induced an abortion unsafely (Kalu et al., 2012; Tesfaye, Hambisa, & Semahegn, 2014). Similarly in the United Kingdom, Stone & Ingham, (2011) documented that, women who were less educated tended to have repeated abortions, which were mostly unsafe.

These findings are due to the fact that contraceptive use among educated women is high which further reduces their risk of unwanted pregnancies (Kabiru, Ushie, Mutua, & Izugbara, 2016). In the analysis of education and contraceptive use by Larsson & Stanfors, (2014) among women in Ghana, Madagascar and Zambia, educated women were found to be more likely to choose more effective methods of contraception compared to uneducated ones. Women who are better educated are more empowered, may have better understanding of the abortion law and the conditions under which they can obtain a safe abortion. They also have better income generating ability enabling them to afford care by a skilled provider in a health facility that may offer better post abortion contraceptive counselling (Jejeebhoy, Kalyanwala, Zavier, Kumar, & Jha, 2010; Larsson & Stanfors, 2014).

Married women relative to those co-habiting or single had a lower prevalence of unsafe abortion. Single and unmarried women are more at risk of having an unsafe abortion because of the stigma associated with having a child out of wedlock (Osur et al., 2015). Studies in Ghana show that the stigma associated with abortion is a significant contributor to unsafe abortion (Lithur, 2004). Another study in Ghana by Adjei et al., (2015), showed unsafe abortion to be more prevalent among single women compared to those who were married.

Jejeebhoy et al., (2010), in their study on abortion among unmarried women in India found that, these women face obstacles when terminating pregnancies because they are seen to have defied the norms on chastity and morality. Besides the desire to postpone childbearing until legally married among single women, issues with partner abandonment and lack of resources to be single parents contribute to clandestine abortions.

Safe abortion was higher among women who had insurance because financial accessibility is a predictor of safe abortion care. Cost of abortion is one of the factors that determines where a woman seeks an abortion. Safe and legal abortion services in Ghana are costly. Absence of financial resources pushes women to patronize cheaper alternatives which are most often unsafe. From this study, insurance coverage was a significant predictor of unsafe abortion. Women who were insured resorted to safe means probably because the insurance catered for some cost of the abortion (Morhee & Morhee, 2006; Sundaram et al., 2012).

Women in the highest wealth index quintile had the least prevalence (51.0%) of unsafe abortion compared to those in the second wealth index quintile who had the highest prevalence (70.9%). Ganle et al., (2016) in their study of disparities in abortion in Ghana, ranked wealth quintiles from highest to lowest. Women who were ranked in the highest quintile had better access to safe abortion care as opposed to those in the lowest quintile. The difference could be due to factors such as high cost of abortion care and lack of access to information via sources such as the internet and media on where to obtain safe procedures by poor women. These findings were also consistent with studies in Nepal and Mexico which found unsafe abortion rates to be higher among women

from poor households (Bhattarai, 2019; Sousa, Lozano, & Gakidou, 2010). Apart from legal barriers to assessing safe abortion in Ghana, there is also the issue of limited number of facilities and health practitioners willing to offer abortion services, thus increasing the cost of care (Guttmacher Institute, 2010)

5.2 Complications and treatment post abortion

The complications analysed in this study are those that occurred within the first month after the abortion. Approximately 14% of women had some form of complication. Pain and bleeding were the commonest complications reported. Similar complications were reported in studies conducted in Nigeria and Ghana. However, the proportions documented were higher. Pain constituted 52% whilst bleeding made up 44% in the Nigerian study (Henshaw et al., 2008). The study by Aniteye & Mayhew, (2011) in Ghana also documented pain and bleeding as constituting 75% of all complications reported. The disparities in the proportions could be because women in this study were asked abortion related complications which had occurred five years preceding the survey leading to possible recall bias. It could also be attributed to the fact that the other studies were conducted in health facilities allowing health personnel to properly identify and document complications.

Fever and foul smelling vaginal discharge, indicative of infection were recorded in approximately 10% of the women. A study in Botswana on post-abortion complications showed that approximately 17% of the women had complications which were signs of infection (Melese et al.,

2017). The lower percentage recorded in this study could be because fewer criteria were used to identify probability of infection among respondents.

More than half (57.5%) of the women with complications had treatment with majority (41.5%) receiving antibiotics. Similar results were found in a study by Melese et al., (2017) with most of the women receiving antibiotics as part of their treatment regimen. Antibiotic treatment constituted majority probably because it was given as prophylaxis due to the high prevalence of unsafe abortions increasing the likelihood of infection.

5.3 Family planning and contraceptive counselling after abortion

Counselling and provision of family planning and contraceptives are important elements of post abortion care. This is because, where there is a high unmet need for contraception, women tend to resort to abortion as a means of birth control (Ahmed, Li, Liu, & Tsui, 2012). Out of the 1880 women who admitted to having had an abortion, about 80% did not receive family planning and contraceptive counselling. This is consistent with findings from India where almost 75% of women post-abortion were not offered contraceptive services (Banerjee & Andersen, 2012). Similar results from Zimbabwe were attained with 85% of women not given any form of counselling or contraception (Bankole et al., 2018). The low prevalence of FPC may be due to the fact that approximately 62% of the abortions in this study were unsafe. The prevalence of contraceptive counselling was higher (30.6%) among women who had a safe abortion compared to those who used unsafe means (13.0%). Based on the logistic regression model, the odds of receiving family

planning and contraceptive counselling from an unskilled provider was 74% lower (aOR: 0.26, 95% CI: 0.11-0.60, p=0.002) compared to a skilled provider.

Unskilled providers lack adequate knowledge about post abortion contraceptive counselling making them incapable of providing the service (Tang et al., 2017). When the abortion is not done in a well-equipped location, family planning and contraceptive services are usually unavailable (Ramarao et al., 2017). Contrary to the study finding, more than 90% of women who sought PAC in a study by Millimouno et al., (2020) in Guinea, were given counselling with almost all of them (97%) adopting a method before discharge The higher percentage from this above study was because the contraceptive counselling was given as part of follow up care and not immediately after the abortion when the women were dealing with complications such as pain.

Compared to women in the age group 40-49, those aged 20-39 years had a two fold increase in the odds of receipt of contraceptive counselling. This may be because women in this age group are more likely to induce abortions. When they present to health facilities to seek abortion care, providers would want to give contraceptive counselling to reduce their risk of unwanted and unplanned repeat pregnancies. Also, younger women are more willing to accept post abortion contraception because they are often in school and unmarried and would want to delay childbearing (Abebe, Kassaw, & Shewangashaw, 2019).

The odds of receiving FPC was 78% higher among rural residents compared to those in the urban areas. Contributing factors include, increase in the use of mid-level providers such as nurses and

midwives instead of doctors whose availability is limited in rural areas as a means of improving PAC. Also, as part of measures to increase contraceptive uptake in rural communities, more emphasis has been placed on training health personnel providing services in these areas making them more competent to provide quality post-abortion care (Berer, 2009; Dawson et al., 2013).

5.4 Strengths of the study

The study is one of the studies in Ghana with focus on Post Abortion Care offered to women in the country. The findings from this study are therefore nationally representative and can be generalized.

The study also provides the foundation for further studies on the other components of Post Abortion Care.

The findings and conclusions of the study can be used to inform policies and improve on existing interventions targeting Post Abortion Care

5.5 Limitations

The study was based on respondents' recollection of events 5 years prior to the survey increasing the likelihood of recall bias. There may have also been underreporting or misreporting of information because of the sensitive and stigmatized topic of abortion.

Although post abortion care comprises, five elements, the GMHS limits it to only two components; treatment and contraceptive counselling hence not giving the full picture of PAC in the country.

Since the study was cross-sectional, there is a limitation with interpretation of the results. This is because some variables such as education and wealth status could change over time and can potentially affect the results.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Majority of the women had had an unsafe abortion. Most unsafe abortions occurred among young women between the ages of 15-29 years. Women's age, marital status, educational level and wealth index were significant determinants of unsafe abortion.

Common complications following unsafe abortions were pain and bleeding with antibiotics being given as the main treatment. More than half of the women reporting with complications received treatment.

The proportion of women who had an abortion and received contraceptive counseling as a post-abortion care service was low (19.7%). Less than a tenth (6.9%) of women were given a method and only 11.5% were prescribed a method of contraception.

6.2 Recommendations

- More adolescent counselling sessions need to be made available to adolescent girls and young women to sensitize them on the dangers of unsafe abortion and address the unmet need for contraception. Organization of school outreaches, evening and weekend sessions would increase the education being provided especially for the girls who attend school.

- Ministry of Health and Ghana Health Service should increase public awareness about the legal context within which safe and legal abortion services can be provided.
- Ghana Health Service should build the capacity of service providers through training to recognize post-abortion family planning as an integral part of post abortion care.

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APPENDIX:AUTHORIZATION LETTER FROM DHS PROGRAMME

Apr 30, 2020

Abena Adom-Asomaning
University of Ghana
Ghana
Phone: +233208531888
Email: antwiaa@gmail.com
Request Date: 04/30/2020

Dear Abena Adom-Asomaning:

This is to confirm that you are approved to use the following Survey Datasets for your registered research paper titled: "Post Abortion Care Services in Ghana: Analysis of the Ghana Maternal Health Survey, 2017":

Ghana

To access the datasets, please login at: https://www.dhsprogram.com/data/dataset_admin/login_main.cfm. The user name is the registered email address, and the password is the one selected during registration.

The IRB-approved procedures for DHS public-use datasets do not in any way allow respondents, households, or sample communities to be identified. There are no names of individuals or household addresses in the data files. The geographic identifiers only go down to the regional level (where regions are typically very large geographical areas encompassing several states/provinces). Each enumeration area (Primary Sampling Unit) has a PSU number in the data file, but the PSU numbers do not have any labels to indicate their names or locations. In surveys that collect GIS coordinates in the field, the coordinates are only for the enumeration area (EA) as a whole, and not for individual households, and the measured coordinates are randomly displaced within a large geographic area so that specific enumeration areas cannot be identified.

The DHS Data may be used only for the purpose of statistical reporting and analysis, and only for your registered research. To use the data for another purpose, a new research project must be registered. All DHS data should be treated as confidential, and no effort should be made to identify any household or individual respondent interviewed in the survey. Please reference the complete terms of use at: https://dhsprogram.com/Data/terms-of-use.cfm.

The data must not be passed on to other researchers without the written consent of DHS. However, if you have coresearchers registered in your account for this research paper, you are authorized to share the data with them. All data users are required to submit an electronic copy (pdf) of any reports/publications resulting from using the DHS data files to: references@dhsprogram.com.

Sincerely,

Bridgette Wellington

Bridgette Wellington
Data Archivist
The Demographic and Health Surveys (DHS) Program

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