ABORTION COMPLICATIONS AMONG WOMEN OF REPRODUCTIVE AGE IN NEPAL: EVIDENCE FROM NDHS 2006

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF ARTS
(POPULATION AND REPRODUCTIVE HEALTH RESEARCH)
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2008

Thesis
entitled

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was submitted to the Faculty of Graduate Studies, Mahidol University
for the degree of Master of Arts
(Population and Reproductive Health Research)

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ACKNOWLEDGEMENTS

First of all I would like to express my sincere gratitude and deepest respect to my major advisor, Prof.Pramote Prasartkul, Ph.D. and co-advisor Asst.Prof. Patama Vapattanawong, Ph.D. for their immense support, continuous guidance, and suggestions during preparing and completing my thesis work. I would also like to thank Asst. Prof. Panee Vong-ek, Ph.D., Program Director of International Master's Degree program, and the chair person of the thesis committee for her valuable advice. Likewise, I would also like to be grateful to my external examiner, Assoc. Prof.Yawarat Porapakkham, M.D. for her insightful suggestions and feedbacks.

I also extend my deepest appreciation to Emeritus Prof. Aphichat Charatrithirong, Ph.D, Assoc. Prof. Yothin Sawangdee, Ph.D, Asst. Prof. Pimonpan Isarabhakdi,Ph.D, Asst. Prof. Pungpond Rukumnuaykit, Ph.D. and all respected teachers (Archans) of IPSR for sharing their valuable knowledge, giving support and encouragement throughout the study period.

I would like to thank Mr. K.P Bista, Director General and Mr. Subhash Chandra Shrestha, Coordinator of Finnish Project, Family Planning Association of Nepal for their cooperation and encouragement to finish my study well in Thailand. I also extend my sincere gratitude to Thailand International Development Cooperation Agency (TICA) for awarding a scholarship and providing the financial support to pursue my study in Thailand. I would like to thank Archan Thomas Edward Blair for his guidance and enormous support throughout the course. Likewise; I also thank to Khun Luxana Nil-Ubol, for her care and help throughout the course.

My special thanks go to my friend Mr. Sujan Karki for his valuable suggestions during thesis preparation. I would also like to acknowledge my friends Mr.Sajjad Akbar Khan Niazi, Mr. Chourn Thou, Miss.Tiwarat Tor. Jarern, Mr.Saomony Chhay, Mr.Saiyadeth Chanthavong, Mr.Donlachai Hawangchu and Ms. Ngo Thi Thanh Huong for their cooperation and support during my stay in Thailand.

Finally I would like to acknowledge my deepest appreciation to my lovely parents, my father-in-law, mother in-law and my loving husband Mr. Amit Singh Basnet for their inspiration, continuous moral support and encouragement to accomplish my study successfully.

Diksha Khadka

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ABSTRACT

Complications from abortion are a significant yet preventable cause of maternal mortality and morbidity. Little research has been conducted in Nepal on abortion complications after the legal abortion policy.

The study uses a dataset from the 2006 Nepal Demographic and Health Survey to assess abortion complications among Nepalese women (ages 15-49) who had their last induced abortion or miscarriage in the three years preceding the survey (2003-2006).The sample size of the study is 354 respondents, among whom 220 had experienced miscarriage and 134 had undergone induced abortion.

Binary logistic regression was used to show the effect of each of the independent variables on the likelihood of complications from induced abortion and miscarriage in the multivariate analysis model. The result shows that women experiencing miscarriage who visited health facilities were 7.3 times more likely to have had complications from miscarriage. Age at marriage, educational level, wealth status and development regions had significant effects on abortion-related complications.

The study indicates that there is a substantial need among women to utilize abortion services at health facilities in Nepal. Government and policy planners should concentrate more on programs that improve the health service system and enable women to exercise their safe and legal rights to sexual and reproductive health.

KEY WORDS: ABORTION COMPLICATIONS/INDUCED ABORTION / MISCARRIAGE / REPRODUCTIVE AGE WOMEN / NEPAL

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LIST OF ABBREVIATIONS

CAC	Comprehensive Abortion Care
CREHPA	Center for Research on Environment Health and Population Activities
EFCS	Egyptian Fertility Care Society
ICPD	International Conference on Population and Development
MDG	Millennium Development Goal
MMR	Maternal Mortality Ratio
MoHP	Ministry of Health and Population (Nepal)
MoPH	Ministry of Public Health (Thailand)
MVA	Manual Vacuum Aspiration Technique
NDHS	Nepal Demographic and Health Survey
NGO	Non Government Organization
PAC	Post Abortion Care
TBA	Traditional Birth Attendant
UN	United Nations
VDC	Village Development Committee
WHO	World Health Organization

CHAPTER I
INTRODUCTION

1.1 Background

Complications from unsafe abortion are the significant cause of the maternal mortality and morbidity in most of the developing world and constitute at least 13 percent of maternal mortality globally (Berer, 2002). Thus the improvement of maternal health is one of the eight goal included in the Millennium Development Goals (MGDs).The World Health Organization (2003) has shown that there were 19 million unsafe abortions that take place every year and that one in 10 pregnancies result in unsafe abortion, that is ,over 40 percent of abortions are classified as unsafe. Most unsafe abortions take place in the developing world, with 10.5 million occurring in Asia and over 7 million occurring in South Central Asia alone, representing a high proportion of abortion incidence in a large population of reproductive age women (15-49 years of age). In the countries where access to safe abortion is restricted, complications from unsafe abortion lead to maternal mortality and morbidity. Abortion-related deaths occurring in developing countries are 350 per 100,000 abortions. Like other developing countries, Nepal also faces a serious threat of unsafe abortion complications to women's reproductive health and lives and is a major public health concern of the country.

Nepal is a small landlocked country and shares its northern border with Tibet and its eastern, western, and southern border with India .The total area of the country is 147,181 square kilometers and the population is about 24 million with only 14 percent living in urban areas. Nearly half of the population lives below the poverty line (Ministry of Health and Population, 2007) According to the United Nations, Nepal's GDP per capita was US $ 1,157 in 2001, the eleventh lowest in the world. Agriculture is the mainstay of the economy, providing a livelihood for over 80 percent of the population.

Culturally, women are considered as an economic burden. Female literacy rate in Nepal is just 55 percent in comparison to 79 percent for males. Approximately 60 percent of Nepali women at age group 20-49 years are married before the age of 18 with most of those bearing children in their teenage years (MoHP, 2007). Despite a law governing the age of marriage for girls (18) and boys (21) early marriage and early childbearing continues to be the norm in Nepal. About 6 percent of the adolescent girls are married by age 15-19 and almost one quarter of Nepalese women have given birth before reaching age 18, and more than half have had a birth by age 20. The median age at first birth is about 20 years for all age cohorts (MoHP, 2007).This, combined with the high incidence of miscarriage and unsafe abortion that leads Nepal to have the high maternal mortality rate.

However, the 1994 International Conference on Population and Development (ICPD) in Cairo took important initiatives to support women's reproductive health and rights by setting a safe policy for abortion and thereby reducing maternal mortality. The Program of Action urged all government and non government organization to "strengthen their commitment to women's health and deal with health impact of unsafe abortion as major public health concern. In all cases, women would have access to quality services for the management of complications arising from unsafe abortion" (UN, 1994).

1.2 Problem identification and justification

Abortion is considered to be a social problem and taboo in many developed and developing countries and is the result of unplanned and unwanted pregnancies. Abortion is related to several factors such as knowledge, attitude, practice, birth control, social acceptance, and women's empowerment and decision-making prerogatives. Women are barred from access to safe abortion services due to combination of social, economic, religious, and policy factors. Apart from these factors lack of trained service providers, restrictive law, accessibility, availability, and affordability, especially to marginalized and vulnerable women, are also profound barriers of safe abortion service. Almost all unsafe abortion takes place in the developing world (Ahman & Shah, 2002). It is estimated that approximately 210 million women become pregnant and some 133 million (63%) of them give birth to

live babies, out of which 80 million were unplanned. And of the 210 million pregnancies that occur every year, about 46 million (22%) end in induced abortion and about 31 million (15%) experienced miscarriage (Wulf, 1999).The rates of maternal deaths due to abortion-related complications are more challenging than mortality. Every year around 68,000 women die as a result of complications from unsafe induced abortions, about eight per hour. Complications include hemorrhage, sepsis, peritonitis, and trauma to the cervix, vagina, uterus, and abdominal organs (WHO, 2004).

In 2006 Nepal Demographic Health Survey, the prevalence of induced abortion and miscarriage was shown as 13 percent. This indicates that women are more than three times likely to report having had a miscarriage (10 percent) compared to an induced abortion (3 percent) in Nepal. Among women who had an abortion or a miscarriage 58.4 percent suffered from complications associated with their last induced abortion or miscarriage. The maternal mortality ratio (MMR) was 281/100,000 live births (MoHP, 2007). Although the abortion rate is estimated to be as high as 117 per 1,000 among women of reproductive age in Nepal. (Thapa et al., 1994), utilization of abortion service at health facilities is quite low 35.8 percent (MoHP, 2007). Studies conducted by the Ministry of Health show that 54 percent of all maternal deaths occurring in hospitals were due to unsafe abortion. And about 98 percent of the women admitted with complications from unsafe abortion were from poor economic backgrounds and suffered from long-term consequences such as chronic pain, pelvic inflammatory disease, tubal occlusion, and secondary infertility (Ministry of Health, 1998). Another hospital-based study, conducted by the Center for Research on Environment Health and Population Activities, found that 20-60 percent of women admitted as obstetric and gynecological patients had abortion complications due to unsafe practice (CREHPA, 2000).The sociodemographic status of Nepalese women compared with women in other countries has always been low in terms of level of education, region, and place residence, i.e., rural and urban setting that affect attitudes toward abortion and lead to higher unsafe abortion and complications.

Legal policy is a causal pathway to link safe abortion and reduce maternal mortality. Broadly speaking, legal abortion is important component of making

abortion safe because quality of care can be assured. In many developed countries like Sweden, Italy, Denmark, Norway and Netherland, where abortion is legal, maternal mortality declines to 2- 16 deaths per 100,000 live births (Warriner & Shah, 2006). The main cause of decline in the maternal mortality rate adopted in these countries are improved living conditions, better nutrition, improved standards of midwifery and obstetric care, aseptic condition practiced during deliveries, legalization of abortion and provision of safe abortion service, skilled service providers using Manual Vacuum Aspiration (MVA) techniques followed with post abortion family planning counseling and service.

However, significant exceptions were also found in some countries, such as Zambia, and India, where legalization of abortion is insufficient in reducing unsafe abortion because of access to competent care services like family planning is inadequate and inefficient, ignorance about the law, lack of training to service providers, failure to authorize providers and facilities and lack of resources (Berer, 2002).

Until recently, abortion was strictly illegal in Nepal and many women who had an abortion were imprisoned. In 1997 a nation survey estimated that 20 percent of women were in jail on charge of abortion or infanticide (Shakya et al., 2004). Despite this fact, many abortions were carried out in unsafe circumstances with untrained and unskilled persons. Nepal legalized abortion law in 2002 and the bill became the Act by Royal Assent in September 2002 making a historical achievement for the reproductive health and rights of Nepalese women. The trend in unsafe abortion for the country is difficult to measure due to lack of information records on induced abortion related admission at health institution or lack of population base survey on abortion after legal abortion reform. Lack of complete knowledge on legal and safe abortion practices increases complications and therefore acts as barriers in development of quality reproductive health services in Nepal. Complication from unsafe abortion will remain a major problem of maternal mortality and morbidity unless unsafe abortion and its consequences are reduced and this provides the rationale for the study proposed. It is essential to identify women who are at risk of abortion complication and provide them necessary services they require. There is little research been conducted in Nepal on abortion complications which focus on women

who had induced abortion or miscarriage. The findings of this study aim to provide valuable information to the national reproductive health policy makers and planners to understand various factors influencing abortion related complications.

1.3 Research question

The study will examine:

- Does legalization of abortion law reduce abortion complications in Nepal?
- Is abortion at health facilities more effective in reducing abortion complications from induced abortion/miscarriage?

1.4 Research objectives

1.4.1 General objective

- To assess abortion complications among Nepalese women (15- 49) who have ever had last induced abortion or miscarriage

1.4.2 Specific objective

- To identify the relationship between knowledge of women about safe place to get abortion service and complications from miscarriage and induced abortion
- To assess the association between awareness of legal abortion law and complications from miscarriage and induced abortion
- To determine the association between utilization of abortion service at health facilities and complications from miscarriage and induced abortion

CHAPTER II
LITERATURE REVIEW

2.1 Definition of abortion

The World Health Organization (2006) defines abortion as a pregnancy termination any time within 28 weeks of gestation. Abortion is referred to as spontaneous when the pregnancy loss occurs naturally without intention and deliberate attempt to terminate it. This is so often referred as a miscarriage. But if the termination is intended and a deliberate attempt is made, it is referred to as induced abortion. The World Health Organization also defines unsafe abortion as a procedure for terminating an unintended pregnancy either by persons lacking the necessary skills or in an environment lacking the minimal medical standards or both.

Abortion related complications recommended by WHO may be identified by several signs and symptoms; the most common ones include high fever of 38.5 C or more, septic, foul-smelling vaginal discharge with or without blood, signs of local pelvic infection such as lower abdominal pain and cervix and uterine pain, generalized pelvic infection, septicemia and shock. Patients with recent abortion experience who show these signs and symptoms are usually considered to have unsafe abortion.

2.2 Abortion law in Nepal

Legalization of abortion came into existence after several years of research and advocacy campaign in Nepal. The main policies of safe abortion is to reduce the maternal mortality and morbidity from unsafe abortion, to provide choice and safe service for women who have unintended pregnancies, and also to reduce the incidence of repeated unintended pregnancies and abortion.

Family Planning Association of Nepal in 1996 took the important step with its effective advocacy for legal reform and introduced the Pregnancy Protection Bill and got it registered as Muluki Ain 11th amendment bill (country code) in the upper parliament in 1997. Finally the bill was accepted receiving Royal Assent in September, 2002. Abortion law is guided by National Abortion Policy 2002 which guarantees "access to safe and affordable abortion to every woman without discrimination". Likewise Safe Abortion Service Procedure 2003 defines clinical procedures for safe pregnancy termination, service provision facilities, trained service providers, client consent which lays down criteria for approving a health center as Comprehensive Abortion Care centre. Abortion law is legal in following grounds (Ministry of Health, 2002).

- Up to 12 weeks of gestation for any women with her consent
- Up to 18 weeks of gestation if the pregnancy results from rape or incest
- At any time during pregnancy, with the advice of a medical practitioner or if the physical or mental health or life of the pregnant women is at risk or if the fetus is deformed and incompatible with life

2.3 Determinants of induced abortion

Mostly women seek abortion only when emergency cases occur, as in rape or incest, medical emergencies, fetal abnormalities, etc. But a majority of women need safe abortion service in unwanted or unintended pregnancies to stop child bearing, contraceptive failure, relationship problem with partners, disruption of education or unemployment and economic and social status burden.Determinants of induced abortion ultimately determine the outcome of an induced abortion. It explains the real situation of women facing many problems that finally leads to end in unsafe abortion. There are two types of determinants of induced abortion: Proximate determinant and Systemic determinants. Proximate determinant relate directly to women fertility behaviour (such as family planning choices and practice and are the factor that cause unintended pregnancies and termination of unwanted pregnancies. And Systemic determinant are less directly related to cause of unwanted pregnancies but influence women decision making process leading to pregnancy termination. It establishes the conditions that allows a woman to have safe and unsafe abortion which is ultimately

influence by several factors like service factor, social factor, economic factor, religious factor, and policy factor (Warriner & Shah, 2006).A Mexican case study conducted among 300 women admitted to hospital for abortion complications, the major factor to abort includes economic, social and family related problems (Warriner & Shah, 2006).

2.4 Related research on abortion

2.4.1 Complications from abortion

Health consequence of unsafe abortion could be short-term or long-term morbidity or mortality and causes serious reproductive problem to women's health. Short-term morbidity ranges from minor complications to very serious ones that need hospitalization. Long-term consequences may be disorder of reproductive health system and infertility. A study on this aspect has revealed that in some Latin American countries clandestine and unsafe abortions are the principal cause of death among women in reproductive age. An estimated five million women are hospitalized each year for treatment of abortion-related complications, such as perforation of uterus, fever, septic shock, hemorrhage and sepsis. Approximately 220,000 children worldwide lose their mothers every year because of abortion-related deaths (Grimes, 2006). Similarly 10-50 percent of women who had unsafe abortion need medicare (WHO, 2004).A woman living in a developing country faces a risk of death upto 330 times greater than those among developed countries if she seeks abortion service from an untrained service providers (Wulf, 1999).The risk of death is significantly reduced when women has access to safe and legal abortion services. A community based survey on abortion seeking behavior among Nigerian women found 14 percent of the respondents had terminated a pregnancy, and 10 percent had an abortion. Since abortion is illegal in Nigeria except to save the women's life, 42 percent performed unsafe abortion service with untrained personnel and quarter experienced complication from abortion (Bankole et al., 2008).A study conducted in Nepal showed more than half of all maternal deaths in the hospitals were due to abortion related complications (Thapa, 2004). A study conducted among women hospitalized for abortion complication in four Latin American countries (Bolivia,

Colombia Peru and Venezuela) found that, 23 percent of all women in these four countries had septic infection resulting from induced abortion and were admitted in the hospital (Singh and Wulf, 1993). A study conducted in Egypt among post abortion patients found 19 percent of women were admitted for treatment of an induced abortion or miscarriage and among them 14 percent were suffering from excessive blood loss, 1 percent had more than one signs of trauma, and 5 percent had other infections (Huntington et al., 1998).Like women undergoing unsafe abortion, even women experiencing miscarriage need prompt medical care .A study done in Egypt in 86 public sector hospitals found that two third of women were admitted who had experienced miscarriage and had complications (EFCS, 1997).Sometimes miscarriage may lead to health risks, permanent disability, and even deaths where post abortion care is unavailable or ineffective.

2.4.2 Awareness of abortion law

Awareness about the legal abortion law helps to utilize safe abortion service at health facilities. Several other factors such as social acceptance, quality service, attitude, and misperception are associated with the awareness about legalization of abortion law and its utilization of services. Even abortion policies being legal, further research need to be conducted to fill the gaps to reach people from practicing risky unsafe abortion service. A study conducted among Mexican youth about knowledge and opinion on abortion law in 2002 found that 54 percent did not know about abortion being legal under some circumstances in Mexico (Becker et al., 2002). Similarly, a cross section survey conducted to know the knowledge level of women in western cape province in South Africa showed that women at 15-49 aged, 68 percent knew about legal abortion law and 23 percent did not know about the existing law. (Morroni et al., 2006). In many countries advocacy to increase access to legal abortion policy have reduced the rate of maternal mortality and morbidity from abortion. In Peru (1989–98), in Brazil (1992-2005) and in Philippines (1994–2000), the abortion-related hospitalization rate dropped by 33%, 28%and 10% respectively. Countries that liberalized their abortion laws such as Barbados, Canada, South Africa, Tunisia, and Turkey, did not have an increase in abortion demand and likewise Netherlands, which

has unrestricted abortion and contraceptive service, is considered as one of the lowest abortion rates country in the world (Grimes, 2006).

2.4.3 Knowledge of women about a safe place to get abortion service

Knowledge of women about a safe place for abortion service is a key element influencing indicator to terminate a pregnancy in health centers. (Warriner & Shah, 2006). Similarly a national survey conducted in Nepal in 2006 found that 55 percent of Nepalese women know a place to get abortion services and said that it is usually done in government hospital 45.5 percent and 31 percent in private hospitals and remaining in NGOs (MoPH, 2007).Post abortion care (PAC) facilities were introduced in Nepal at selected hospitals in 1995.And Comprehensive abortion care (CAC) service were first launched in the government maternity hospital at Kathmandu after one and half year of liberalization of abortion (March 2004).Since then many government and non government organization certified the health center as CAC center throughout 68 districts out of 75 districts in Nepal. A system for approving safe service sites have been established based on the WHO technical and policy guidance on safe abortion which consists of minimum physical resources requirement for safe abortion services and includes at least one trained health personnel (CREHPA, 2006).

2.4.4 Utilization of abortion service at health facilities

In almost all countries except five countries 99 percent allow abortion to save the woman's life, 78 percent allow to save physical health, 75 percent to preserve mental health, 72 percent in the case of rape or incest and 64 percent in the fetal impairment, 61 percent on economic and social grounds and 40 percent on request (United Nation, 2007).Increasing trend in utilization of abortion service at health facilities are positive indication of improvement in women reproductive health. Countries which has improved access to health care and utilization of emergency obstetric service, greatly reduced overall maternal mortality due to unsafe abortion service. Most abortions in United States occur in abortion clinics. Accessibility and abortion service enhances women to utilize service at health facilities with skilled health providers and modern methods. As a result, this will not increase the demand

rather change previous clandestine and unsafe procedures into safe ones (Wulf, 1999). Access to safe abortion is also mediated by women's awareness of the law. Knowledge is often poor, even in countries with longstanding liberal laws. In contrast, Uganda study showed that women are more likely to seek medical care in health facilities for abortion complications 58 percent compare to delivering child birth 39.2 percent (Singh et al., 2005).In addition to these, absence of health facilities or distance to health facilities, often may limit women to utilize medical care and increase abortion complications.

2.4.5 Socio demographic factors and abortion complications

2.4.5.1 Age

A worldwide review of the characteristics of women who seek induced abortion indicates that in some countries adolescents account for a substantial proportion of cases, for example,33 percent in Cuba and 22 percent in Scotland (Bankole et al., 1999).In general, however, induced abortion rate by age of women shows an inverted U-shape pattern; that is lower among those at the younger and older age groups while the proportions among the middle reproductive age groups are higher. In the Asia region 30 percent of unsafe abortions are in women younger than 25 years of age and 60 percent are in women under 30 (WHO, 2004).In developing countries unsafe abortion rate is peak in women aged 20-29 years (Grimes,2006). But apart from above study, this study shows that morbidity and mortality rates from induced abortion complication increases among young women due to social stigma and fear of being exposed to sinful abortion act (Warriner & Shah, 2006). It is more likely that younger women have greater risk from abortion complications as they delay seeking help and terminate in late stage of gestation more than 12 weeks, slow to recognize pregnancy which increases the risks of unsafe abortion and complication, less likely to know where to go for treatment. Similarly, in Lusaka, Zambia, for example, 60% of women hospitalized for induced abortion complications were aged 15-19 (Likwa & Whittaker, 1996).Likewise there is similar finding in the study conducted in Egypt. It showed that among post abortion patients, the incidence of miscarriage and complication is higher among younger women and steadily decrease

with higher age and established positive association between age and miscarriage (Huntington et al., 1998).

2.4.5.2 Education

Education level plays a great role to reduce abortion complication. A study conducted on 1990 among women hospitalized for abortion complication in four Latin American countries found that women who had induced abortion are less educated 52 percent compared with those who had miscarriage 39 percent. Moreover educated women are more likely to have abortion service in health facilities at early stage of pregnancy (Tamang, 1996). Similarly study conducted among post abortion patient admitted for abortion treatment in Egypt found that women having secondary or higher education level are less likely to experience complications risk than primary or no education (Huntington et al., 1998). A study conducted in private clinic of Kathmandu showed that women obtaining induced abortion were educated (Thapa et al., 2001).Another finding showed women with at least secondary schooling are more likely to have abortion complications than highly educated women because highly educated women often delay childbirth or married late (Bankole et al., 1999).

2.4.5.3 Residence

Abortion complication and mortality rate are higher among rural women than urban women. Traditional birth attendances (TBA) were reported to be the primary source of abortion services for a significant proportion of women in the rural communities in Nepal (Thapa et al., 1992).This leads to high probabilities of unsafe abortion and are more likely to experience complications. Moreover urban residence women have more probability of having service in health facility. (Tamang, 1996).Similar finding was observed in a study conducted in Nigeria, which found that urban women are found to access to safe abortion service than rural women for hospital treatment and also for medical complications (Adebusoye et al., 1997).

2.4.5.4 Development regions

Women living in developed region of country with good abortion service facilities are less likely to have abortion complication than less developed regions.

Different countries have their own development regions for administrative purposes. Nepal has been divided into five development regions: eastern, western, central, mid-western and far western, 14 zones and 75 districts .Districts are divided into village development committees (VDC) and sometimes into urban municipalities.At present there are 3915 VDCs and 58 municipalities in Nepal.

2.4.5.5 Wealth status

Studies have found that there is a strong relationship between economic status and abortion complication. Poor women often suffer the most from mortality and morbidity due to unsafe abortions. Women living in poor status are more likely to receive unsafe abortion service than wealthier women. In countries where abortion is highly restricted, it affects a lot to poor women. In Latin American cities, where abortions are increasingly performed by medical providers, poor women are more likely to be hospitalized for abortion complications than wealthy women, who seek safe abortions in private clinics. Poor women are likely to abort themselves or go to untrained or poorly skilled providers because they cannot pay doctors' fees (Singh & Wulf, 1994).A study conducted in six hospitals of Nepal showed that 98 percent of women who were visited for abortion complications were from poor economic status and delay to seek the treatment (CREHPA,1999).

2.4.5.6 Age at marriage

Some studies show that age at marriage is directly associated with abortion related complication. Women age at marriage has an important effect on childbearing during their reproductive age. Teenage mothers are more likely to suffer from severe complications due to miscarriage and induced abortion, which can be detrimental to the health and survival mother. In Nepal, the median age of first marriage of women is 17.2 years and 6 percent young women are married by age 15 years (MoHP, 2007). Similar study showed that early marriage, is common especially in Ethiopia's northern highlands, 35 percent of Ethiopian girls are married by the age of 15 years and 70 percent by 17 years. A study conducted at 15 hospitals in seven out of nine federal regions of Ethiopia shows that out of total 1,075 cases two thirds of women seeking treatment for induced abortion

complications were married, and that nearly 60 percent were between the ages of 20 and 29 years (Ashenafi, 2004).

2.4.6 Geographical factors and abortion complications

2.4.6.1 Ecological zones and abortion complications

Nepal is divided into three distinct ecological zones- mountain, hill and terai (or plains). The mountain zone constitute 35 percent of the total area but only about 7 percent of the total population inhibit because of difficulties of transportation and communication facilities. In contrast, the hill ecological zone is densely populated with 44 percent of the total population lives and covers 42 percent of the total area. Likewise terai constitute 23 percent of total land area with accommodate 49 percent of population .Transportation and communication facilities are much more developed compare to other two zones of the country(Central Bureau of Statistics, 2006).

A demographic health survey conducted in 2006 found that, induced abortion was common among women living in hill zone 4 percent and western region 5 percent whereas miscarriage was found high among women living in mountains zone 11 percent and Mid-western and far western region (13 percent each).And the complications from induced abortion or miscarriage was found more among women living in mountain zone 89 percent and far western region 71 percent (MoHP, 2007).

2.5 Conceptual framework

For this study, the conceptual framework is derived from several earlier studies that have shown relationship among the phenomenon associated with complications from induced abortion or miscarriage with the knowledge about a safe place to get abortion service, abortion law and utilization of abortion service at health facilities. Based on the literature review, in many countries proximate determinant (women fertility behaviour like family planning choices and practice) relate to cause of unintended pregnancy while systemic determinant (service factor, social factor, economic factor, religious factor, and policy factor) plays an important role against women intension to terminate unintended pregnancy in safe and unsafe condition and this circumstances may lead to serious health complications (Warriner & Shah, 2006). According to my research, my study deals only with the systemic determinant of

abortion and its relationship with abortion related complications. The framework consist of three independent variables knowledge of women about safe place to get abortion, awareness of abortion law, and utilization of abortion service at health facilities and dependent variables complications from miscarriage and induced abortion. The socio demographic and geographic factors were considered as control variables, namely, age, education, place of residence, development regions, age at marriage, wealth status, and ecological zones (Figure 1).

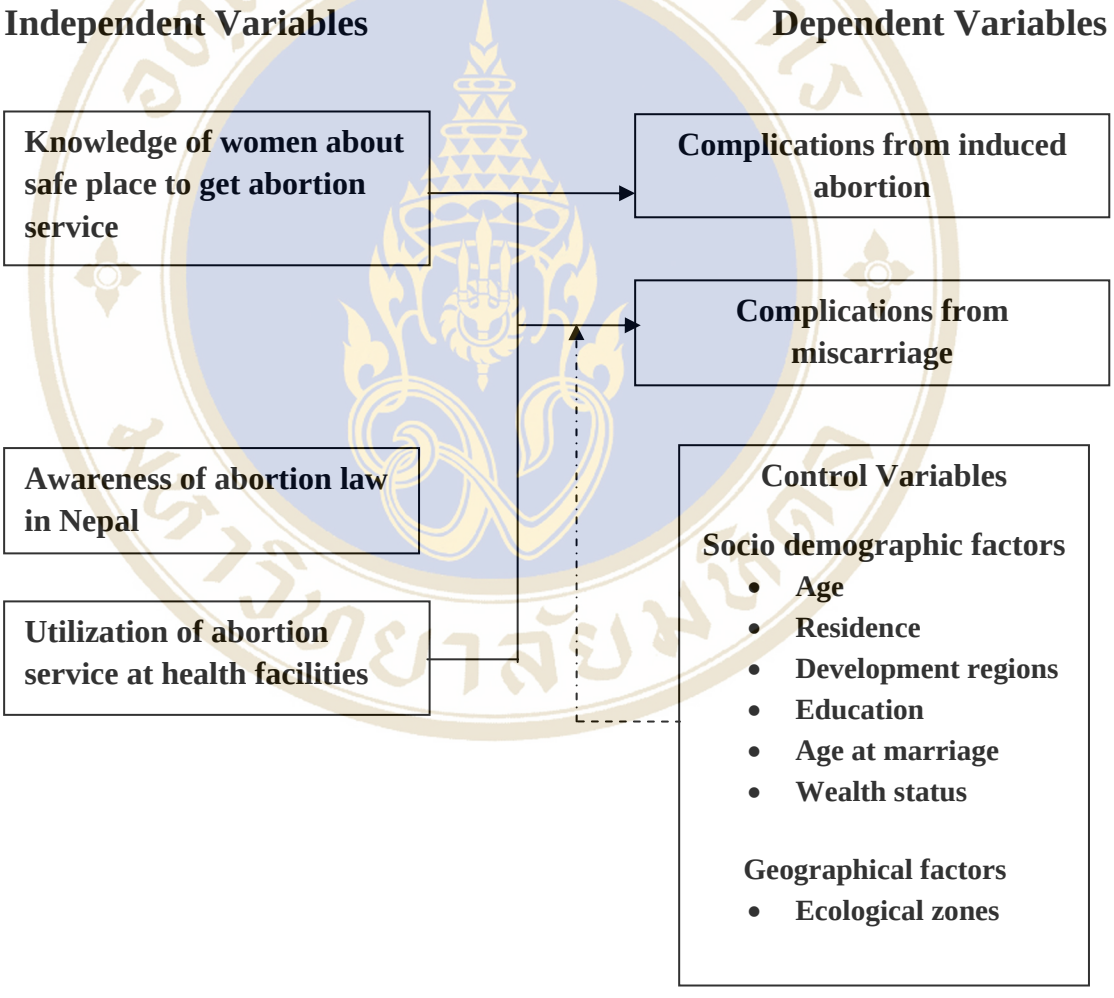

Figure 1 The conceptual framework

2.6 Research Hypotheses

- Women who are aware of legalization of abortion law are less likely to have chance of complications from induced abortion
- Women who are aware of legalization of abortion law are less likely to have chance of complications from miscarriage
- Women who utilized health facilities for their last miscarriage are less likely to have chance of complications from miscarriage
- Women who utilized health facilities for their last induced abortion are less likely to have chance of complications from induced abortion

CHAPTER III
RESEARCH METHODOLOGY

3.1 Source of data

The proposed study has used secondary data from the 2006 Nepal Demographic and Health Survey (MoHP, 2007).The Survey was carried out under the endorsement and guidance of the Population Division of the Ministry of Health and Population and was implemented by New ERA, a local research organization and was funded by the U.S. Agency for International Development (USAID) through its Measure DHS program in Nepal.

3.2 Sample design and sample population

The Nepal Demographic Health Survey is a national survey conducted every five years period. This study research is based on cross sectional design. The sample was designed to provide estimates of most key indicators for the 13 domains obtained by cross-classifying the three ecological zones (mountain, hill and terai) with the five development regions (East, Central, West, Mid-west, and Far-west).The 2006 NDHS used the sampling frame provided by the list of census enumeration areas with population and household information from 2001 population census.The 75 districts of Nepal is subdivided into Village Development Committee(VDCs) and each VDC into wards. The sample for the survey is based on a two-stage, stratified systemic sampling method with probability proportional to size, which give national representative sample of households.

The population of the study was the women of Nepal aged 15-49 years who had their last induced abortion or miscarriage in the three years (2003-2006) preceding the survey .The study includes those abortion cases undertaken during the time period 2003 -2006 i.e after the implementation of abortion law in Nepal and excludes cases that were undertaken during 2001-2002 from this survey data.

3.3 Unit of analysis

The study deals with the reproductive age women who had their last induced abortion or miscarriage in the three years preceding the survey. The survey successfully interviewed 8,707 households with a total of 10,793 women, yielding a response rate of 98 percent. However, the sample size of this study is 354 respondents who had their last induced abortion or miscarriage during the three years (2003-2006).And this group 220 respondents had experienced miscarriage and 134 respondents had undergone induced abortion.This study represents the country as a whole because the sample population is drawn from the national representative survey.

3.4 Operational definitions of the variables used in the study

It is essential that all the variables used in the study should be well defined in order to measure them with accuracy .The definitions provided below are meant to be guidelines for operation:

3.4.1 Dependent variables

3.4.1.1 Complications from induced abortion

This variable is used to measure the women who suffer complications or not from induced abortion. The question asked in the survey questionnaire was “Did you suffer any complication from your last induced abortion”? It gives only the perception of complications suffered from the respondent itself. It is dichotomous variable. The question recorded in two categories 1 and 0.Women who suffered complications from last induced abortion was coded 1 and those who suffered no complications from last abortion was coded 0 .

3.4.1.2 Complications from miscarriage

This variable is used to measure the women who suffer complications or not from miscarriage. The question asked in the survey questionnaire was “Did you suffer from last miscarriage”? It is dichotomous variable. It has two categories “Yes”

and “No”. Women who suffered complications from last miscarriage was coded 1 and those who suffered no complications from last abortion was coded 0.

3.4.2 Independent variables

3.4.2.1 Knowledge of women about safe place to get abortion service

Knowledge of women about safe place to get abortion in this survey means the understanding among reproductive age women who know a place to seek abortion service when needed. In this analysis safe place is identified as Government hospital, Private hospital/Clinics and Non government organization (FPAN and Marie Stope).The variable is created by using question on knowledge in the survey, “Do you know a place where a women can go to get an abortion”? The response options were “Yes”, “No” and “Don’t know”. The options were recoded into two categories ‘Yes’ and “No”. The respondent who said “Yes” was coded 1 who has knowledge about safe place and those who said “No” and “Don’t now” were coded 0 who have no knowledge about safe place for abortion service. It is measured at nominal scale.

3.4.2.2 Awareness of abortion law in Nepal

Awareness of abortion law in Nepal means the knowledge and understanding among the reproductive age women about the legalization of abortion law.The question asked in the survey was “Is abortion legal in Nepal”? The response option was “Yes” and “No” and “Don’t know”. The options were recoded into two categories “Yes” and “No”. The respondents who answered “Yes” was coded 1 for knowledge about law and those who said “No” and Don’t know were coded 0 who have no knowledge about law. It is measured at nominal scale.

3.4.2.3 Utilization of abortion service at health facilities

Utilization of abortion services mean the number of women seeking health facilities for abortion service (uterus cleaned) and complications treatments. The variable is created by using question from the survey, “Did you have your uterus cleaned at a health facility”? The response option was “Yes” and “No”. The

respondents who said “Yes” was coded 1 for utilizing the health facilities for abortion service and respondents who said “No” was coded 0 for not utilizing the health facilities for abortion service. It is measured at nominal scale.

3.4.3 Control variables

3.4.3.1 Age

It refers to complete years since birth date of women of reproductive age at the date of interview. It is categorized in four groups: 15-24, 25-29, 30-34, and 35-49.Age is measured at ordinal scale

3.4.3.2 Place of Residence

It refers to the place of residence of women at reproductive age group either rural area or urban area. In Nepal, urban area is defined as population living in municipalities. At present there are 3915 VDCs and 58 municipalities in Nepal. If there is 20,000 or more population in one municipality, it is considered as urban area and other not having these criteria is defined as rural area. Urban areas function as focal points of commercial, industrial, administrative, recreational and social services required by the rural and urban population. It has two categories ‘urban’ and ‘rural’. The respondents living in urban was coded 1 and those living in rural was coded 0.The place of residence in the study is measured at nominal scale.

3.4.3.3 Development region

It refers to five administrative region of Nepal where respondent live at the time of survey namely as Eastern, Central Western, Midwestern and Far western. The development region is measured at nominal scale.

Figure 2 Map showing the development regions of Nepal

3.4.3.4 Education

It refers to highest level of education of women at reproductive age group which includes three categories no education, primary level, and secondary level and higher. Education level is measured at ordinal level.

3.4.3.5 Wealth status

It refers to composite index of different household assets. The wealth status was categorized into five quintile poorest group, poorer group, middle group, richer group and richest group It is measured at ordinal scale.

3.4.3.6 Age at marriage

Age at marriage was categorized on the basis of risks of abortion complications. Age at marriage refers to the completed years of first age at marriage who have induced abortion or miscarriage in last 3 years preceding the survey. The age at marriage of the respondents is divided into 3 categories; less than 15 years, 15-19 years and 20 year and above. It is measured at ordinal scale.

3.4.3.7 Ecological zone

It refers to geographical areas where women live at the time of interview. There are three distinct ecological zones in Nepal namely Mountain, Terai (or plain), and Hill. It is measured at nominal scale.

Table 1 Scale of measurement of variables used in the study

Variables	Description	Measurement scale
Dependent variables Complications from induced abortion	Suffer complication from last induced abortion	Nominal scale 0 = no complications 1= complications
Complications from miscarriage	Suffer complication from last miscarriage	Nominal scale 0 = no complications 1= complications
Independent variables Knowledge of women who know a safe place to go for an abortion	Respondent's knowledge about safe place to go for abortion service	Nominal scale 0= no knowledge about safe place 1=knowledge about safe place
Awareness of abortion law in Nepal	Respondent's aware about abortion law	Nominal Scale 0= no awareness about abortion law 1 = awareness about abortion law
Utilization of abortion service at health facilities	Respondent's utilization of health facilities for abortion service	Nominal Scale 0= not utilize health facilities for abortion service 1 = utilize health facilities
Control variables ***Sociodemographic Factors*** Age	Respondent's completed age	Ordinal scale 1= 15-24 years 2=25-29years 3=30-34 years 4=35-49 years
Residence	Type of place of residence of the respondent	Nominal Scale 1= Urban 0= Rural

Table 1 Scale of measurement of variables used in the study (Conts.)

Variables	Description	Measurement scale
Development Regions	Type of region of residence of respondent	Nominal Scale 1=Eastern 2= Central 3=Western 4=Mid- western 5= Far western
Education	Respondent's completed level of education	Ordinal Scale 0 = No education 1 = Primary education 2= Secondary and Higher education
Age at marriage	Respondent's age at the time of marriage	Ordinal scale 1= 10-14 years 2 = 15- 19 years 3 = 20 and above
Wealth status	Respondent's composite index of different household assets	Ordinal Scale 1= Poorest 2= Poorer 3= Middle 4=Richer 5=Richest
Geographical Factors Ecological zones	Type of ecological zones of the respondent	Nominal Scale 1= Mountain 2= Hill 3= Terai

3.5 Method of analysis

All the data used in the survey were analyzed by using SPSS software program. The study employed the univariate, bivariate and multivariate technique. At first, data were summarized by descriptive statistics with simple frequency distribution, mean, percentage of the sample. Then, bivariate analysis was used employing cross tabulation and association was shown between independent variables and dependent variables by using Chi square test. Finally, a binomial logistic regression was used as analytical statistic to explore the relationship between independent and dependent variables in multivariate model.

3.6 Limitation of study

Abortion is still not socially accepted among Nepalese society thus it is likely that not all women who have had an abortion would be willing to report having done so. It is a very sensitive issue for a woman having an abortion. In some circumstances when women have difficulty in classifying abortion they might not report at all.Thus, abortion statistics may likely to underestimates of the true level of abortion. The Demographic Health Survey is a national household survey so complications defined in the study is based on the respondent perception of last miscarriage/induced abortion complications experience. The questions asked on abortion were very limited and did not give the in-depth information on type of complications suffered from abortion.Marital status was not considered in the study as there is no variation i.e all respondents were married women. The finding of the current research had not included the proximate determinant of abortion like women fertility behavior like family planning choices and practice in the proposed study.

CHAPTER IV
RESULTS

This chapter describes the result of the data analysis. Initially, it provides the background information of respondents who had last induced abortion or miscarriage within three years period of the survey (2003-2006). Data was analyzed by using univariate, bivariate and multivariate analysis. In the univariate analysis background characteristic of the study population was described.In bivariate analysis association between independent variables on dependent variables was described using Chi-square test and finally binary logistic regression was used to estimate the effect of each of the independent variables on the likelihood of complications from induced abortion and miscarriage in the multivariate analysis model.

4.1 Univariate analysis

4.1.1 Background characteristics of respondents

The total number of women who had their last miscarriage or induced abortion during three years period (2003-2006) in Nepal was found to be reported as 354 respondents, among them 220 (62.1%) had experienced miscarriage and 134 (37.9%) had undergone induced abortion. The reason for higher incidence of miscarriage cases to be reported than induced abortion could be that in most of the cases, women who had miscarriage might not know that they were pregnant and experience miscarriage whereas in case of induced abortion, women knew that they were pregnant and if a pregnancy is not planned, they visit a health facility for abortion.

4.1.2 Complications from abortion service

In Figure 3 among women who had experienced miscarriage and induced abortion from their last abortion service 133 (60.5%) suffered complications as a result of miscarriage and 60 (44.8%) as a result of induced abortion.

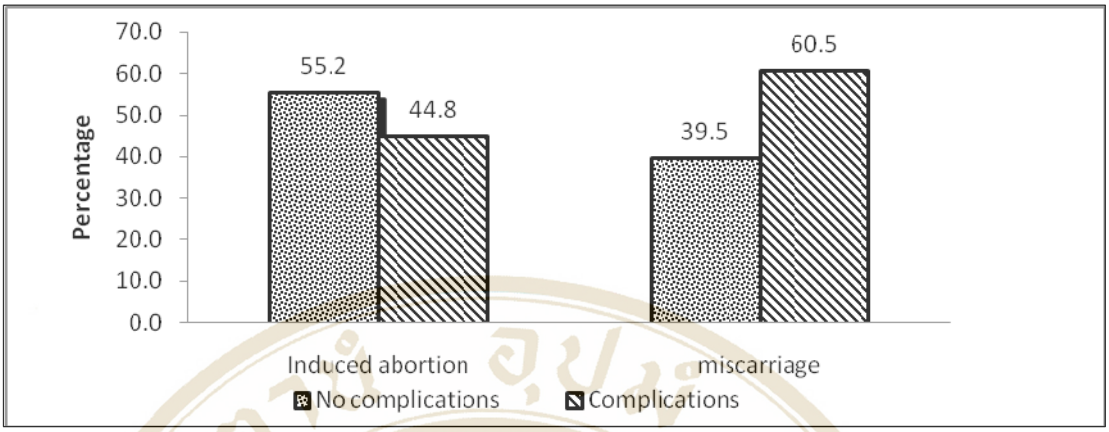

Figure 3 Percentage distributions of women who had abortion complications

4.1.3 Utilization of health facilities for abortion service

Women who utilize health facilities for abortion service was found to be 19.5% among women who had miscarriage compared to 87.3% women who had undergone induced abortion .This shows that the women who had miscarriage rarely utilize health facilities than those who had induced abortion which may increase the rate of abortion complications among that group of population (Figure 4)

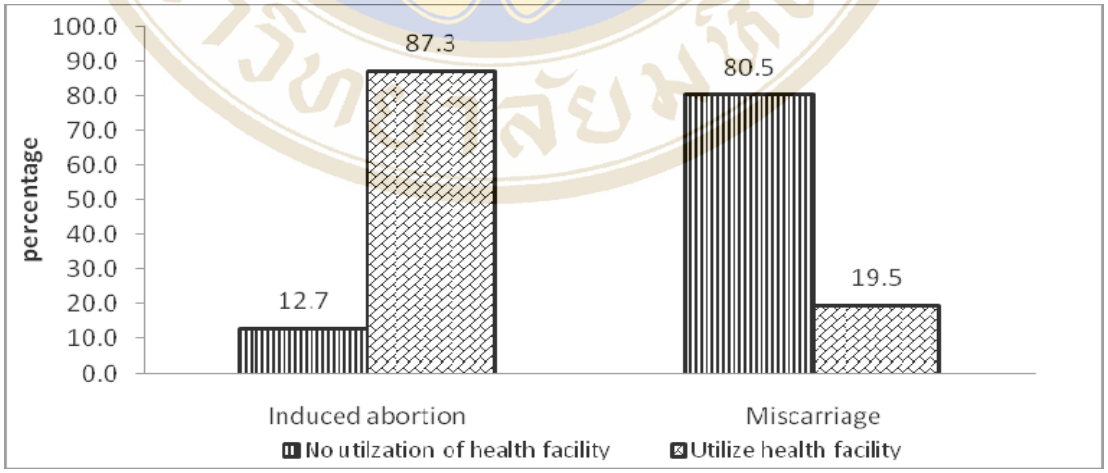

Figure 4 Percentage distributions of women by utilization of health facilities for abortion service

4.1.4 Awareness of abortion law in Nepal

Similarly, (Figure 5) shows the awareness of abortion law among women in reproductive age was found to be 59.7% among women who had undergone induced abortion and 29.5% among women had experienced miscarriage. This shows that majority of women need more awareness campaign on abortion right to woman.

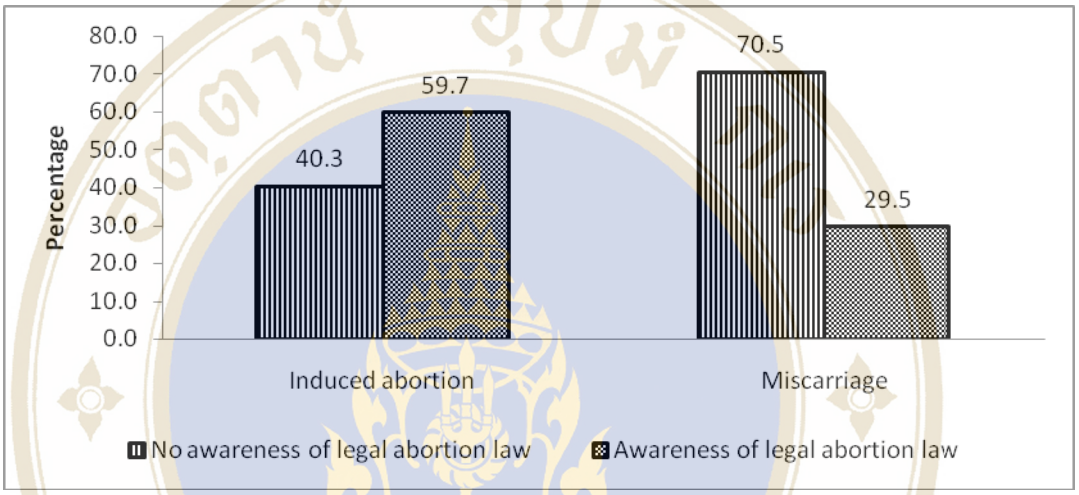

Figure 5 Percentage distributions of women by awareness of abortion law

4.1.5 Knowledge of women about safe place to get abortion service

Regarding the knowledge about safe place to get abortion service among women who had experienced induced abortion and miscarriage 95.5 % and 57.3 % respectively have correct knowledge about safe place to get abortion service. In this study, government hospitals, private hospital/clinics and non government organizations (FPAN and Marie Stope) are as selected as safe place to get abortion service (Figure 6).

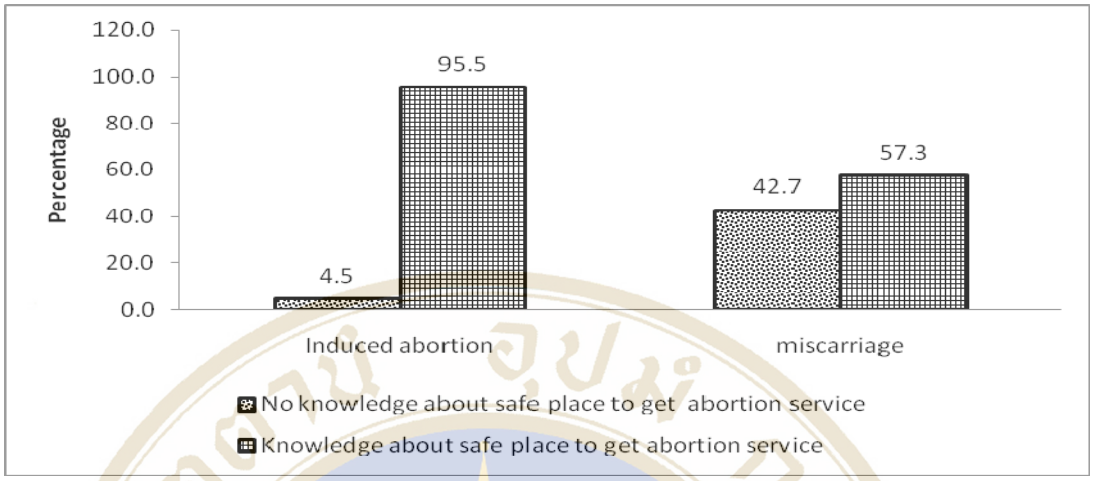

Figure 6 Pecentage distributions of women by knowledge of women about safe place to get abortion service

4.1.6 Sociodemographic and geographical characteristics

In this study Table 2 shows women in reproductive age group (15-49 years) ranged into four groups from 15-24,25-29,30-34 and 35+. The majority of women were higher in 15-24 and 25-29 years (49.1% and 26.4%) respectively among those who experienced miscarriages whereas among those who had undergone induced abortions, majority of women were higher in 25-29 and 30-34 (35.1% and 25.4%) respectively.Early marriage is common in Nepal .While looking at the distribution of women on age at marriage , more than half of women (64.2%) were married at age 15- 19 years among those who had undergone induced abortion and more than two third (70.5%) were married at age 15-19 years among those who experienced miscarriages.Likewise,the study covers more than three quarter of women from rural setting among those who had experienced miscarriages (76.4%) and more than half (59.7%) among induced abortions. Similarly the study portrays the percentage distriution of women according to their educational level. More than half (61.4%) women were found to have experienced miscarriage with no education compared to secondary and higher education.Similarly percentage distribution of women who had undergone induced abotion by educational leval showed 37.3% with no education, 22.4% with primary education, 40.3% with secondary and higher education.Likewise,the wealth status of women in the study varies among those who had miscarriage and induced abortion. Nearly half of the women (43.3%) who are in

richest status had undergone induced abortion compared to poorest status (14.2%). Whereas 24.5% women in poorest status were found to have experience miscarriage compare to women in richest status 16.4%.Likewise regarding development regions, majority of women living in western and farwestern region had undergone more induced abortion (33.6% and 26.9%) respectively whereas among those who had miscarriage, central and mid western region (22.7% and 21.4%) respectively had more proportion compare to other region

According to geographical characteristics, Nepal has been divided into three distinct ecological zone namely Mountain, Terai (or plain), and Hill. And proportions of women living in hill and terai zone were found to experienced miscarriage and induced abortion compared those women living in mountain in both cases.

Table 2 Number and percentage of women who had miscarriage and induced abortion by socio demographic and geographical characteristics

Background Charateristics	Women who had miscarriage	Total (N)	Women who had Induced abortion	Total (N)
Socio demographic characteristics				
Age				
15-24	49.1	108	20.9	28
25-29	26.4	58	35.1	47
30-34	10.9	24	25.4	34
35-49	13.6	30	18.7	25
Total	**100.0**	**220**	**100.0**	**134**
Age at marriage				
10-14	13.6	30	14.2	19
15-19	70.5	155	64.2	86
20+	15.9	35	21.6	29
Total	**100.0**	**220**	**100.0**	**134**
Place of residence				
Urban	23.6	52	40.3	54
Rural	76.4	168	59.7	80
Total	**100.0**	**220**	**100.0**	**134**

Table 2 Number and percentage of women who had miscarriage and induced abortion by socio demographic and geographical characteristics (Conts.)

Background Charateristics	Women who had miscarriage	Total (N)	Women who had Induced abortion	Total (N)
Development region				
Eastern	19.1	42	11.2	15
Central	22.7	50	14.2	19
Western	17.3	38	33.6	45
Mid western	21.4	47	14.2	19
Far western	19.5	43	26.9	36
Total	**100.0**	**220**	**100.0**	**134**
Wealth status				
Poorest	24.5	54	14.2	19
Poorer	20.5	45	14.9	20
Middle	20.0	44	8.2	11
Richer	18.6	41	19.4	26
Richest	16.4	36	43.3	58
Total	**100.0**	**220**	**100.0**	**134**
Educational level				
No education	61.4	135	37.3	50
Primary education	16.8	37	22.4	30
Secondary and higher	21.8	48	40.3	54
Total	**100.0**	**220**	**100.0**	**134**
Geographical characteristic				
Ecological zone				
Mountain	15.5	34	7.5	10
Hill	44.5	98	47.0	63
Terai	40.0	88	45.5	61
Total	**100.0**	**220**	**100.0**	**134**

4.2. Bivariate analysis

4.2.1.Utilization of abortion service at health facilities

Table 3 shows that in terms of utilization of health facilities for abortion service percentage distribution of women responding to complications was found to be more than three quarter (79.1 %) among those who had miscarriage whereas less than half (43.6%) among those who had undergone induced abortion encounter with complications. This is interesting to know that rate of women visiting health facilities

for miscarriage have had more complications compared to those who never utilize health facilities.

Chi square test was done to find out the association between independent and dependent variables. Women who had miscarriage had significant association ($p<.01$) with complications from miscarriage. As described in the descriptive analysis, the rate of service utilization among women who had miscarriage was found to be very less and among those who visited the health facilities, complications are greater.

4.2.2 Knowledge of women about safe place to get an abortion service

In terms of knowledge about safe place to get abortion service,two third of women (65.9%) had complications from miscarriage whereas 44.5% women had complications from induced abortion among those who had correct knowledge about safe place to get abortion service.

4.2.3 Awareness of abortion law in Nepal

Women who were aware of the abortion law 67.7% had complications from miscarriage whereas 46.3% had complications among women who had undergone induced abortion. This shows that apart from abortion policy other factors influence women to adopt unsafe abortion service in Nepal.

Table 3 Percentage distributions of women who had abortion complications

Independent variables	Complication from Miscarriage		Total (N)	χ^2	Complication from Induced abortion		Total (N)	χ^2
	Yes	No			Yes	No		
Utilization of abortion service at health facilities								
Utilize	79.1	20.9	43	7.74**	43.6	56.4	117	0.53
Do not utilize	55.9	44.1	177		52.9	47.1	17	
Knowledge about safe place to get an abortion service								
Correct knowledge	65.9	34.1	126	3.62	44.5	55.5	128	0.69
Wrong knowledge	53.2	46.8	94		50.0	50.0	6	
Awareness of legal abortion law in Nepal								
Awareness about law	67.7	32.3	65	2.02	46.3	53.8	80	0.17
No awareness about law	57.4	42.6	155		42.6	57.4	54	
Total	**60.5**	**39.5**	**220**		**44.8**	**55.2**	**134**	

Note: *Significant at 0.05 ** Significant at 0.01 ***Significant at 0.001

4.2.4 Socio demographic and geographical characteristics

Table 4 presents distribution of women who had complications from miscarriage and induced abortion by sociodemographic and geographical characteristics. In regards to age, it was shown that that younger the age group, higher will be the risk of complications from miscarriage than older age group whereas complications were seen higher in younger and older age in induced abortion. Women at age 15-24 years experienced 63% complications from miscarriage and 46.7% at age above 35 years. Likewise 46.4% complication from induced were observed at age 15-24 years women and 52% at age 35 above. Similarly concerning the age at marriage, women at early age of marriage below 15 years had experienced 80% complications from miscarriage and 31.6% from induced abortion compared to women who get married after 20 years 45.7% and 44.8% respectively. Regarding the place of residence, women in rural and urban areas have 59.5% and 63.5% complications from miscarriage whereas 50% and 37% from induced abortion. . Similarly concerning five development regions, women who live in far western region had experienced more than two third (83.7%) complications from miscarriage than women who live in eastern region 47.6%. And among women who had undergone induced abortion, more complications were observed in women living in eastern region (53.3%) than other regions. In terms of educational level for women, more than half women 60.7% experienced complications from miscarriage and 52% from induced abortion with no education compared to secondary and higher educational level. The finding shows education plays important role to reduce complications from induced abortion, lower the education more will be complications. Likewise, women with poorest status were found to experienced complication from miscarriage 70.4% than in richer status women 53.7%.It may be due to the reason that poor women have less economic status to concern about own reproductive health care and needs. In regards to women who had undergone induced abortion, middle status experienced 72.7% complications than richest status women 41.4%. It may be due to high cost of abortion service charge, so for cheaper service they had to go to backstreet abortion which might increase complications risk.

Regarding the geographical characteristic, it was found that women who live in mountain zone experienced 67.6% complications from miscarriage and 80% from induced abortion than women living in hill and terai zone

Table 4 Percentage distributions of women who had abortion complications by socio demographic and geographical characteristics

Control variables	Complication from Miscarriage		Total (N)	Complication from Induced abortion		Total (N)
	Yes	No		Yes	No	
Socio demographic factors						
Age						
15-24	63.0	37.0	108	46.4	53.6	28
25-29	65.5	34.5	58	38.3	61.7	47
30-34	54.2	45.8	24	47.1	52.9	34
35+	46.7	53.3	30	52.0	48.0	25
Age at marriage						
10-14	80.0	20.0	30	31.6	68.4	19
15-19	60.0	40.0	155	47.7	52.3	86
20+	45.7	54.3	35	11.8	55.2	29
Education level						
No education	60.7	39.3	135	52.0	24.0	50
Primary education	56.8	43.2	37	36.7	63.3	30
Secondary and higher	62.5	39.5	48	42.6	57.4	54
Wealth status						
Poorest	70.4	29.6	54	52.6	47.4	19
Poorer	66.7	33.3	45	35.0	65.0	20
Middle	45.5	54.5	44	72.7	27.3	11
Richer	53.7	46.3	41	42.3	57.7	26
Richest	63.9	36.1	36	41.4	58.6	58
Development regions						
Eastern	47.6	52.4	42	53.3	46.7	15
Central	46.0	54.0	50	42.1	57.9	19
Western	60.5	39.5	38	44.4	55.6	45
Mid western	66.0	34.0	47	42.1	57.9	19
Far western	83.7	16.3	43	44.4	55.6	36
Place of residence						
Urban	63.5	36.5	52	37.0	63.0	54
Rural	59.5	40.5	168	50.0	50.0	80

Table 4 Percentage distributions of women who had abortion complications demographic and geographical characteristics (Conts.)

Control variables	Complication from Miscarriage		Total (N)	Complication from Induced abortion		Total (N)
	Yes	No		Yes	No	
Geographical Characteristics						
Ecological zone						
Mountain	67.6	32.4	34	80.0	20.0	10
Hill	60.2	39.8	98	41.3	58.7	63
Terai	58.0	42.0	88	42.6	57.4	61
Total	**60.5**	**39.5**	**220**	**44.8**	**55.2**	**134**

4.3 Multivariate analysis

Table 5 presents the result of the logistic regression analysis. Since both the dependent variables are dichotomous in nature (1= suffer complications from induced abortion and miscarriage and 0= No complications from induced abortion and miscarriage), a binary logistic regression model was used to assess the relationship of independent variables on complications from miscarriage and induced abortion, after controlling by socio-demographic and geographical characteristics. Among 354 women who had their last induced abortion or miscarriage, 220 women experienced miscarriage and 134 women had induced abortion were analyzed in this logistic regression model.

The logistic regression model shows the effect of independent variables and sociodemographic and geographical factors on complications from miscarriage and induced abortion. In multivariate analysis among independent variables and control variables altogether five variables were found to be significant.

And above all, in both type of complications from miscarriage and induced abortion, whole model was found to be significant. Utilization of abortion service at health facilities show a statistically significant difference on complications from miscarriage. Women who had miscarriage visited the health facilities for abortion service were 7.3 times more likely to have had complications from miscarriage

whereas no significant difference was observed between utilization of health facilities for abortion service and complications from induced abortion. Knowledge about safe place to get an abortion service and awareness of abortion law showed no association with complications from miscarriage and induced abortion. This could be the reason that apart from knowledge about safe place and legal abortion right, various other factors like delay in recognizing the need for health care, transportation, distance to the health facilities and unskilled staffs and well equipped health facilities might effect to make the complications more severe and fatal.

Similarly among social demographic characteristics, age at marriage showed positive and statistically significant impact on complications from miscarriage. Women who married before 15 years and at 15-19 years were 10.9 times and 7.4 times respectively more likely to have complications from miscarriage than women who married after 20 years and above. In terms of educational level, it shows statistically significant difference on complications from induced abortion. Women who have no education were 3.6 times more likely to have complications from induced abortion than women who had secondary and higher education. Regarding the wealth status, women in middle status were 7.8 times more likely to have complications from induced abortion compared to women who were in richest status. Likewise in terms of development regions, it shows statistically significant difference on complications from miscarriage. Women living in mid western and far western development regions were 3.8 times and 4.4 times more likely to have complications from miscarriage compared to women living in eastern development regions.

However no significant difference was observed among age group, place of residence and ecological zone with complications from induced abortion and miscarriage.

Table 5 Odd Ratios and 95%C.I values of women who had abortion complications

Variables	Complication from Miscarriage		Complication from Induced abortion	
	Odd Ratio	95% C.I.	Odd Ratio	95% C.I.
Utilization of abortion service at health facilities	7.350***	2.762 - 19.562	0.717	0.188 -2.735
Knowledge of women who know a safe place to get an abortion service	2.173	0.947 - 4.990	0.245	0.042 -1.431
Awareness of legal abortion law in Nepal	1.051	0.474 - 2.328	1.696	0.686 -4.192
Sociodemographic factors				
Age (Ref: 35+)				
15 – 24	0.412	0.123 - 1.383	0.881	0.196 -3.961
25 – 29	0.520	0.151 - 1.786	0.496	0.129 -1.910
30 - 34	0.386	0.084 - 1.785	0.315	0.067 -1.492
Age at marriage (Ref: 20+)				
10 – 14	10.910***	2.693 - 44.197	0.207	0.028 -1.528
15 - 19	7.423***	2.513 - 21.922	0.658	0.217 -1.994
Educational level (Ref: Secondary and higher education)				
No education	1.341	0.396 - 4.539	3.697*	1.070 -12.693
Primary education	0.686	0.203 - 2.313	0.577	0.166 -2.006
Wealth status (Ref: Richest)				
Poorest	1.742	0.368 - 8.249	0.902	0.176 -4.616
Poorer	1.713	0.425 - 6.898	0.302	0.065 -1.404
Middle	0.481	0.116 - 1.995	7.841*	0.985 -62.393
Richer	0.814	0.231 - 2.869	0.744	0.213 -2.602
Development regions (Ref:Eastern)				
Central	1.765	0.632 - 4.930	0.408	0.067 -2.490
Western	2.318	0.694 - 7.745	0.476	0.086 -2.623
Mid western	3.815***	1.120 - 12.988	0.353	0.048 -2.615
Far western	4.472***	1.221 - 15.657	0.605	0.099 -3.706
Place of residence (Ref: Urban)				
Rural	0.646	0.222 - 1.878	0.968	0.327 -2.869
Ecological zone (Ref: Terai)				
Mountain	1.314	0.351- 4.919	6.774	0.330 -137.93
Hill	0.605	0.270 - 1.356	0.414	0.135 -1.264
-2Log likelihood	223.526		140.129	
Model Chi-square value	60.310***		34.645*	
Degree of freedom	21		21	
Cox & Snell R Square	0.254		0.238	
No of cases	**220**		**134**	

Note: Ref = Reference, * Significant at 0.05, ** Significant at 0.01, *** Significant at 0.001

CHAPTER V
DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

5.1 Discussion

Greater challenges need to be met with regard to safe abortion in order to reduce risk-taking behavior of abortion seekers. In Nepal, government and non-government organizations are initiating awareness of community mobilization for safe abortion services to reduce complications from unsafe abortions and miscarriages. Many studies, including the present findings, indicate that complications from abortion cause serious and fatal health risks in Nepal. Thus, women need greater awareness of safe abortion services available in health facilities. But many women who suffer complications from unsafe, illegal abortions are afraid to come in for medical treatment, and those who do utilize health facilities usually come only when they face serious life-threatening complications from miscarriage and induced abortion.

In terms of utilization of health facilities, it was found that more than three-quarters (79.1%) of women responded to complications from miscarriages whereas less than half (44%) encountered complications from induced abortion. There was a positive and statistically significant association between utilization of health facilities and complications from miscarriage while utilization of health facilities in the case of complications from induced abortion could not establish significant association The finding is similar to the findings of a hospital-based survey conducted in 1999 in Thailand which showed that more cases were reported as a result of miscarriage than induced abortion among those women who were admitted for treatment of complications (MoPH,2003).

The results here are consistent with those of Huntington et al. (1998), which state that women who had undergone induced abortions in health facilities were found to be more prompt to utilize health services compare to those who had miscarriages. This may be because miscarriage is a biological phenomenon of women's reproductive health, and only when women have some severe symptoms of

complications do they visit a health facility, whereas in the case of induced abortion, women decide to get abortion when a pregnancy is not planned, so they visit a health facility before encountering complications.

Measures of knowledge about safe places to get an abortion showed no significant association with complications from induced abortion and miscarriage and showed similar results with those of Berer (2002) and Grimes (2006). This could be the reason that, apart from knowledge about safe places to get an abortion, various other factors such as a delay in recognizing the need for healthcare, lack of transportation, distance to the health facility, unskilled staff, lack of access to a well equipped health facility, and, above all, social and cultural acceptance might be barriers to access seeking safe abortion, resulting in more severe and even fatal complications. Knowledge of Nepalese women about safe place to get abortion service was 55.2% (MoHP, 2007).

Like the study in South Africa (Morroni et al., 2006), the present finding shows no statistically significant influence between awareness that abortion law in Nepal and complications from induced abortion and miscarriage. Awareness about abortion law among reproductive age women in Nepal was only 31.2% (MoHP, 2007). One of the main reasons for this may be that abortion is still not fully accepted socially and culturally, which makes women having abortions feel embarrassed, guilty, and ashamed. In fact, women who come to abortion clinics are often stigmatized by colleagues and society. However, it should not be concluded that awareness of abortion law is not significantly related to complications arising from abortions as the right to abortion plays an important role in improving the quality of life and reproductive health care for women.

Binary logistic regression analysis indicated that age at marriage; education level, wealth status, and development regions had a statistically significant influence on complications from miscarriage and induced abortion.

Age at marriage shows a statistically significant difference from complications arising from miscarriage. This finding was similar to the findings of the Nepal demographic health survey (MoHP, 2007), which states that women are three times as likely to report having a miscarriage than they are an induced abortion. This is because Nepalese women get married at an early age, so they have a longer period of

exposure to the risk of becoming pregnant, which may result in miscarriage and or cause other complications. Another explanation is that younger women are less familiar than older women with the reproductive health system and as a result are less likely to go for medical treatment. On the other hand, age at marriage affects older women in terms of induced abortion and is similar to the findings from Ashenafi (2004). The reason may be that older women already have had all the children they want or that they did not plan their most recent pregnancy.

The education level of women also influences complications from induced abortion. Women with no education were found to suffer more complications from induced abortion compared to women who had secondary and higher education. The findings from Huntington et al. (1998), Thapa et al. (2001), and Becker et al. (2002) show similar results with the present study, namely, that women with more education are less likely to have complications since they go to a safe place for abortion compared to women with no education.

Similarly women's wealth status also plays an important role and has an influence on complications from abortion. The present finding shows that there is a statistically significant difference among complications from induced abortion with women's wealth status. Women of middle economic status were found to have more complications from induced abortion than those of richest economic status. Other findings also showed similar results (Singh & Wulf, 1994; CREHPA, 1999). One reason for more complications from induced abortion might be the fees charged for abortion and regularity of services. Poor women are more likely to try to induce abortions themselves or go to untrained or poorly skilled providers because they cannot pay doctors' fees so they suffer or die without ever being counted as an abortion statistic. Abortion fees in private clinics and nursing homes are three to four times higher than government hospitals and NGOs in Nepal (CREHPA, 2006).

In terms of development regions, significant differences in complications from miscarriage were observed. Women living in the mid western and far western regions were more likely to suffer from complications from miscarriage than those living in the eastern region. This could be due to poor accessibility and availability of health services and quality of care management in abortion services in the mid western and far western regions of Nepal. Another explanatory reason could be due to lack of

transportation and communication facilities, distance to medical facilities, and cultural factors, often limit women to seek medical care when complications arise (MoHP, 2007).

The present findings did not support two hypotheses that women who utilized health facilities for their last induced abortion or miscarriage were less likely to experience complications from induced abortion or miscarriage. This may be due to the fact that reporting of abortion complications in this study depends on the individual's own perception. Thus, we cannot measure the degree of complications whether it was a minor or major risk of complications so younger women, who might lack reproductive healthcare knowledge compared to that of older women, might have reported cases as abortion complications which may in fact be perceived as minor cases by older women who had more than one children. Therefore, accurate information might not have been obtained as per our research objective. Similarly, contrary to another two hypotheses, awareness of abortion law also had no significant association with complications from induced abortion and miscarriage. This is because of social and cultural norms on abortion set by society. It was also found that when women had abortion in clandestine conditions, its occurrence tends to be under reported, not reported at all or reported as miscarriages due to social and restrictive law (Ahman & Shah, 2002).

However, we should not ignore the importance of abortion law and utilization of healthcare facilities for abortion service because they are essential components for making abortion safe and responsive to women's sexual and reproductive health needs. Laws restricting abortion make abortions unsafe, but do not eliminate them (Henshaw et al., 1999).

5.2 Conclusion

The present study concludes that women who visited health facilities and responded to miscarriages were more likely to have had complications from miscarriages compared to those who did not visit health facilities. However, no statistically significant difference exists between complications from induced abortion and utilization of health facilities. Similarly, knowledge about safe places to get an

abortion and awareness of abortion law also showed no significant difference in terms of complications from miscarriages and induced abortions as socio cultural characteristics had more influence on women's rights.

Women who were married at an early age (below 19 years) have faced a greater risk of complications from miscarriage than those who got married after age 20. Education is one of the important factors associated with abortion complications. The majority of women who possessed higher education were less likely to have complications from induced abortion. Wealth status also shows a statistically significant difference with complications from induced abortion. Higher costs for abortion at health facilities are restricting women from using such facilities. Likewise, it was also found from the study that women living in the mid western and far western development regions had more complications from miscarriages than those living in the eastern development region as they are exposed to poor quality health service.

However, the finding showed no significant association among age group, place of residence and ecological zone with complications from miscarriage and induced abortion.

Overall, these findings indicate that there is an immense need among women for abortion services at health facilities in Nepal. Thus, government and non-government organizations should concentrate more on programs that aware woman to utilize abortion services at health facilities both for women experiencing miscarriages and induced abortions. Strategies should be developed to address this gap so that women are fully informed of their rights to a safe and legal termination of pregnancy.

5.3 Recommendations

Some barriers to addressing unsafe abortion and related maternal mortality and morbidity have been reduced when the Nepal government set a specific abortion policy in 2002 for betterment of woman's reproductive health. But more supportive programs and future research need to be done to decrease the incidence of unsafe abortion and its resultant complications. The present study has found some recommendations that need to be considered for future planning and programming abortion related issues.

5.3.1 Recommendations for policy/program level

5.3.1.1 The majority of women do not utilize health facility for abortion service and complications treatment from miscarriage and induced abortion, so policymakers need to respond to reproductive health and social problems faced by women by expanding and improving them where they are inadequate and performed predominantly in unsafe conditions.

5.3.1.2 Women were not well aware of the legal abortion policy, so more programs about women's right to safe and legal abortion need to be taken into consideration.

5.3.1.3 Age at marriage is one of the significant causes of abortion complications, so government programs should focus on messages that delay marriage of young women and men.

5.3.1.4 More complications occurred due to miscarriage, so program should be designed for young women and newly married couples to raise their awareness of early pregnancy and its consequences as well as precautionary measures to take during pregnancy.

5.3.1.5 Accessibility and availability of health services and quality of care management in abortion services should be enhanced in the mid western and far western development regions to reduce complications risk from abortion.

5.3.1.6 Standardization of abortion fees in all government hospitals, private clinics, and in NGOs is highly essential to ensure affordability of safe abortion service by every woman.

5.3.2 Recommendations for future research

The present study focuses on women who have abortions and their perceptions regarding experiencing complications from induced abortion and miscarriage, so further research needs to be done to generate in-depth information on various types of complications women might get after undergoing abortion. A detailed questionnaire must be designed that will elicit information on various signs and symptoms of abortion complications in order to distinguish between the minor and major cases. Such statistical findings will be useful for the policy planners and health personnel to deal with the abortion-related problems. It will also show close association between

different socio cultural factors affecting complications from abortion. However, variables like distance to health facility, a couple's decision to have an abortion, parity of women, attitude toward abortion, service satisfaction, and women's fertility behavior (such as FP choice and practice) need to be included in future studies so as to see more correlations with abortion related complications. Similarly future research on attitudes towards induced abortion and a more supportive service environment related to unplanned pregnancy should be carried out among young women.

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