FIGO SAFE ABORTION PROJECT

ZAMBIA ABORTION SURVEY REPORT

INCIDENCE AND DETERMINANTS OF ABORTION IN ZAMBIA

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Implementing Institutions
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Abstract

Abortion remains the major risk factor to maternal morbidity and mortality in many parts of Africa and more so in the Zambian situation, even though the level of its incidence is still uncertain. Despite Zambia having the most favourable and liberal abortion law in Africa, morbidity and mortality that have accounted for unsafe abortion remain a major reproductive health challenge, demonstrating gaps in application of abortion law compounded by institutional and socio-cultural barriers, as social norms of Zambian societies. The purpose of a national abortion survey in Zambia was to estimate abortion incidence ratio rate and examine its determinants in order to better understand the magnitude of unsafe abortion and seek further approaches for improving safe abortion services and other related reproductive health services in the country. Specifically, it involved collecting annual abortion data, from June 2008 to May 2009 in major referral hospitals, alongside determining abortion complications by demographic characteristics in relation to age, education, occupation, marital status, religion, parity and method used for abortion over a period of six months. The other objective was to examine the mode of abortion practice and its occurrence by type of abortion complications, as whether legal, unsafe (illegal practice), or spontaneous abortion prevalent at the health facilities.

A retrospective cross sectional hospital-based survey was conducted to review 4174 abortion case records over a period of six months, January to June 2009, in four major hospitals of Kitwe Central, Ndola Central, University Teaching Hospital (UTH) and Kabwe General Hospital in three provinces of Lusaka, Copperbelt and Central. These study sites were selected purposively on the basis of population concentration and serving as major referral hospitals in the country. A ratio estimation of abortion incidence rate was applied to the annual abortion data for June 2008 to May 2009 estimated on the basis of annual expected pregnancies for 2009. Other measures included demographic characteristics and abortion status in relation to its classification as, legal termination of pregnancy (TOP), unsafe abortion (Illegally induced), or spontaneous, method used for abortion and parity as main variables. A record review checklist was used to collect all abortion data. Data were analyzed by SPSS statistical package for descriptive statistics and statistical tests for associations in the occurrence of abortion and its characteristics, method used and parity.

The findings show the abortion incidence ratio rate of 12.3 percent per 100 live births of expected annual number of pregnancies for 2009 for the three provinces. There are greater significant associations in the prevalence of abortion with education, marital status, occupation, religion, parity, methods used for abortion and type of health facility (pvalue< 0.000- 0.001), which determines the extent to which abortion affects women in Zambia. Age was not found significantly statistical difference in its association with the prevalence of abortion (pvalue > 0.558). However, abortion affected all age-groups of women in the age range from 10 to 49 years, with a mean of 26.29 years, even though there were some variations in the distribution of abortion incidences according to their age-groups. Significant differences were also observed in the practice of legal abortions (2.5 percent) and those presenting with complications of unsafe abortion and spontaneous abortions as incomplete abortion accounting for 92.4 percent (pvalue < 0.000). Mortality is highest in Ndola Central (45.5 percent) followed by Kitwe Central (27.3 percent) than UTH and Kabwe General Hospital with limited figures, giving the overall percent of 0.3 percent of all abortion deaths. More women are surviving from the risk of abortion morbidity in Zambia. Use of MVA is found highly significant in reducing abortion mortality at health facilities. The findings suggest greater unmet needs for family planning and safe abortion services directing to improvement in family planning programme, policies and future innovation research approaches including the effective process of monitoring and evaluating abortion trend and strategies alongside strengthened health information system are imperative. Abortion is a highly risk factor to morbidity more than mortality which directs to better effective preventive measures of unwanted pregnancies than reliance on case management strategies of abortion care.

Acknowledgement

The development of the initial proposal for this abortion survey study to reach its completion by the authors was through the initiative of Ipas Africa Alliance in collaboration with the Federation of International Association for Gynaecologists and Obstetricians (FIGO), Zambia Medical Association and the University of Zambia to provide financial assistance, implementation and indeed foreseeing the completion of this study.

Special tribute goes to the eminent research assistants and support staff at the designated hospitals for enthusiastic participation in the hospital-based survey data collection: Rose Mwanza (Kabwe); Mavis Chingeji (Kitwe); Julia Muyunda (Ndola); Esther Mary Kurian (Lusaka); Sakala Mabvuto (Lusaka); Clive Banda (Lusaka); Jane Chisanga (Lusaka); and all support staff including the driver, Mr Sten. Ngwenya.

To the Ministry of Health and all Provincial and Hospital Health Directors, and indeed the UNZA Research Ethics Committee for authority and approval of the study to enable us access to the hospital premises and the clients records at the designated hospitals.

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Acronyms

CAC: Comprehensive abortion care
CSO: Central Statistics Office
CPR: Contraceptive prevalence rate
IEC: Information, education & communication
IPPF: International Planned Parenthood Federation
MML: Christian Mission of Many Lands
MVA: Manual vacuum aspiration
PAC: Post abortion care
TOP: legal termination of pregnancy
UNZA: The University of Zambia
UTH: University Teaching Hospital
WHO: World Health Organization
ZDHS: Zambia Demographic and Health survey

Terminology

Abortion:	Termination of pregnancy, expulsion or extraction of embryo, fetus or products of conception before viability at 28 weeks of gestation. In Zambia, 28 weeks of gestation is the date of viability.
Abortion Condition:	Status of a woman's health surviving at time of discharge following treatment of abortion complication from a health facility or died at admission or during hospital care.
Abortion incidence ratio:	Total number of women treated for abortion complications per 100 live births in a year
Adolescence:	A period of physical and biological transitional changes from childhood to puberty recognized by first menstrual initiation in females and orgasm plus spur growth in males.
Adolescent:	A person aged between 10-19 years
Comprehensive Abortion Care:	A holistic approach of reproductive health care involving the epidemiological primary concept of pregnancy prevention, secondary management of unwanted pregnancy and the tertiary care of treating abortion complications in the heath systems.
Family Planning:	A voluntary or deliberate method of spacing or limiting births to achieve the desired family size a couple or individuals would wish to have in their lifetime.
Legal Abortion:	Termination of pregnancy involving a safe procedure performed under hygienic conditions using appropriate or right equipment by trained providers as laid-down by the Termination of Pregnancy Act.
Maternal Mortality Ratio:	The number of women dying due to pregnancy and child birth complications per 100,000 live births in a year
Post Abortion Care:	An integrated package of care for women who have had spontaneous (miscarriage) or induced abortion with or without its complications, which includes provision of emergency treatment, family planning counseling and linkages to other reproductive health services at a clinical health facility and community levels.
Unsafe abortion:	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
Unintended pregnancy:	Pregnancy occurring unplanned resulting in either wanted or unwanted birth
Unwanted pregnancy:	Pregnancy which is not desired by the pregnant woman.
Youth:	A person aged 10-24 years

PART 1
INTRODUCTION

Abortion remains a serious regional health concern in many parts of Africa and more so in the Zambian situation due to the consequences of unsafe abortion (Kinoti 1995; World Health Organization 2004; Singh 2006; Guttmacher 2007). World Health Organization (1998) has defined unsafe abortion as 'a procedure for terminating unintended pregnancy carried out either by persons lacking the necessary skills or in an environment that does not conform to minimal standards, or both' positions many women in serious health risk conditions. Estimation of more than 95% of abortions in African and Latin American countries, and 60% of abortions in Asia are performed under unsafe conditions (Sedgh et al. 2007; Susheela Singh et al.2009). The proportion of all abortions that are unsafe, therefore, increased from 44% to 47% in a global estimation between the periods 1995 to 2003, respectively (Guttmacher 2007; Sedgh et al.2007). These statistics demonstrate the severity of unsafe abortions in Africa and other developing regions likely to increase if remains unchecked, given situations of developed regions showing nearly all abortions (92%) are safe, whereas in developing regions more than half (55%) are unsafe (World Health Organization 2004; Guttmacher 2007). In Zambia, incidence measurement of abortion, more specifically unsafe abortion and its determinants has remained a major gap to direct better provision of primary, secondary and tertiary health care of abortion services. It is in this context that this study was thought to provide a baseline data for managing and initiating better innovative approaches to reduce abortion related morbidity and mortality in Zambia.

To curb with the risk of unsafe abortion, the Ministry of health has introduced a post abortion care (PAC) to reduce the risk of unsafe abortion morbidity currently being implemented in all provinces that is, yet, to be supplemented by a holistic approach of comprehensive abortion care (CAC). The decision on implementing CAC envisions significant reduction in maternal mortality to attain the Fifth Millennium Development Goal by the year 2015. Alongside this vision, the Ministry of Health further developed standards and guidelines for reducing unsafe abortion morbidity and mortality that emerged from the Zambia strategic abortion needs assessment of 2008 (Ministry of Health 2009). However, unsafe abortion is still one of the high risk causes of maternal mortality in Zambia. The need to monitor its incidence is critically vital to direct effective implementation of the intended approaches to strengthen reproductive health services in Zambia. It is, also, in this context that a continued monitoring of unsafe abortion was thought to provide a better direction for safe abortion project implementation in the country.

Background

Abortion Legislation

Availability of pregnancy termination is largely determined by national legislation. In all parts of Africa, induced abortion is illegal or restricted by law (Liskin 1980; Logo 1996). Only in two Sub Saharan countries of Burundi and Zambia that allow abortion beyond health considerations or on social grounds (Government of Zambia 1972; Commonwealth Regional Health Community Secretariat 1990; Logo 1996). Even in these countries, procedural barriers, inadequacy of services and gaps in knowledge of abortion law make it impossible for demand for safe induced abortion to be promptly and adequately met (Turkson 1996; Rogo 1996; Ipas et al.2008). Age is specifically cited as a factor considered in the Zambia Termination of Pregnancy Act 1972 and permits three registered medical practitioners to determine pregnancy status and the legal indication for the authority of an abortion has brought about mixed feelings in its implementation in the Zambian community (Government of Zambia 1972; Ministry of Health and Ipas 2008).

Magnitude of Abortion in Zambia

The current situation of abortion problem in Zambia can not be entirely differentiated from those depicted from other countries in the region. Zambia has the most favourable and liberal continental abortion legislative frameworks in Africa (Logo 1996). Yet, morbidity and mortality accounted due to abortion that is most likely unsafe have remained a major reproductive health challenge nationwide (Kinoti 1994; Kaseba et al. 1998; Ministry of Health and Ipas 2008; Likwa et al. 2009) The effects of abortion law in Zambia are more profoundly evident in the occurrence of unsafe abortion incidence increasing the risk to women, even though very little quantified estimates that have been done to determine its morbidity and mortality incidence or prevalence rates for the country's national situation. Much of this evidence has relied on limited studies devoted to mortality and qualitative estimates (Kinoti 1995; Likwa et al. 1994; IPAS et al. 2008). In a recent abortion 'research in brief' study which computed abortion statistics for the selected five major central and general hospitals demonstrates severity of abortion morbidity and mortality that required a further abortion measurement. A total number of 115886 abortion statistics collected from five major hospitals in four provinces of Zambia over a period of nine years, 2000-2008, giving a proportion of 60.4 percent abortions of all gynae admissions, only 0.5percent (616) were legally terminated. Overall, 66687 (34.8 percent) were abortion complications of all gynae admissions (Likwa et al. 2009). Out of this figure, 47885 cases had a manual vacuum aspiration procedure (MVA) for a post abortion care which translate to over 70 percent of abortion complications had MVAs reflect the extent to which unsafe abortion increases the risk to maternal mortality in Zambian women (Likwa et al. 2009). Risk to abortion morbidity and consequences of mortality are high and increasing in trend giving six per thousand women die of abortion complications due to unsafe abortion. Abortion complications in gynae admissions increased from 3,380 in 2000 to 10,689 for 2008 period translating trend increase from 29 percent to 43 percent, respectively (Likwa et al. 2009). Other limited hospital based studies have further confirmed 30-50 percent of acute gynaecological admissions that are abortion complications mostly being associated with unsafe abortion (Kaseba 1998; Mtonga et al.2001; Kamanga 2009). It is suggesting, therefore, that most of these abortions could be performed in unsafe conditions thereby exposing women to high risk of complications. Access to safe

induced abortion has become quite low and declined from 3,231 in the periods 1996-1997 to 123 in 2008. With a current maternal mortality rate of 591 per 100,000 live births, it is estimated further that 30 percent of these deaths could result from unsafe abortion (Kinoti et al.2004; CSO et al.2009) [1]A total number of 1,164 legal abortions with few others from hospitals have been documented (Ministry of Health 1993). However, 10 to 20 legal abortions were performed, but not documented due to poor record keeping system at health facilities (Kinoti 1995). The substantial differences between recorded legal abortions and the implicit evidence of illegal abortions demonstrate gaps in reporting system of abortion incidences at the health facilities. Variation in statistics may suggest a further comprehensive measurement of abortion incidence to determine its relevancy contribution to maternal mortality in the country.

Furthermore, differences in demographic characteristics have been noted to exist between groups of women exposed to abortion. More than 80 percent of women presenting induced abortion complications are adolescents, between ages 15 and 19 years (Likwa 1989). Young women are more likely to be affected than older women to seek illegal or unsafe abortion. In another study conducted in 1990 period show that women seeking legal abortions tend to be older, between 20 and 29 percent (55 percent), attained secondary education (60 percent) and had children (71 percent) than those seeking illegal abortion (Likwa et al. 1996). Most women undergoing illegal abortions have been between 15 and 19 years (60 percent), had some secondary education (55 percent), unmarried (60 percent), had no previous pregnancies (63 percent) and 81 percent have been students who had wanted to continue their education (Likwa et al. 1996). Delayed abortion procedures to second trimester have been also found (Mhango et al. 1986). It could have occurred on account of lack of information, fear of parents and cultural moral values, and hesitation due to decision making. For young girls, this could also reflect their failure to recognize signs of pregnancy, denial to face the situation, or hope for inevitable abortion (Likwa et al.1996). Age, education and marital status seem as most prominent social factors associated with seeking abortion procurement which has a relationship links to unmet needs for contraception and access to quality safe abortion care in Zambia. Common method used for clandestine abortion was cassava root inserted in the cervix (33 percent). Others were high doses of chloroquine tablets taken orally (Likwa et al. 1996).

Unmet Need for Family Planning

Unmet needs for family planning is still problematic in Zambia. Overall, 27 percent of currently married women have an unmet need for family planning, 17 percent for spacing births and 9 percent for limiting births. Unmet need for family planning has therefore remained unchanged since 1996 (CSO 2009).[2] The evidence has serious repercussions to high increases of unwanted pregnancies attributing to unsafe abortion observed in the country. If all women in reproductive ages with an unmet need for family planning were to use an effective contraceptive method of their choice, the contraceptive prevalence rate (CPR) for any method in Zambia would increase from current 41 to 67 percent, and abortion related complications from unwanted pregnancy would also reduce drastically.

[1] ZDHS 2007
[2] Zambia Demographic and Health Survey Report 2007

Significance of National Abortion Incidence Measurement

The national commitment to attain the fifth Millennium Development Goal of reducing maternal mortality by the year 2015 can essentially be achieved by enhancing approaches for strengthening reproductive health services through a constant monitoring the trends of abortion morbidity and mortality in the country. Unsafe abortion is still recognized as one of high risk causes of maternal mortality in Zambia. The need to monitor its incidence trend is critically vital to direct effective implementation of further approaches for reducing morbidity and mortality. Furthermore, the recent strategic needs assessment for strengthening abortion services and the Zambia Demographic and Health Surveys findings demonstrate gaps in incidence estimation of unsafe abortion morbidity and mortality for women in Zambia (IPAS et al. CSO et al. 2002, 2008). In another research in brief that compiled abortion statistics of limited major hospitals was essentially important to provide direction to a national abortion incidence measurement that will be useful to develop better strategies for implementing comprehensive provision of abortion care (CAC) to prevent unsafe abortion morbidity and mortality. It is in this context that measuring a national abortion incidence was thought to provide a comprehensive and representative baseline data to guide in implementing and monitoring CAC services aimed at reducing morbidity and mortality for women in the country.

To curb with the risk of unsafe abortion, the Ministry of Health introduced a Post Abortion Care (PAC), a service intended to reduce the risk of unsafe abortion morbidity, is currently available in all provinces (Ministry of Health et al. 2008). Although, PAC continues being implemented, it has been realized that the program would need expansion through integration with CAC, a continuum of care involving prevention of unplanned pregnancies by intensified IEC, expansion of family planning services, provision of safe abortion services and management of unsafe abortions. It is in this further context that a continued monitoring and evaluation of unsafe abortion be instituted to determine the extent to which reduction in unsafe abortion has a positive contribution to a lower maternal mortality in this country. Abortion measurement may provide direction for effective CAC implementation strategies intended to achieve the Millennium Goal 5 for reducing maternal mortality in Zambia.

PART 2

THEORETICAL REVIEW OF ABORTION

Theories of abortion still show a major public health concern in many developing countries where laws remain restrictive and access to contraceptive use are selective and limited to specific population (Grimes et al. 2006; Singh et al 2006; IPPF 2006; WHO 2004; Ipas 2004). Grimes and others (2006:69) provide a global estimate of all abortions that nearly all unsafe abortions (97 percent) occur in developing countries. It is one of the most neglected sexual and reproductive health problems worldwide (Sedgh et al. 2007; Crimes et al. 2006; WHO 2004). An estimated of 68,000 women die, giving a case-fatality rate of 367 deaths per 100,000 unsafe abortions, which is stated as hundreds of times higher than the mortality rate for legal abortion occurring in developed countries (Grimes et al. 2006). Globally, unsafe abortion accounts for 13 percent of all maternal deaths, even though the proportion has risen to 17 percent in Latin America and 19 percent in Southern Asia (Sedgh et al 2007; Grimes et al.2006; WHO 2004). The complications of unsafe abortion include haemorrhage, sepsis, peritonitis and trauma. WHO (2004) estimates that 20-60 percent of unsafe abortions cause reproductive tract infections, of which 20-40 percent result in upper-genital tract infection and infertility.

The prevalence of unsafe abortion is highest in the 82 countries with the most restrictive abortion laws and lowest in the 62 countries that allow abortion on request (Grimes et al.2006). Grimes and others (2006) emphasize on the need for the legality of abortion that making abortion legal, safe and accessible does not increase demand, but rather reverses clandestine unsafe procedures into legal and safe ones, thereby reducing morbidity and mortality to the lowest estimates.

In Africa, unsafe abortion is highest in the Eastern African countries, which includes Zambia, with a prevalence rate of 39 per 1000 women 15-44 years than other African countries (Sedgh et al. 2007). Abortion incidence ratio in the Eastern Africa is 14 per 100 live births higher than for Africa estimated at 12 per 100 live births and Southern Africa with 13 per 100 live births, even though the ratios have reduced compared with the previous estimates for 2004 (Sedgh et al 2007; Ipas 2004).

The severity of unsafe abortion complications is further demonstrated in other hospital-based studies in Africa (Henshow et al.2008; Singh et al. 2005; Rasch et al. 2000; Jewkes et al. 1997; Aafke et al.1992). In Tanzania, for example, illegal induced abortion accounted for 61 percent and the magnitude of unsafe abortion show an estimated figure of 109,926 women treated for complications of spontaneous abortion or induced abortion in Uganda (Aafke et al 1992; Singh et al 2005; Rasch et al. 2000). Studies in sub-Saharan Africa have shown that women who have undergone illegal abortion are reluctant to discuss their experiences for the fear of negative personal, social, legal and even medical consequences (Rasch et al. 2000; Bleek 1987; Royston et al. 1989). In addition, existence of different traditional clandestine methods for illegal abortions documented further create negative fears of social and legal consequences in most African settings and more so in the Zambian situation (Schott et al.2000; Krengel et al. 2000; Koster-Oyekan 1998; Bledsoe 1995; Jones 1990; Bulatoa et al. 1983; Poewe 1981). As a result of these complexities, underreporting is common, making it more difficult to estimate the magnitude of the problem of unsafe induced abortion.

[3]Ministry of Health 2008 strategic assessment report

The persistent burdened problem of unsafe abortion in Zambia is not different from that observed in other countries, even though abortion law has been liberal on medical and social grounds, but restrictive in its legal procedural form (Government of Zambia 1972). In-country specific studies alluded to earlier for both hospital-based and community-based studies have also shown the severity of unsafe abortion morbidity with severe consequences of mortality among women. In recognizing unsafe abortion having a significant attribute to high maternal mortality ratio, there is demand for reliable data on this problem in order to understand and better address the determinants and consequences of illegal abortion alongside the improved techniques to achieve this are needed (WHO 2003; Jewkes et al. 1997). It is on this account that the study was sought to explore the magnitude of abortion and its determinants in order to demonstrate the incidence of unsafe abortion, the root causes and consequences in the hospital-based settings in Zambia.

PART 3

RESEARCH QUESTIONS & SURVEY OBJECTIVES

Research questions

The following questions that triggered for further enquiry are:
What is the magnitude of abortion in Zambia?
What determines prevalence of abortion morbidity and mortality in Zambia?

Objectives of Abortion Incidence Measurement

Generally, was to determine the abortion incidence level and its determinants in the country as a baseline data for monitoring the extent to which abortion contributes to morbidity and maternal mortality and development of better approaches to improve maternal health.

Specific objectives were:

- To determine the magnitude of abortion incidence estimation by characteristics and methods used among women admitted at major central and referral hospitals of three provinces in Zambia.

- To determine the prevalence and acceptability of legal pregnancy termination in comparison with those treated for abortion complications at health facilities.

- To provide possible solutions for developing better innovative approaches for strengthening reproductive health services and abortion monitoring system to reduce unsafe abortion morbidity and mortality in the country.

PART 4

METHODOLOGY & LIMITATIONS

The scope of approach forms part of monitoring and evaluation component for the FIGO and Ipas Africa Alliance Safe Abortion Project to facilitate provision of comprehensive abortion care (CAC) to strengthen sexual and reproductive health to reduce maternal mortality.

Study Design & Setting

A cross sectional descriptive hospital-based survey design was conducted in four major referral and central hospitals in three provinces of Lusaka, Central and Copperbelt in Zambia.

Conceptualizing Variables

There were four main variables identified for this purpose: Abortion incidence; demographic characteristics characterized by age, marital status, economic status, religion and residence; parity; and method used for abortion

a) Dependent variable- is the *abortion incidence* described in the context of abortion status. The indicators for this variable include:

- Estimating incidence ratio for women presenting with abortions in a year in relation to total annual number of live births from the expected number of pregnancies as a denominator.

Method of estimating the incidence ratio of abortion is similar to other studies (Singh et al 2005; WHO 2004). The total number of women having abortions in year included those who were hospitalized for complications at a health facility, those obtained care from private clinics and referred to health facilities, and those received no care including those who died, and those without complications. Using 2007 ZDHS and hospital-based data of expected pregnancies for 2009, incidence rate of abortion was computed by first estimating the annual number of women treated for illegal induced and spontaneous abortion complications, and then applying a multiplying factor that represents the proportion of women having an abortion not requiring treatment or obtained it from other sources. It also included those with medical pregnancy termination assuming that most pregnancy terminations would have occurred on account of medical complications indication. It was then estimated using expected annual number of pregnancies for 2009 estimates as live births.

- Total number of abortion complications admissions classified as '*induced*[4]' and '*spontaneous or inevitable*[5] ' abortion cases in relation to all abortion cases
- Total number of abortion cases died, in relation to those survived
- Total number of all Gynae admissions required for computing abortion admission incidence per hospital workload.

b) Independent variables are:

Method used for abortion- measured by types of method applied as self medication, use of traditional herbs or roots or stems (sticks); contacting private surgery or application of cytotec drugs; termination of pregnancy procedure; use of manual vacuum aspiration (MVA); and conservation treatment.

[4] Induced abortions refer to those interfered by self, traditionally or medically by unskilled person in unhygenic environment.

[5] Spontaneous or inevitable abortions refer to those occurring under natural circumstances without interferences.

- *Parity*- by number of children ever produced by women and recurrent abortions ever occurred
- *Demographic characteristics* as *age*- indicated as age of last birthday*; marital status* measured through four indicators- single, married, divorced and widowed; *education* by no education, primary, secondary and tertiary; *religion* classified by type of denomination; *economic status* by occupation and type of occupation or economic activity engaged in; and *residenc*e as urban setting.

Sampling

There was no statistical calculation of sample size determined, but allows a possible estimation of 99% c.i. power likely achieved for a proportion sample of over a thousand abortion admissions in all sampled hospitals. All records were selected purposively conditioned by number of abortion cases ever admitted in gynae admission wards at each hospital. Therefore, use of aggregated data from annual hospital data and disaggregated data from case records for verification of sample were applied. It was assumed that more than 10,000 abortion records would be obtained from a selected referral hospital to give a total annual sample of 40,000 abortion cases. It takes into consideration variation arising from varied hospital admissions in these provinces. However, a sample of all 4174 abortion case records was obtained at the selected health facilities over a period of six months- January to June 2009, which shows an overwhelming number of abortion complications treated at the selected health facilities for a short period of time. In addition, a total figure of 10,276 abortion cases was obtained from the selected facilities for the periods, from June 2008 to may 2009 for measuring abortion incidence ratio for the three provinces of Zambia.

Data Collection, Analysis and management

A record review checklist adjacent in the annex was used to compile abortion statistics in all hospitals eligible for selection.

There were no major ethical considerations anticipated as no interaction with clients was encountered, except gaining access to clients' records that was done with authority from the relevant hospital authorities for case record review and aggregated data from the hospitals to be sought. Data was further supported by the desk review of current available studies in the country.

A Zambia Abortion survey (ZAS) was planned for a maximum of 20 days with effect from 18th May to 12th June 2009, but extended to more than 20 days due to voluminous data extracted from the sampled hospitals for a period of six months by the Principal investigator in collaboration with Co- investigator and research assistants recruited at the study sites (see Table 4.1 in annex). Three (3) research assistants, representing one research assistant from each province and two hospital based support staff based at the health facilities were recruited to assist in accessing records and collecting abortion data from the relevant hospital registers and case records.

Data were processed and analyzed in an aggregated form using SPSS computer statistical soft ware to measure incidence rate as ratio, risk analysis and other measurements. Data analysis took some time due to more voluminous data collected than expected.

Limitations

- Missing data on some demographic characteristics of spontaneous abortion cases, legal abortions and illegal induced abortions affected comprehensive analysis of these characteristics.
- Misappropriate clinical diagnosis of abortion conditions also affected the critical classifications of unsafe abortions. Most abortions were presented as “inevitable”, “spontaneous”, “complete”, “incomplete” or “threatened” and “missed” abortion without considering the primary causes of these incidences, with exception of the limited cases classified as illegal induced abortion and those for legal termination of pregnancy (TOP).

Lack of accurate diagnosis of abortion conditions and missing data on women's characteristics identified could have occurred on account of personal behaviour linked to social and legal consequences that may result from the abortion outcome (Ministry of Health and Ipas 2008).

PART 5

SURVEY FINDINGS

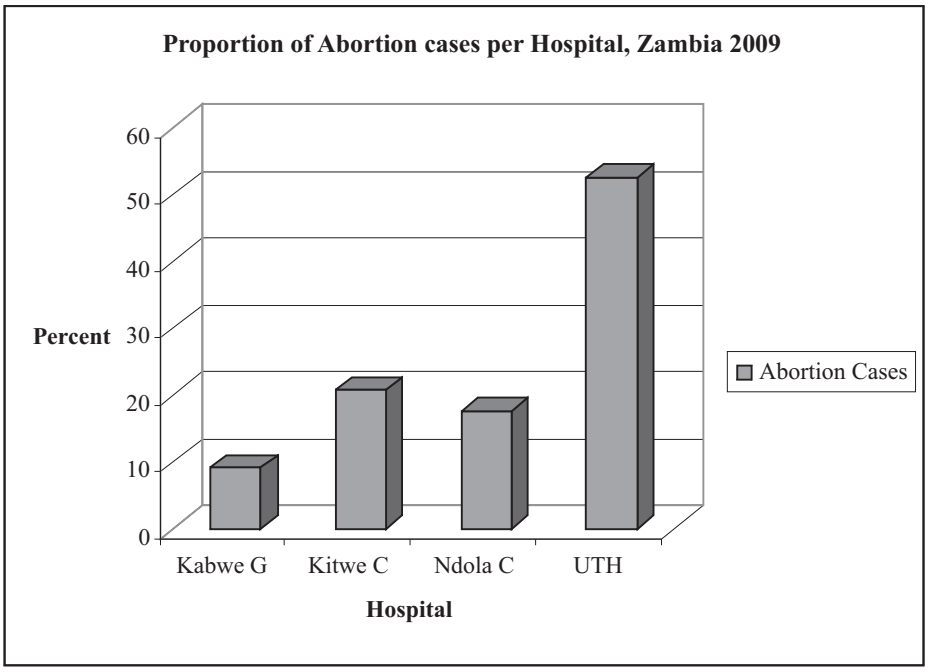
The purpose of the study was to provide incidence rate of abortion and its determinants in Zambia as a response to the research questions relating to- what is the magnitude of abortion in Zambia? What determines prevalence of abortion in Zambia? The findings are therefore, presented in five main folds described as follows:

Description of Sample

Table 5.1.1: Distribution of abortion cases reviewed in relation to a selected health facility by Name

Health Facility Name	Frequency	Percent
Kabwe General Hospital	379	9.1
Kitwe Central Hospital	865	20.7
Ndola Central Hospital	740	17.7
University Teaching Hospital (UTH)	2190	52.5
Total	4174	100.0

Figure 5.1: Proportion Distribution of Abortion Sample in Relation to a Health Facility



The findings show uneven distribution of 4174 abortion cases reviewed over a period of six months-January to June 2009- respectively (Table 5.1.1 transformed in Figure 5.1 above). The variation in the sample achieved accounts for the population concentration of women seeking abortion care and the availability of abortion case records in the health facilities. More than half (52.5 percent) of women seeking abortion care are managed at the University Teaching Hospital (UTH) in Lusaka Capital City of Zambia, compared with other Central and referral hospitals of Kitwe Central hospital representing 20.7 percent, Ndola Central with 17.7 percent and Kabwe General hospital with a least percent of 9 percent low response rate. These data obtained from these major health facilities over a period of six months, January to June 2009 have determined the magnitude of abortion consequences in Zambia. Given a highly number of 4174 abortion complications obtained from four public health facilities translates to total number of 8,348 to 10,276 abortion complications in a year for these public health facilities, which gives an annual estimated number of over 776,364 to 955,668 abortion complications of all 97 public hospital facilities in nine provinces of Zambia (Ministry of Health 2008, 2005). With these estimates, it concludes that unsafe abortion is problematic and severe in this country.

Demographic Characteristics of Abortion Cases

The demographic characteristics of women seeking abortion care are characterized by age, education status, marital status, occupation, religion by denomination and parity that were assumed as determinants of abortion prevalence in women (Table 5.2.1). However, extensive vital information gaps or missing data were found in the aspects of education, marital status, occupation, religion and parity that affected the comprehensive analysis of all abortion cases, which shows that information management system is poor at all health facilities sampled (Table 5.2.1).

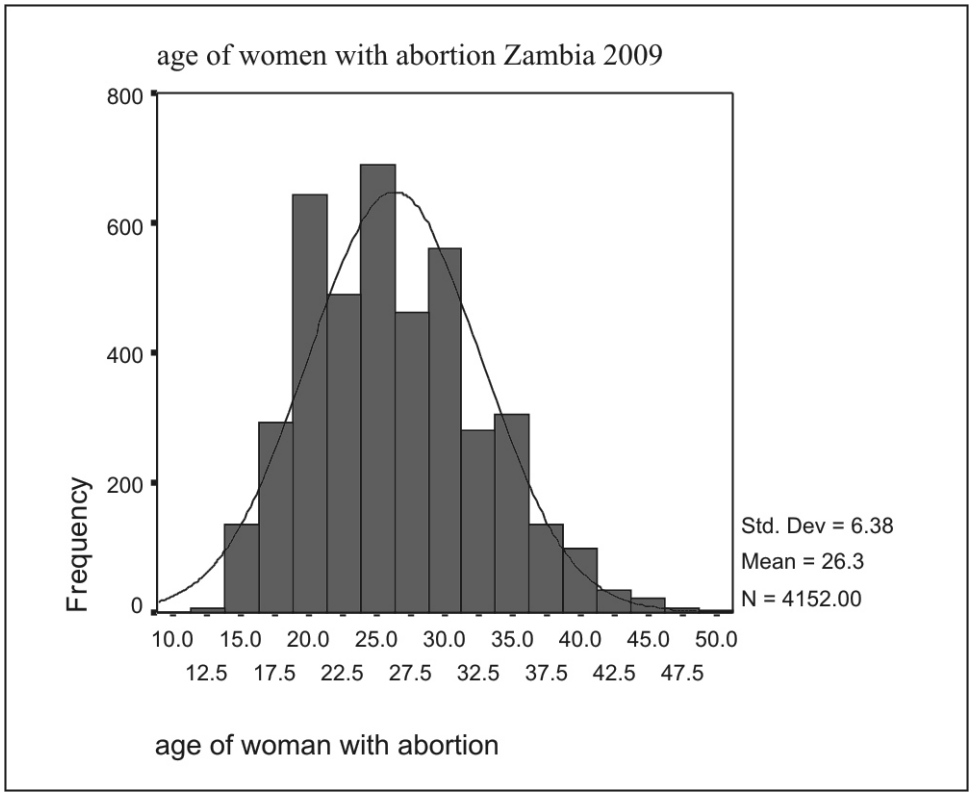
Table 5.2.1: Demographic Characteristics of Women Presenting with Abortion in Selected Hospitals, Zambia 2009

Demographic Characteristics	F	%
•Age-group		
10-14	24	0.5
15-19	599	14.4
20-24	1157	27.8
25-29	1134	27.2
30-34	759	18.2
35-39	368	8.8
40-44	89	2.2
45-49	22	0.5
Total	4152	99.5
Missing values	22	0.5
Total	4174	100.0
•Marital status		
Single	264	6.3
Married	1055	25.3
Divorced	17	.4
Widowed	3	.1
Not stated	2835	68.0
Total	4174	100.0
•Education Status		
No Education	1	0.0
Grades 5-7	18	0.4
Grades 8-9	35	0.8
Grades 10-12	51	1.2
College/University	30	0.7
Not stated	4039	96.7
Total	4174	100.0
•Occupation		
Employed	48	1.1
Student	68	1.7
H/wife	985	23.7
Business venture/ self employed	30	0.7
Other, not stated	3040	72.5
Total	4174	100.0
•Religion by Denomination		
Catholic/Anglican	184	4.4
UCZ	122	2.9
New Apostolic	37	0.9
Jehovah's witnesses	58	1.4
SDA	79	1.9
Reformed Church of Zambia	14	0.3
Born Again Ministries/Baptist	263	6.3
Other	48	1.1
No Religion/Not stated	3368	80.7
Total	4174	100.0
Parity		
0 children	205	4.9
1-2	423	10.1
3-4	244	9.0
>5	56	1.8
Total	948	22.7 # 4174

AGE

Of all 4152 total abortion cases, the mean age is 26.29 years, and the median age is 26 years (Table 5.2.1). The age ranged from 10 years to 49 years for women presenting with abortions in gynae admission wards. Figure 5.2 below provides a summary distribution of all ages in the sample.

Figure 5.2: Age Distribution



With a mean age of 26.29 years implies that abortion prevalence is significantly more common among the young women below 30 years old. The findings in Table 5.2.1 show a higher proportion of 69.9 percent of the younger age-groups 10-29 years, with a peak of 27.8 percent for the age-group 20-24 year old, than the older ones above 30 years with a lesser proportion of 29.7 percent. However, only 0.5 percent had no information on age of all the abortions reviewed, implying that response rate on age was quite high compared with other variables explored.

The age range of 10 to 49 for women seeking abortion care has demonstrated that abortion is prevalent in all women of child bearing ages in Zambia. It further shows that child bearing is initiated as early as at puberty likely influenced by early premarital sexual practice and early marriage relationship (Table 5.2.1). The chances of increasing more frequent abortions per woman due to untimely and unwanted pregnancy, which lengthen reproductive period of child bearing may assume greater than if conception and marriage were delayed in Zambia.

Education

The results in Table 5.2.1 show further more women with secondary education (2 %) in the grades 8-12, while those with tertiary education attainment indicate 0.7 percent and the least most are those with primary education for the grades 5-7 with a limited proportion of 0.4 percent. The limited information on education status is accounting for a highly proportion of missing values due to poor information system on abortion case- records reviewed in all major hospitals sampled. There were only 135 cases that provided limited proportionate analysis difference of all the abortions reviewed on education.

Marital Status

The majority of women were currently married (25.3 percent) compared with a low proportion of 6.3 percent for single women and 0.5% for divorced and widowed (Table 5.2.1). When examining its relationship with age, it is found highly significant in the extent of abortion incidence by status or type (pvalue 0.000). Table 5.2.2 provides a summary of its relationship with age.

Table 5.2.2: Age and Marital status

Age-group	Marital Status										Total
	Single		Married		Divorced		Widowed		Not Stated		
	F	%	F	%	F	%	F	%	F	%	
10-14	9	3.4	1	0.1	0	0.0	0	0.0	14	0.5	24
15-19	98	37.3	98	9.3	1	5.9	0	0.0	402	14.3	599
20-24	84	32.0	253	24.0	3	17.6	0	0.0	818	29.0	1158
25-29	47	17.8	324	30.8	8	47.1	0	0.0	754	26.8	1133
30-34	16	6.1	223	21.2	4	23.5	1	33.3	515	18.3	759
35-39	6	2.3	120	11.4	1	5.9	1	33.3	240	8.5	368
40-44	3	1.1	27	2.6	0	0.0	1	33.3	58	2.1	89
45-49	0	0.0	7	0.6	0	0.0	0	0.0	15	0.5	22
Total	263	100.0	1053	100.0	17	100.0	3	100.0	2816	100.0	1452

Pvalue<0.000

The findings show that the majority of single women are young in the age-group 15-24 years (69.3 percent) and mostly adolescent with a high proportion of 37.3 percent than the older ones with a low proportion of 27.3 years. Young single women in ages 10-24 years are found more exposed to abortion than the older single women above this age-group.

Among those married, abortion is highly prevalent in the age-group 25-29 years with a peak of 30.8 percent of all married women may suggest direct link to delayed married and child spacing practices and marital disruption. There are more divorced women in age-group 25-29 with prevalence of abortion (47.1 percent). All widowed women with abortion were older, distributed in the age-groups 30-40 years. How ever, missing data provided limited analysis of marital statuses for abortion cases.

Generally, the findings show a highly significant association with prevalence of abortion in relation to age and marital status of women (pvalue 0.000). Young single women are more at higher risk of abortion than older women with confinement to more abortion practice in marriage. This suggests its direct association with unwanted pregnancy among the young single women. The prevalence of abortion practice in older married women could be influenced by the desire for family size and the extent of child spacing practices for child survival. The differences observed in abortion practice among the young and older women direct their implications for unmet needs for Family planning services and sex education.

Religion

Information on religion was categorized according to Christian denominations that varied greatly among women, but also included some non Christians, such as Moslem and Islam Churches (Table 5.2.1). Most (6.3 percent) women belonged to Born Again Ministries, compared with the Catholics and Anglicans indicating 4.4

percent, United Church of Zambia 2.9 percent with low proportions and the least being the Reformed Church of Zambia (0.3 percent). Other denominations range from 0.9 percent for New Apostolic Church, 1.1 percent for groups mixed religion, such as Moslem, Islam, Christian Mission of Many Lands (CMML) and Zion, 1.4 percent for Jehovah's Witnesses to 1.9 percent for Seventh Day Adventist Church (SDA). The findings show the prevalence of abortion being practiced more among Christians than the non Christian women in Zambia. However, abortion is common in all Christian denominations in the country.

Occupation

Information on occupation of women with abortion also varied from unemployed to employed and student. The results in Table 5.2.1 show that the majority of women were housewives (23.7 percent), while those who are students account for 1.7 percent, employed with a monthly income is 1.1 percent, and those engaged in business venture or self-employment show a least proportion of 0.7 percent.

Parity

Parity ranged from 0-10 children per women, with a mean of 2.2 children per woman. The majority of women presenting abortion had 1-2 children (10.1 percent). Among those with 3-4 children were 9 percent, while those with no children show a proportion of 4.4 percent, and 1.1 percent for those with children above five to ten children.

5.3 Incidence of Abortion

Estimating the incidence of abortion in Zambia is based on the total number of women having abortion in a year, which includes those who were treated for complications at a health facility, those who obtained care from a private doctor and referred to a major hospital, those who received no care in a status of complete abortion including those who died before obtaining care, and those who had no complications, and requested a legal pregnancy termination. This follows an approach used in other studies (Singh et al. 2005; World Health Organization 2004).

Using annual data for 2008-2009 from the Health Facilities Survey of all four major referral hospitals in three provinces, it is estimated that 10,276 Zambian women seek medical care for the treatment of spontaneous and induced abortion complications yearly. This gives annual estimated incidence ratio rate of 12.3 percent per 100 live births based on expected number of pregnancies for live births (Table 5.3.1).

Table 5.3.1: Measures related to Calculating the number of women Treated for Complications of Abortion at a Health Facility by Province, Zambia 2009

Province	Number Treated for Abortion Complications	Women with live Births from the Expected number of pregnancies	Incidence ratio rate per 100 live births
Central	848[7]	8,055	12.3%
Copperbelt	4079[8]	32,866	
Lusaka	5349[9]	42,441	
Total	10,276	83,362	

[6] Expected number of pregnancies for live births is based on CSO projected demographic data for live births for 2009 compared with expected number of pregnancies for health facilities.
[7] For Kabwe General hospital only
[8] Data from Kitwe and Ndola Central Hospitals
[9] Data from the University Teaching Hospital only, Lusaka

This may translate to 123 per 1000 live births end in pregnancy loss if the estimates remain constant at health facilities.

When measuring the incidence rate of abortion complications' admissions in relation to all gynaecological admissions at all major health facilities surveyed, it gives further an estimated annual rate of 18.4 percent of all annual gynaecological admissions for the yearly period of 2008-2009, respectively. This translates into presumable increased medical load devoted to post abortion care of managing unsafe abortion complications at health facilities, while at the same time considering its deterrent risk to maternal morbidity and mortality. The incidence rate shows further that abortion remains a major public health problem and increasing the risk of morbidity and mortality to women in Zambia.

Abortion Morbidity: Abortion status by Type

Abortion status is characterized by type of abortion classified as: i) *legal abortion* as termination of pregnancy (TOP), ii) *deliberate induced abortion (illegally)* as unsafe abortion and those presenting with a clinical feature of a septic condition, iii) *inevitable or spontaneous abortion condition* occurring on its own as a result of natural or pathological causes including those presenting with a missed abortion, or physically injury due to domestic violence-assault, and iv) *failed abortion*, whereby pregnancy survived from the risk of abortion presenting with a clinical feature of a 'threatened abortion." Of all of illegally induced abortion and most spontaneous abortion cases presented with the clinical features of "*incomplete abortions*" at admission in all the hospitals represent the extent of unsafe abortion incidence in Zambia. The findings are presented in the following Table 5.3.2.

Table 5.3.2: Proportion of Abortion in relation to Characteristics and Health Facility, Zambia 2009

Health Facility by Name	ABORTION STATUS								Total
	Legal Abortion[10]		Induced abortion illegally/ Septic abortion		Spontaneous abortion/ Missed/ Assault		Failed Abortion/ Pregnancy survived		
	F	%	F	%	F	%	f	%	
Kabwe General Hospital	13	12.4	0	0.0	366	10.0	0	0.0	379
Kitwe Central Hospital	0	0.0	32	16.7	781	21.4	52	24.3	865
Ndola Central Hospital	1	1.0	88	46.1	492	13.4	159	74.3	740
University Teaching Hospital (UTH)	91	86.6	71	37.2	2025	55.2	3	1.4	2190
Total	105	100.0	191	100.0	3664	100.0	214	100.0	4174
Overall % total		(2.5)		(4.6)		(87.8)		(5.1)	(100.0)

Sig. Pvalue: < 0.000

The findings in Table 5.3.2 show variation in the incidence of abortion by characteristics in the health facilities. There are more legal abortions as 'Termination of Pregnancy' (TOP) that are performed at the University Teaching Hospital (UTH) (86.6 percent) than in other hospitals. However, Kabwe General Hospital provides a limited evidence of 12.4 percent of legal abortions being conducted, while only one of such a case has been recorded at Ndola Central Hospital and none found at Kitwe Central Hospital.

Among those presenting with induced abortion illegally by self or contacted a private surgery and those clinically assessed as 'septic abortion' are found more (46.1 percent) at Ndola Central than at UTH (37.2 percent) and Kitwe

[10]Abortions conducted in conformity with Termination of Pregnancy Act. 1972

Central Hospital (16.7) percent. There is no evidence of illegal induced abortions recorded at Kabwe General Hospital suggesting that such cases are either not managed or not reported in the hospital case-records.

More than half (55.2 percent) of spontaneous or inevitable or missed abortion conditions with a clinical feature of incomplete abortion occur at UTH, compared with other hospitals indicating limited varied proportions of such cases. The varied proportions show a distribution of 21.4 percent for Kitwe Central, Ndola Central with 13.4 percent and Kabwe General indicating a least figure of 10 percent. Among those with failed abortion demonstrating pregnancy survival chance from the risk of abortion, most likely as a result of adequate quality of care or good record system, are found more at Ndola Central with a higher proportion of 74.3 percent than other hospitals indicating 24.3 percent for Kitwe Central, 1.4 percent for UTH and zero for Kabwe General.

Generally, the findings show that abortion is prevalent in all major hospitals, but vary in their distribution. Of all 4174 abortions managed at these major hospitals, spontaneous abortions in the context of incomplete abortion account for more than 87 percent, compared with other abortion conditions of illegal induced abortion (4.6 percent) and legal abortion indicating the least figure of 2.5 percent. In a realistic comparison with those seeking legal termination of pregnancy (TOP), unsafe abortion may account for 92.4 percent of all abortion complications hospitalized at these major hospitals. The findings show a highly significant difference in the incidence of abortion in relation to their characteristics and the health facility (pvalue < 0.000). There is a lower acceptability of legal pregnancy termination in these major hospitals as most of them occur at UTH that is likely to be associated with the perception of abortion, accessibility and legal provisions of managing abortion care.

Abortion Status and Age

The age distribution in relation to abortion status by type is not found statistically significant (pvalue> 0.558), even though there are variations observed in the age-groups of women (Table 5.3.3)

Table 5.3.3: Proportion of abortion by type in relation to age-group of women, Zambia 2009

Age-Group	Abortion Status								Total
	Legal Induced Abortion		Illegal Induced Abortion		Spontaneous/Missed Abortion		Failed Abortion/ Pregnancy Survived		
	F	%	F	%	F	%	f	%	
10-19	12	11.4	54	28.2	531	14.5	27	12.5	623
20-24	27	25.7	45	23.5	1008	27.7	76	35.3	1156
25-29	29	27.6	52	27.3	1003	27.5	50	23.3	1134
30-34	21	20.0	23	12.0	677	18.6	38	17.7	759
35-39	13	12.3	14	7.3	326	9.0	16	7.4	369
40-44	2	2.0	2	1.1	80	2.2	6	2.8	90
45-49	1	1.0	1	0.6	18	0.5	2	1.0	22
Total	105	100.0	191	100.0	3643	100.0	215	100.0	4153

Pvalue > 0.558

The results in Table 5.3.3 show that more women seeking legal abortion as termination of pregnancy (TOP) are highly among those in age group of 25-29 years (27.6 percent), while those exposed to illegal induced abortion as unsafe abortion are mostly adolescents 10-19 years (28.2 percent). When comparing the incidence of Illegal induced abortion in this situation or unsafe abortion by WHO definition (1998), between groups of women, youths < 25 years and those above, there is a highly prevalent of unsafe abortion among young women 10-24 years (51.6 percent) more than older women above this age-group with a low proportion of 48.4 percent. Unsafe

abortion affects more women youth, even though adolescents and women 25-29 years are mostly affected, than older women 30 years and above.

Among those with spontaneous abortion conditions as incomplete abortions show a higher figure of 27.7 percent for the age-group 20-24 years more than other age-groups. Similarly, women whose abortion failed or pregnancy survived, presenting with symptoms of 'threatening abortion' were found more for women 20-24 years with a higher proportion of 35.3 percent than other age-groups. A substantiated high prevalent of spontaneous abortion complications of this younger age-group may include more unsafe abortion practices which remain secretly unreported in many cases as such practices attach stigma and considered a private practice of most women in many societies (Ministry of Health et al. 2009; Krengel et al. 2001). A highly failure rate of pregnancy termination to imply that pregnancy survived from the risk of abortion for women hospitalized with complications of threatened abortion is also found substantially high for the similar age-group 20-24 years with 35.3 percent, compared with other age-groups. This may suggest prompt action proceeded in the provision of quality medical care services employed in these major government hospitals alongside timely decision-making of seeking medical care by women, whether pregnancies were intended or unintended. Furthermore, it points to the fact that not all pregnancies are aborted to demonstrate a highly survival chances of pregnancies that were most likely unwanted or intended for women hospitalized with abortion complications at these health institutions.

Education, Occupation, Marital Status, Religion and Prevalence of Abortion

One of the objectives of the study was to determine the extent to which social, economic and cultural factors of religion and marriage influence prevalence of abortion in women of all reproductive ages in Zambia. The following findings show that the socio-economic and cultural variables highly influence prevalence of abortion morbidity and mortality in women positively (pvalue < 0.000-0.001).

Table 5.3.4: Education Status and Abortion Status, Zambia 2009

Education Status	Abortion Status								Total
	Legal Abortion		Induced Illegally		Spontaneous /Missed Abortion		Other, Failed Abortion/ Preg. Survived		
	F	%	F	%	F	%	F	%	
No education	0	0.0	0	0.0	1	0.0	0	0.0	1
Grades 5-7	4	3.8	4	2.1	9	0.2	1	0.5	18
Grades 8-9	6	5.8	11	5.8	16	0.4	2	0.9	35
Grades 10-12	15	14.3	14	7.3	21	0.6	1	0.5	51
College & Unive rsity (Tertiary education)	13	12.3	0	0.0	16	0.4	1	0.5	30
Not Stated (missing data)	67	63.8	162	84.8	3,600	98.3	210	97.6	4038
Total	105	100.0	191	100.0	3663	100.0	215	100.0	4174

Sig.pvalue <0.000

The findings in Table 5.3.4 show variation in the occurrence of abortion status according to the education of women. Among women with a legal abortion (TOP) show a higher proportion of 26.6 percent for those who attained Grades 10-12 and tertiary education than those for grades 5-9 for primary and basic education or junior secondary level of education with a lower proportion of 9.6 percent. Women with grades 10-12 education attainment had more access to legal abortion service with a peak of 14.3 percent than those with the lower grades

and tertiary education. Among those with illegally induced abortion are more (7.9 percent) for women with grades of 5-9 than those for grades 10-12 with a low percent (7.3 percent). There was no evidence found on women with tertiary education seeking medical care for complications of unsafe abortion suggesting that educated women are aware of consequences of abortion. Women with higher level of education are, therefore, more likely to access a safer legal induced abortion service than those with less education. Of those presenting with spontaneous or inevitable abortion and missed abortion complications is found highly among those with higher education more than those with low education or no education attained. Even though data were limited for education status due to missing data in the case-records reviewed, it has shown further that education determines the extent of abortion prevalent, accessibility and preference for type of abortion care service sought.

Table 5.3.5: Occupation and Abortion Status, Zambia 2009

Occupation	Abortion Status								Total	Pvalue <0.001
	Legal Abortion		Induced Illegally		Spontaneous Abortion		Failed Abortion/ Preg. Survived			
	f	%	F	%	F	%	f	%		
Employed	11	10.5	1	0.5	33	0.9	3	1.3	48	
Student	14	13.3	27	14.1	26	0.7	1	0.5	68	
Housewife, not working	23	21.9	41	21.5	785	21.4	139	64.7	988	
Business venture/ Self employed	2	1.9	0	0.0	24	0.7	4	1.9	30	
Other, not stated: missing data	55	52.4	121	63.4	2793	76.2	68	31.6	3035	
Total	105	100.0	191	100.0	3663	100.0	215	100.0	4174	

The prevalence of abortion in relation to occupation of women is also varied in its occurrence. The findings in Table 5.3.5 show that housewives highly practice legal abortion (21.9 percent) more than students, and those in employment, business venture or self employed. This difference may attribute to the prompt recognition and optimal management of complications related to legal pregnancy termination to reduce morbidity (Ministry of health 2009). Medical pregnancy termination procedure is embraced within the abortion law of Termination of Pregnancy Act which covers all pregnancy phases for medical and social grounds to save the life of a pregnant woman even though it may predispose to a higher neonatal morbidity and mortality (Ministry of Health 2009; Laws of Zambia 1972). The prevailing condition of substantial legal abortions for housewives may predetermine medical grounds for the intended pregnancy rather than being conditioned by social reasons. Students account for 13.3 percent for legal abortion, while those employed show 10.5 percent and the least being for those engaged in business venture or self employed with only 1.9 percent. The latter ones may suggest legal pregnancy termination on social grounds for the pregnancy not being desired rather than medical grounds.

Among those exposed to induced abortion illegally or unsafe conditions are affecting mostly housewives (21.5 percent) and students (14.1 percent) than those in employment indicating a limited proportion (0.5 percent) and zero for business venture and self-employed. Most women presenting with spontaneous abortion complication are housewives, not engaged in any form of economic activity, with a high proportion of 21.9 percent more than those in business venture (1.9 percent), employment (1.3 percent), or students (0.5). How ever, the findings further show that pregnancies survived from risk of abortion affect mostly housewives (65.6 percent) than those in any form of economic activity. Only a small figure (0.5) that affect students to show further that almost all pregnancies were aborted for women engaged in economic activities and students. The findings show a

significant association in the prevalence of abortion with the occupation status of women (pvalue <0.001). Housewives and students are at a higher risk to abortion than those in economic activities. Socio-economic status of women determines the prevalence of abortion in Zambia.

The prevalence of abortion in relation to marital status is also found highly significant (pvalue <0.000). Table 5.3.6 provides a summary of findings.

Table 5.3.6: Marital Status and Abortion Prevalence, Zambia 2009

Marital Status	Abortion Prevalence by Status								Total	Pvalue <0.000
	Legal Abortion		Illegally Induced		Spontaneous Abortion		Failed Abortion/ Preg. Survived			
	F	%	F	%	F	%	f	%		
Single	44	41.9	46	24.1	155	4.2	19	9.0	264	
Married	32	30.5	42	22.0	836	22.9	146	67.9	1055	
Divorced	1	1.0	6	3.1	9	0.2	1	0.4	17	
Widowed	0	0.0	1	0.5	2	0.1	0	0.0	3	
Not stated/ missing values	28	26.7	96	50.3	2661	72.6	49	22.7	2834	
Total	105	100.0	191	100.0	3663	100.0	215	100.0	4174	

The findings in Table 5.3.6 show that single women practice legal abortion (41.9 percent), followed by married women with a less figure of 30.5 percent. Only one percent of those divorced had a legal abortion, while no evidence was found among those widowed. Among those exposed to illegal induced abortion are mostly single women with 24.1 percent, compared with married women with a slightly low figure of 22 percent, divorced women (3.1 percent) and widowed (0.5 percent). Women with spontaneous abortion complications are found highly among those married (22.9 percent) more than the single with 4.2 percent, those divorced with 0.2 percent and those widowed indicating only 0.1 percent. Pregnancy survival rate was also highly among married women (67.9 percent) more than the single (9 percent), divorced (0.4 percent) and no evidence found the widowed. Marital status has a significant positive effect on the prevalence of abortion in Zambia (pvalue< 0.000).

The cultural context of religion by denomination was also another dimension found to influence abortion prevalence among Zambian women in this study. The following Table 5.3.7 presents the significant relationship between religion and the prevalence of abortion in Zambia.

Table 5.3.7: Religion and Abortion Prevalence

Religion: Denomination	Prevalence of Abortion by Status								Total	Pvalue 0.000
	Legal abortion		Induced Illegally		Spontaneous Abortion		Failed Abortion/ Preg. Survived			
	f	%	F	%	F	%	f	%		
Catholic and Anglican	0	0.0	23	12.0	119	3.2	42	19.5	184	
UCZ[1]	0	0.0	15	7.9	88	2.4	19	9.0	122	
New Apostolic	0	0.0	2	1.0	28	0.8	6	2.8	37	
Jehovah's Witnesses	0	0.0	6	3.1	41	1.1	11	5.2	58	
SDA[2]	0	0.0	8	4.2	63	1.7	8	3.6	79	
Reformed Church	1	1.0	1	0.5	11	0.3	1	0.4	14	
Born Again Christian	1	1.0	24	12.6	188	5.1	50	23.2	263	
Ministries and Baptist										
Other, Zion, ACZ, CMML, Moslem, Islam, African Methodist	0	0.0	8	4.2	33	1.0	7	3.3	48	
Not stated /missing values	103	98.0	104	54.5	3093	84.4	71	33.0	3369	
Total	105	100.0	191	100.0	3663	100.0	215	100.0	4174	

[11] New Apostolic Church
[12] Seventh Day Adventist Church

The practice of legal abortion is not easily accepted by women of different denominations. The findings in Table 5.3.7 show limited equal proportions of one percent found among those of the Reformed Church of Zambia and Born Again Ministries resorting to legal abortion practice. By contrast, illegal or unsafe induced abortion is a common practice for all different denominations. A substantial high number of 12.6 percent is found for women of Born Again Christian Ministries and Baptist Church, followed by Catholic and Anglican Churches with 12 percent who have had unsafe induced abortions more than other denominations. Among those with spontaneous abortion complication with a figure of 5.1 percent and those whose pregnancy survived indicating 23.2 percent are highly for the Born Again Ministries more than other denominations. It demonstrates that the Born Again Ministries practice abortion, followed by Catholics more than other denominations and non Christian denominations. There is a highly significant relationships in the practice of religious denominations and the prevalence of abortion in Zambia (pvalue <0.000) that may suggest greater associations with the religious doctrines that are against abortion considered murder and criminal practice and out of wed-lock or pre-marital pregnancy as use of any form of contraception is prohibited on religious ground (Ministry of Health et.al 2008; Thapa et al. 1992; Aafke et al, 1992).

Parity, Recurrent Abortions and Prevalence of abortion Status

Parity is another factor found to influence prevalence of abortion among the Zambian population. Table 5.3.8 shows a varied distribution in the prevalence of abortion in relation to number of children for women.

Table 5.3.8: Number of Children Ever produced and abortion prevalence by type

Number of Children	Abortion Prevalence by Type								Total	Pvalue 0.000
	Legal abortion		Induced Illegally		Spontaneous Abortion		Failed Abortion/ Preg. Survived			
	F	%	F	%	F	%	F	%		
0 children	35	43.3	7	30.4	163	19.3	0	0.0	205	
1-2	27	34.2	4	17.5	390	46.2	1	100.0	422	
3-4	13	16.5	11	47.8	220	26.1	0	0.0	244	
5-10	4	5. 0	1	4.3	71	8.4	0	0.0	76	
Total	79	100.0	23	100.0	844	100.0	1	100.0	947	

The findings in Table 5.3.8 show that legal abortion is practiced by women with no children (43.3 percent, followed by those with 1-2 children (34.2 percent) more than those with 3-4 children with 16.5 percent and those having 5-10 children with a 5 percent proportion. This difference may be attributed to the account of medical complications associated with high parity for women with subsequent births, while those with no children or 1 -2 children could be attributed to mostly pregnancies not being desired.

Among those with illegal induced abortion complications show a highly proportion of 47.8 percent for those with 3-4 children, followed by those with no children indicating 30.4 percent more than those with 1-2 children or with many children above 5. It shows that unsafe induced abortion is practiced as a method of family planning to delay births and limit births for those with a desired family size. By contrast, spontaneous abortion complications occur highly among women with 1-2 children (46.2 percent), while those with 3-4 children indicate 26.1 percent, with no children show 19.3 percent and the least figure of 8.4 percent for those with 5-10

children. It shows that the bulk of spontaneous abortions could be more attributed to unsafe induced abortion practices linked to child spacing or prolong birth intervals or delay births than on the account of medical conditions. The magnitude of spontaneous abortion complications are in a way unsafe abortions most likely for unintended pregnancies due to other factors. The findings show a highly statistical significant association in the prevalence of abortion with the parity of women (pvalue 0.000) suggesting unmet needs for contraception.

When comparing the marital status of women exposed to the current abortion with parity, it is also highly significant (pvalue<0.000). Table 5.3.9 presents the findings.

Table 5.3.9: Marital Status of Women with Current Abortion and Number of Children Ever Produced

Marital Status	Number of Children Ever Produced								Total
	0		1-2		3-4		5-10		
	F	%	F	%	f	%	f	%	
Single	64	31.2	27	6.4	4	1.7	1	1.3	96
Married	42	20.5	150	35.5	101	41.4	37	48.7	330
Divorced	0	0.0	1	0.2	2	0.8	0	0.0	3
Not Stated	99	48.3	245	57.9	137	56.1	38	50.0	519
Total	205	100.0	423	100.0	244	100.0	76	100.0	948

Pvalue <0.000

The findings in Table 5.3.9 show more single women had no children with 31.2 percent higher than those married with 20.5 percent and zero for the divorced. Among those with 1 and more children are mainly married women with a distribution of 35.5 percent (1-2 children), 41.4 percent (3-4 children) and 48.7 percent (5-10 Children) more than the singles and those divorced with limited proportions. Current abortion of married women is highly influenced by parity or fertility that may assume deficiencies in child spacing practices and the desire to limit births more than those for the single and divorced.

Furthermore, there are highly significant variation observed in the number of previous abortion experiences in relation to age and marital status of women presenting with abortion (pvalue <0.000) that may point to the extent of unwanted pregnancies occurring. The following Tables 5.3.10 and 5.3.11 present such summaries.

Table 5.3.10: Number of Previous Abortion Outcome and Marital status of women, Zambia 2009

Number of Previous Abortion	Marital status								Total
	Single		Married		Divorced		Not Stated		
	F	%	F	%	F	%	F	%	
0 abortions	95	99.0	310	95.1	2	66.7	492	94.3	899
1-2 abortions	1	1.0	10	3.1	1	33.3	29	5.5	41
3-5 abortions	0	0.0	6	1.8	0	0.0	1	0.2	7
Total	96	100.0	326	100.0	3	100.0	5	100.0	947

Pvalue<0.000

The findings in Table 5.3.10 show that the majority of single women have never had abortions before with a higher proportion of 99 percent more than those with repeated abortions of 1 to 2 in number indicating a limited figure of only one percent and zero for single women with recurrent abortions of 3-5 abortions. The high number of single women experiencing abortion of current pregnancy may attribute to increases in unwanted pregnancies pointing to unmet need for family planning presumably to space births.

Married women are also found with highest numbers of recurrent abortions with a distribution of 3.1 percent for

1-2 abortions and 1.8 percent for as high as 3-5 abortions more than among the single or divorced women. There is a highly significant difference in the occurrence of repeated abortions in relation to marital status (pvalue<0.000) that may be attributed to more unmet needs for contraception among the singles. Occurrence of recurrent abortions among married women may suggest also more unmet needs for contraception to space births and also desire to limit number of children rather than for medical conditions.

Table 5.3.11: Age and Number of Previous Abortions, Zambia 2009

Age-group	Number of Previous abortions												Total
	0		1		2		3		4		5		
	F	%	F	%	F	%	f	%	F	%	f	%	
10-14	10	1.1	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	10
15-19	135	15.0	3	9.4	1	12.5	0	0.0	0	0.0	0	0.0	139
20-24	248	27.6	9	28.1	4	50.0	1	25.0	0	0.0	0	0.0	262
25-29	245	27.2	10	31.3	1	12.5	0	0.0	0	0.0	2	100.0	258
30-34	179	19.9	5	15.6	2	25.0	1	25.0	1	100.0	0	0.0	186
35-39	68	7.5	5	15.6	0	0.0	1	25.0	0	0.0	0	0.0	74
40-44	16	1.7	0	0.0	0	0.0	1	25.0	0	0.0	0	0.0	17
45-49	3	0.3	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3
Total	898	100.0	32	100.0	8	100.0	4	100.0	1	100.0	2	100.0	945

Pvalue <0.000

There is a furthermore highly significant relationship found in the recurrent abortions and age of women (pvalue 0.000). The findings in Table 5.3.11 show that more women with no recurrent abortion and those with 2 repeated abortions are mostly 20-24 age-group with higher proportions of 27.6 percent and 50 percent, respectively. Among those who had a recurrence of 1 abortion is highly among 25-29 year age-group indicating 31.3 percent of all age-groups. Recurrence of 3 to 5 abortions affects mostly older women > 25 years old. It demonstrates that recurrent abortion is strongly associated with age of woman likely having a bearing on extent of childbearing practice. The more a woman becomes older with increased risk exposure to childbearing, the more risk to recurrent abortions occur. There is a highly exposure to recurrent abortions of 1 or 2 abortions for the 20-34 age-group, which demonstrates a drive for frequent child bearing practice with limited used of contraception, Abortion may be employed as a method of child spacing in this scenario.

5.4 Method Used for Abortion

Methods used for abortion are described in the context of indigenous traditional practices of abortion and those seeking care from private surgery, applying legal procedure of terminating pregnancy, manual vacuum aspiration (MVA) and other conservative methods of medical care.

The first part of the findings presents a frequency distribution of varied methods used for terminating pregnancy, while the second part determines the association that exist between methods used for abortion and abortion status by types or classification.

Table 5.4.1: Method used for Abortion, Zambia 2009

Method used	F	%
Self Medication/Herbs/ Sticks	33	0.8
Contacted Private surgery/ Cytotec use	15	0.4
Used Termination of Pregnancy (TOP) procedure	105	2.5
MVA Procedure and Cytotec Drug Use	3625	86.8
Other, none/ conservative treatment/oxytocin use	391	9.4
Not stated	5	0.1
Total	4174	100.0

The findings in Table 5.4.1 show a varied distribution of different types of methods that are used for abortion ranging from use of cytotec drug supplied by private surgery to self medication and traditional methods to a manual vacuum aspiration (MVA). A higher proportion of 86.8 percent shows manual vacuum aspiration (MVA) procedure combined with cytotec drug use as common method for abortion of all cases reviewed presenting with abortion complications than other methods. Among those accounting for 9.4 percent are those presenting with either complete abortion where no treatment was required or conservative treatment for those whose pregnancy survived from a threatened abortion, or had some complications of retained products of conception that required use of oxytocin drug. For those seeking legal procedural methods of termination of pregnancy (TOP) for safe abortion account for 2.5 percent, demonstrating the least accepted procedure compared with the manual vacuum aspiration that is employed for managing abortion complications. Use of traditional methods, such as herbs, and insertion of sharp instruments in the cervix, and self medication account for 0.8 percent that may assume purely causes of unsafe abortion have greater risk to abortion morbidity among young women adolescents than those above this age-group (Table 5.3.2). However, the practice of MVA procedure and cytotec drug use is a common among women in all hospitals.

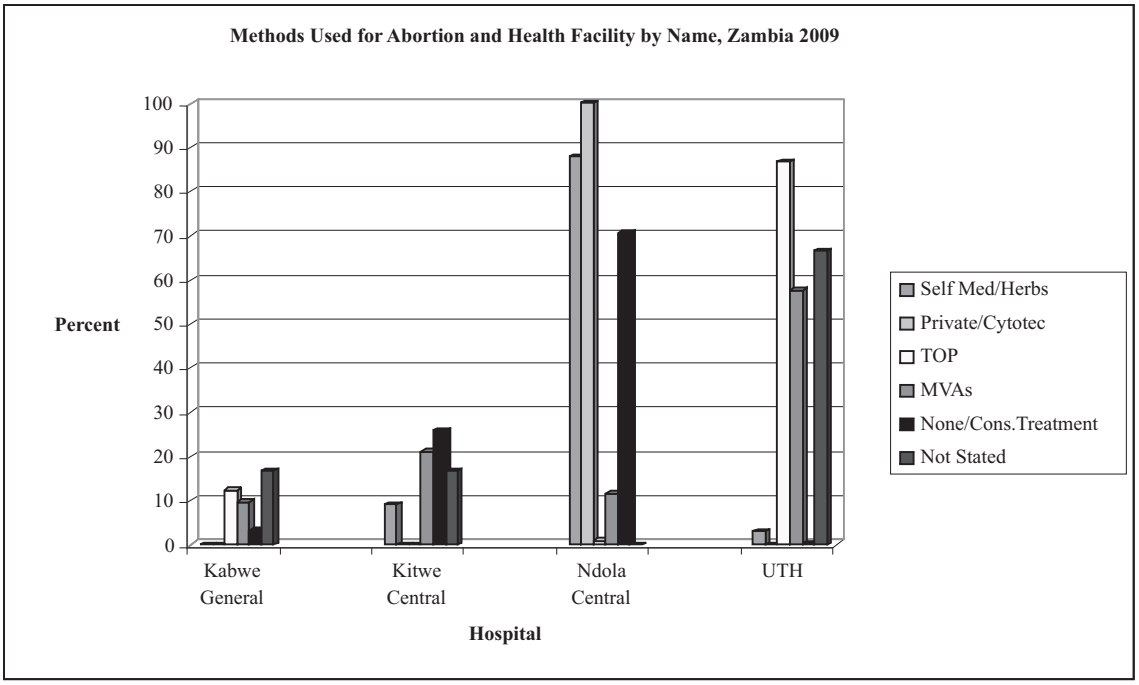
The methods used for abortion show significant associations with the occurrence of abortion in relation to the characteristics (pvalue 0.000) and type of health facility (pvalue 0.000).

Table 5.4.2: Proportion of Methods Used for Abortion among Women and Health Facility

Health Facility Name	Methods Used for Abortion						Total
	Self Medication/ Herbs/Sticks %	Private Surgery/ Used Cytotec drug %	TOP %	MVAs plus Cytotec Drug %	None/ Conservative Treatment/ Oxytocin %	Not Stated %	
Kabwe General Hosp	0.0	0.0	12.3	9.7	3.3	16.7	379
Kitwe Central Hosp	9.1	0.0	0.0	21.0	25.8	16.7	865
Ndola Central Hosp	87.9	100.0	1.0	11.6	70.6	0.0	740
UTH	3.0	0.0	86.7	57.7	6.6	66.6	2190
Total	100.0 (# 33)	100.0 (# 15)	100.0 (# 105)	100.0 (# 3625)	100.0 (#391)	100.0 (# 6)	4174

Pvalue <0.000

Figure 5.4.1: Methods used for Abortion and Health Facility



The findings in Figure 5.4.1 show a high proportion of women using self medication or herbs or herbal sticks are more in Ndola Central Hospital than in other hospitals with low percent and the least being in UTH with 3 percent of all recorded cases. There was no evidence found of such reported incidences in Kabwe General Hospital. Women seeking abortion care from private surgery and supplied with cytotec drug at a cost were only reported at Ndola central Hospital with a 100 percent response rate of all abortion cases. Legal termination of pregnancy (TOP) is highly practiced at UTH, compared with a low percent or zero in other hospitals. Kabwe General Hospital shows a proportion of 12.3 percent for legal abortion practice, while only one percent occurs in Ndola Central and zero percent for Kitwe Central Hospital.

Application of MVA combined with the use of cytotec drug is found highly in UTH with 57.7 percent than in other hospitals indicating a range from 9.7 percent for Kabwe General to 21 percent for Kitwe central. There is a generally practice of MVA and use of cytotec drug for abortion in all major hospital.

Among those stating no methods used and only given conservative treatment for abortion status found complete or the pregnancy being viable are more in Ndola Central with more than 70 percent, followed by Kitwe Central

Hospital indicating more than 25 percent. Limited proportions are found in UTH with only 6.6 percent and Kabwe General with 3.3 percent of such cases. A smaller number (6) of those with no evidence found are more in UTH compared with other health facilities. The findings have demonstrated a greater significant association in the methods used and the types of these major hospitals suggesting their relevant implications for quality of care in the management of abortion, acceptability of legal abortion and information gap existing in these hospitals. When comparing methods used with the status of abortion, it is found highly significant (pvalue 0.000). Table 5.4.3 presents the summary of findings.

Table 5.4.3: Methods Used and Abortion Status

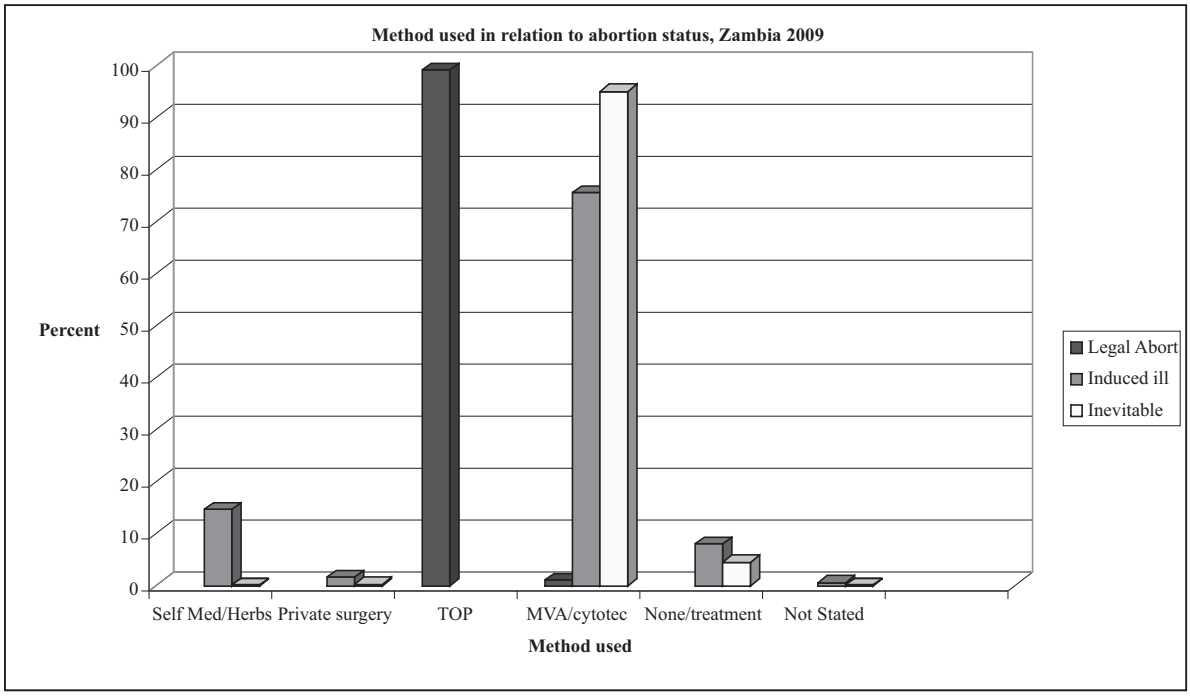
Methods Used	Abortion Status								Total
	Legal Abortion		Induced Illegally/ Unsafe abortion		Inevitable Abortion/ Missed/ Assault		Failed abortion/ Pregnancy survived		
	f	%	F	%	F	%	f	%	
Self Med./Herbs/Sticks	*	*	28	14.6	4	0.1			33
Private Surgery/ cytotec	*	*	3	1.6	11	0.3	1	0.5	15
TOP/Legal procedure	104	99.0	*	*	*	*	*	*	104
MVA and cytotec	1	1.0	144	75.4	3480	95.0	*	*	3625
Other, None/Conservative Treatment/Oxytocin	*	*	15	7.9	166	4.5	210	99.1	391
Not Stated	*	*	1	0.5	2	0.1	1	0.5	5
Total	105	100.0	191	100.0	3664	100.0	212	100.0	4174

Pvalue <0.000

Among the methods used in relation to abortion status show that the MVA method alongside the cytotec drug are highly used for cases of inevitable abortions (95 percent) and unsafe abortion in the context of illegally induced abortion and those presenting with septic abortion (75.4 percent) (Table 5.4.3). Higher proportions of MVA and cytotec drug use may suggest that there are most common and acceptable methods used for managing abortion complications in major hospitals. Almost all legal abortions performed follow legal procedures of terminating a pregnancy (TOP) in these hospitals (99 percent), with exception of one case employed use of MVA and cytotec drug. For self medication, herbs and other traditional remedies, the results show highly applied for illegally induced abortion cases with 14.6 percent.

The findings demonstrate that the status of abortion is determined by the choice of method used for women's survival from the varied abortion risk conditions.

Figure 5.4.2: Proportion of Methods used and abortion status



5. 5. Abortion Condition

Abortion condition is characterized by those who survived from abortion and those who died. The findings show that 99.7 percent of women survived from the risk of abortion, while 0.3percent of women did not survive of all 4174 abortion cases reviewed. The higher survival chances of these abortions may suggest better quality of care applied in the management of abortion complications employing higher use of MVA procedures and cytotec drug in these major health facilities that likely reduces the risk of abortion mortality in Zambia (Tables 5.4.1, 5.4.2). The following Table 5.6.1 provides a summary of findings related to abortion condition status for women survived and those who died from the risk of abortion.

Table 5.5.1: Proportion of Women Survived and Died of Abortion Related Complications by Health Facility, Zambia 2009

Health Facility	Abortion Condition Status				Total
	Women survived		Women died		
	F	%	f	%	
Kabwe General Hospital	377	9.1	2	18.1	379
Kitwe Central Hospital	862	20.7	3	27.3	865
Ndola Central Hospital	735	17.7	5	45.5	740
University Teaching Hospital (UTH)	2189	52.5	1	9.1	2190
Total	4163	100.0	11	100.0	4174
Overall Total %		99.7%		0.3 %	100.0

Sig. Pvalue <0.036

The findings in Table 5.5.1 show that there is a highly recovery rate of 52.5 percent of women admitted with abortion complications at the University Teaching Hospital than other hospitals with lower rates. Kitwe Central Hospital shows 20.7 percent recovery rate, while other hospitals indicate a distribution of 17.7 percent for Ndola Central Hospital and the least figure of 9.1 percent for Kabwe General Hospital. Deaths of abortion related

complications occurred highly (45.5 percent) at Ndola Central Hospital in the last six months (January to June 2009) more than other hospitals. They indicate a distribution of 27.3 percent for Kitwe Central, 18.1 percent for Kabwe General Hospital and 9.1 percent for the UTH. High abortion related mortality may attribute to lesser provision of safe abortion services in hospitals.

Generally, the findings have demonstrated a highly recovery rate of women hospitalized with abortion related complications giving an overall proportion of 99.7 percent, and women survive at UTH more than those managed in other hospitals, while those dying are limited with only 0.3 percent demonstrating reduction in mortality. A recovery rate of women hospitalized is higher at UTH than other hospitals demonstrate some significant association in the recovery outcome of women hospitalized with unsafe abortion complications and a health facility (pvalue 0.036). This difference may account for the improved reproductive technology in managing unsafe abortion related complications employing use of MVAs, enhancing access to safe legal induced abortion services and other effective measures for reducing morbidity (Figure 5.4.2) and changing attitude of health providers towards safe abortion service response.

PART 6
DISCUSSION OF FINDINGS

Abortion in Zambia is, as in many countries in Africa and elsewhere, a serious and severe public health problem concern despite the country's restrictive law and it is most frequently unsafe. WHO (2006) defines unsafe abortion as a procedure for terminating unintended pregnancy either by individuals without the necessary skills or in an environment that does not conform to minimum medical standards or both, justifies the evidence found in this study. The research findings on women hospitalized for treatment of abortion complications and those who sought legal pregnancy termination, presented here, show that unsafe abortions can increase a substantial cost in the impaired health condition of women and in the required medical expenses of those abortion related complications. Among women admitted with abortion complications depicting signs of hemorrhage, retained products of conceptions, shirodkar stitch insertion for cervical incompetence and sepsis in some conditions, and all in the language of "incomplete abortion" or "threatened abortion," more than 87 percent had spontaneous abortion complications presenting with incomplete abortion, 4.6 percent for illegal or criminal abortion based on clinical evidence on methods used and status of a septic condition, 5.1 percent exhibited failed abortion or pregnancy survival and only 0.3 percent died (Tables 5.3.1, 5.6.1). It shows that there are more women hospitalized with abortion related morbidity in Zambia.

Morbidity due to abortion, particularly unsafe abortion, is very high in Zambia. The bulk of abortion conditions are highly associated with unsafe abortion depicting the severity of the problem and the extent of women hospitalized with abortion complications. It relates to the nature of spontaneous abortion complications presented as mostly incomplete with retained products of conception and those described as criminal or illegal induced abortion, whether in a complete or incomplete status. These were more than those for safe legal pregnancy termination or those exhibiting with cervical anomalies in the context of threatened abortion whose pregnancies survived. It may, then, be argued that high abortion morbidity is strongly associated with increase in unsafe abortion, a persistent preventable condition. The reduced mortality rate indicates that, at a minimum, about 31 women in Zambia die from unsafe abortion related complication each year if the estimates of 10,276 women treated annually for abortion complications calculated earlier are reliable and remain constant at these major health facilities. Reduction in mortality is further strengthened by the provision of post abortion care (PAC) employed in all government hospitals to reduce mortality that could have a bearing, also, on the reduced maternal mortality ratio observed recently (Ministry of Health et al. 2008; Ministry of Health 2009; CSO et al.2009). It is found in this study that more than 86 percent use MVA and cytotec drug as methods employed for treating abortion complications at the government health facilities explored (Tables 5.4.1, 5.4.2). Therefore, the response to recovery outcome rate of abortion morbidity is quite high, and may have attributed to the reduction in mortality (Table 5.5.1). However, variation in deaths occurrence due to abortion complications are also noted at the health facilities. More deaths that occurred at Ndola and Kitwe Central hospitals may account for limited provision of safe legal pregnancy termination services and other effective methods for managing medical complications related to abortion morbidity and pregnancy (Tables 5.4.2, 5.5.1). Health facilities with the likelihood of appropriate technology and positive attitude to safe legal pregnancy termination services and effective provision of quality post abortion care demonstrated by higher proportions of legal pregnancy

termination and use of MVA, and other devices have positive effect on abortion mortality (Tables 5.4.2, 5.5.1). This shows that appropriate technology, positive response to quality post abortion care and legal pregnancy termination highly reduce abortion mortality at health facilities. However, it must be noted further that since many die before reaching a health facility and others may remain unreported as a result of poor hospital based data management and stigma attached to unsafe abortion incidences (Ministry of Health et al. 2009), the true reflection in number of women dying from abortion related complications is likely to be higher than this. The results advocate for re-thinking better ways of strengthening hospital and community based information management system related to abortion morbidity and mortality data.

Measuring Abortion Incidence

In this study, the incidence of abortion has further demonstrated the extent of the magnitude of unsafe abortion in Zambia which is not greatly differentiated from those in other countries (Henshaw et al.2008; Singh et al. 2005; Ipas 2004). The findings show a current annual abortion incidence ratio rate of 12.3 percent, which is exceedingly lower than for Africa (14 percent), but could be expected higher than this figure likely to fall within the limits of other African Countries for Eastern and Southern, including Western Africa estimates ranging between 13 to 16 percent (Ahman and Shah 2002). It should be noted here that the annual incidence abortion rate is calculated by number of abortions (safe and unsafe abortions) in two folds- the actual incidence ratio rate measure per live births as it occurred in other studies (Sedgh et al. 2007; Singh et al. 2008) and the incidence rate of abortion admissions per gynaecological admissions in a year which gave the annual incidence abortion rate of 18.4 percent. The estimated incidence rate of 12.3 percent demonstrates further that unsafe abortion is a major public health problem in Zambia similarly to other African countries in increasing greater morbidity on women and child survival consequences than, most likely, other maternal conditions (Singh et al. 2005; Henshaw et al. 2008; Grimes et al. 2006). Pregnancy losses occurring after seven months of gestation classified as still births in Zambia Demographic and Health Survey 2007 that should be considered as abortions account to 91 deaths per 1000 live births (CSO et al.2009). The ZDHS findings have further complimented to the magnitude of abortion morbidity found in this study.

Abortion in the Context of Unwanted Pregnancy

Terminology of pregnancy by its definition as planned or unplanned is complex, as unplanned pregnancy may be either wanted or unwanted, and a planned pregnancy may also become unwanted (Ministry of Health et al. 2009; Rasch et al.2000). In this study, it has shown that the higher proportions of women treated for complications of abortion for illegal induced abortion and those classified as mostly spontaneous abortions account for unwanted pregnancy more than those attributed to medical complications associated with ill-health of women. Furthermore, a highly concentration of abortion in young women 20-29 years old and mostly unmarried more than older women suggests a strong relationship link to pregnancies not being desired on account of unmet need for child spacing that resulted in pregnancy losses (Tables 5.2, 5.2.2,5.3.2 &5.3.5). Adolescents 10-19 years had a highly proportion of more than 28 percent for illegal induced abortion complications, while older women 25-29 years resorted more to legal pregnancy termination with 27.6 percent points to their relationship link to unwanted

pregnancy. Even though, there are variations in its occurrence, abortion has affected all women of child-bearing ages giving a range from, as low as, 10 years to 49 years demonstrating that it is a common practice in Zambia suggesting that unwanted pregnancy is a root cause of abortion.

The 2007 ZDHS has shown that there is a large percentage point decline in married women who want another child soon, from 21 percent in 2001-2002 to 15 percent in 2007. The women who want to wait until later have shown an increase from 37 percent in 2001-2002 to 39 percent in 2007 (CSO et al. 2009). The desire for more children is significantly reducing which may seem to influence increases in unwanted pregnancies reflected in high prevalence of unsafe abortion as observed in this study. The desire to limit births was also noted in 2007 ZDHS to be highly accepted among women (CSO et al. 2009) that may attribute to more abortions resulting from the unwanted pregnancy, depicted as illegal induced abortions and the cumulative incidences of spontaneous abortion complications, affecting more married women with more children and recurrent abortions than the single or divorced (Tables 5.3.6, 5.3.7, 5.3.8). The relationship between unwanted pregnancy and prevalence of abortion can be demonstrated further in more legal abortions (41.9 percent) and unsafe induced abortion (24.1 percent) in single women thereby arguing that abortions occurred on account of unwanted pregnancy. The findings, therefore, direct their implications for unmet need for family planning and safe abortion services.

Even though this study had some limitations for not exploring further on the demand for family planning among women hospitalized for abortion complications, 2007 ZDHS show unmet need for spacing being highest in the 20-29 age-group with a percentage point of 45.3 percent and for adolescents as 19.3 percent, while unmet need for limiting births show low proportions of 3 percent for adolescents and 5.5 percent for the 20-29 age-group (CSO et al. 2009). It shows that unmet need for spacing births is high in young women. The evidence demonstrates that the more demand for contraception becomes due to increase in unwanted pregnancy, the greater exposure it becomes to unsafe induced abortion occurs in this risk age- group. The findings of this study show that the consequences of unsafe induced abortion complications are highly associated with the younger age-groups facing the challenges of greater unmet needs for family planning than the older ones. Abortion could be used as a method of child spacing or to delay births as also demonstrated in the varied methods used for pregnancy termination. Considering that data relied on the case record review and unreliable data obtained from women for whom there is clinical suspicion of illegal induced abortion common for high spontaneous abortion complications, it is suggested further that a cohort follow-up study be conducted on women at these health facilities employing use of structured questionnaire interviews combined with a confidential in-depth dialogue discussions. The method can influence women to willingly provide information on induced abortion without prejudice that may rule out the misclassification differences between unsafe induced abortion and spontaneous abortion, and also pregnancies that are unwanted or unintended.

Method Used for Abortion

The methods used for abortion varied greatly ranging from those used by women for abortion before seeking medical care to those applied for treating abortion complications and those employed for medical pregnancy termination (TOP) at health facilities. In this study, different methods used were self medication of aspirin or

panadol tablets and traditional remedies or herbs, seeking care from private clinics for cytotec drug to induce abortion, legal pregnancy termination procedure (TOP) to post abortion care of employing use of MVA and cytotec drug, plus conservative medical care (pain relief drugs, antibiotics, oxytocin drug use for retained products of conception, and insertion of shirodkar suture for cervical incompetence to retain pregnancy) to none where abortion has been in a complete status. A higher proportion of more than 86 percent employed use of MVA and cytotec drug for post abortion care for managing abortion complications suggest that many of such cases were unsafe, compared with those for legal pregnancy termination with the lowest figure of 2.5 percent. Applying self medication and traditional remedies or use of foreign devices, or seeking care from private clinics further reflect the magnitude of illegal induced abortion performed clandestinely (Koster-Oyekan 1998). Such practices are linked to the prevailing restrictive abortion laws (Laws of Zambia 1972; Ministry of Health 2009). In Countries where induced abortion is illegally, unsafe abortions tend to be widely practiced and women are frequently hospitalized at the health facilities with incomplete abortion after attempting to terminate their pregnancies (Rasch et al. 2000; Abdella 1996; Costa et al. 1993). In a hospital based study from Ethiopia found that 53 percent of all women who were hospitalized because of incomplete abortion resulted from unsafe induced abortion practices (Abdella 1996). Similar findings are also noted in a Zambian strategic community-based qualitative assessment of the need to reduce abortion morbidity and mortality where a complex of methods are stated to be used for terminating pregnancies clandestinely and the providers ranged from self, traditional healers or herbalist, women initiators or a family member to private health practitioners, retired clinical officers and nurses (Ministry of Health et al.2008). Users of clandestine methods were found in this study as mainly affecting young women, students and single women with the limited access to family planning services, most likely, due to social and legal factors (Ministry of Health et al. 2008; Bankole et al. 1998). As Paxman and others (1987) rightly states that health care is a legitimate concern of any country, legislation should be used as a method of creating a system of "rights"to health care to be processed by individuals and "duties" to provide health care in general which falls to the state. Any deficiencies in the legitimacy of health care services may predispose to the increases in the clandestine methods of illegal induced abortion practices as observed in other studies and in this study.

Determinants of Abortion in Zambia

The findings in this study demonstrate that abortion in Zambia is significantly determined by age, education, marital status, parity, occupation, religion, legality, type of a health facility and health seeking behaviour. Recurrent or repeated abortions were found highly in married women suggests that abortion increases with parity and marital status of women. This confirms evidence from other studies that marriage influences recurrent abortions in women. Agadjanian (1997) observes that half of all ever-married Kazakastani women had one or two recurrent abortions. With regards to marital status, it suggests further that married women are eligible to recurrent abortions, which can have a stronger positive impact on the abortion rate than on contraceptive use.

As much evidence has been discussed on age, education, and marital status, Christian religion shows greater influences on highly unsafe induced abortions that are evident in this study. Almost more than 41 percent of women treated with illegal induced abortion complications were Christians, compared with only 4.2 percent for

non Christian communities and 2 percent for medical pregnancy termination (TOP) brings about conflicting arguments in the right to practice induced abortion and the adherence to Christian values that prohibit induced abortion among Zambian women (Table 5.3.6). Religious values that are against premarital sexual union and pregnancies occurring before marriage, alongside the use of contraception among the single or adolescents, as in most Zambian traditional moral values, tend to overcome women's decisions on the right to procure an abortion (Ministry of Health and Ipas 2008). In the focus group discussions conducted among key informants of rural communities in a strategic assessment of the need for safe abortion study, it was stated that illegal induced abortion was a common practice for single women for fear of being excommunicated from the church congregation, especially among the Roman Catholic Congregation, as abortion is murder or killing a child (Ministry of Health and Ipas 2008). This influences women to resort to more private practices of induced abortion for fear of being disqualified or excommunicated from the church congregation. Thus, the term "miscarriage" is more frequently applied than the term "abortion" that attaches stigma and secrecy to its practice placing women in awkward positions in decision making influences on sources of providers and methods used for induced abortion. These factors may attribute to high prevalence of unsafe induced abortion in Christian communities as obligations to religious moral values more than, presumably, the non Christians. Religion is found to determine health seeking behaviour on choice of provider, place and methods used for abortion and therefore increases highly practice of unsafe induced abortion more than legal pregnancy termination in the Zambian women.

The religious influences on increasing illegal induced abortion found in this study are evident in other studies. In an anthropological study of contraception in Islamic societies, it was found that due to social and religious disapproval, abortions are increasingly carried out secretly, that is outside the public health services (Krengel et al.2000). The negative attitude towards abortion and its repercussions in the religious communities is seen to influence decisions on approval of family planning through contraceptives among the religious authorities, whether Islam or Christians (Krengel et al. 2000; Ministry et al. 2008). Increase in unsafe induced abortions that are observed in other societies and indeed in Zambia is therefore justified by the religious influences on higher increase of illegal induced abortions, noted further, as "Earlier, we had seven to nine abortions per day.. Today, we have seventeen abortions per year.. Abortion is a murder and therefore we approve of family planning through contraceptives," states one of the religious authorities in a study (Krengel et al. 2000:208). Similar sentiments were also echoed by clergy men in a Zambian study disapproving abortion as "murder," but acknowledged the use of family planning to women regardless of marital status including the sexually active adolescents arguing that "let the sins return to the owner"(Ministry of Health et al.2008). It is urged that abortion should only be allowed on medical conditions to save the life of a sick woman, but not as deliberate conditions of social problems (Ministry of Health et. al. 2008). Religious influences further affect access to legal termination of pregnancy in Zambia. The evidence noted from other studies has provided factual explanations for the reasons for the high prevalence of unsafe induced abortions than legal abortions among women of various denominations found in this study.

Legality of induced abortion in Zambia affects access to safe pregnancy termination negatively. In Zambia, legal pregnancy termination defined in the Termination of Pregnancy Act of 1972, with amendment in 1994 and 2005,

is on medical and social grounds (Laws of Zambia 1972, 2005). The restrictive procedural practice conditioned by the provision of three licensed medical doctors to perform a pregnancy termination in a hospital setting, coupled with lacking knowledge of abortion law alongside community and health provider's attitudes on the ground of religion has not gained popularity in its acceptance by women (Laws of Zambia 2005; Ministry of Health 2009; Ministry of Health and Ipas 2008). In this study, only 2.5 percent of all major hospitals surveyed have had medical pregnancy termination (TOP) on medical and social grounds. This figure attributes to two prominent health facilities, i.e Lusaka University Teaching Hospital (UTH) with a highest proportion of more than 86 percent and Kabwe General Hospital accounting for 12.6 percent. Response to medical pregnancy termination is perceived negatively in government hospitals. Action taken by the Government to create awareness of the law, through the proficient development and provision of standards and guidelines for reducing unsafe abortion morbidity and mortality in conformity with the law (Ministry of Health 2009) may anticipate changes in its acceptability, but not to its fullest acceptability because of the prevailing attitudinal and procedural factors affecting its provision. In countries where induction of abortion is legalized and accepted life-threatening complications of sepsis and haemorrhage have virtually disappeared or reduced. It is argued that prohibition of induced abortion does not lead to a reduction in the number of abortions, but increase the complication rate of morbidity and mortality (Justesen et al 1992; Hogberg 1985). The findings direct to the need for further changes in the law to provide a positive role in the reduction of unsafe abortion morbidity.

Post Abortion Care

The initiation of post abortion care (PAC) by the government of Zambia in collaboration with Ipas in 1998 has received positive impact on abortion morbidity and mortality in government health institutions, through provision of manual vacuum aspiration (MVA) procedure and the use of cytotec drug for managing abortion complications (Ministry of Health and Ipas 2008; Kaseba et al.1998). PAC is an integrated package of providing emergency abortion care, family planning services and linkages to other reproductive health services. The integrated package is provided by a composite of health providers that include doctors, medical licentiate, clinical officers, nurse midwives and nurses proficiently trained in emergency evacuation of the uterus up to 14 weeks gestation (Mtonga et al. 2001; Ministry of Health 2009). A wider involvement of varied health professionals in the technical provision of PAC may justify significant higher provision of MVA in women treated for abortion complications at the health facilities with 86.8 percent, and UTH in Lusaka exhibiting a substantial highly number of MVA procedures with 57.7 percent than other hospitals, with the least performance at Kabwe General Hospital (9.7 percent). The variation in PAC performance can be attributed to most likely gaps in the technological input of managing emergency evacuations, staffing pattern and space (Ministry of Health 2008). Despite its short fall, use of MVA and cytotec drug has shown a positive impact on mortality reduction in women treated for abortion complications. Recovery outcome rate at health facilities is more than 99 percent, with only 0.3 percent abortion related deaths, which shows that use of MVA procedure with appropriate technology has a positive effect on abortion mortality in Zambia.

However, the introduction of PAC in Zambia does not necessarily mean that abortion morbidity is reduced, but rather, it is on the increase. It is therefore suggested furthermore to consider some aspects of strengthening

contraceptive technology in its package as contraception is low in 20-29 age-group and more so among the adolescents as demonstrated in this study and in the unmet need for family planning (CSO et al. 2009). The need to enhance provision of legal pregnancy termination alongside provision of contraceptives and effective counseling services to more risk groups, such as the sexually active youths and single women, is imperative as part of a holistic comprehensive care approach being advocated by the Ministry of health (Ministry of Health 2009).

PART 7
IMPLICATIONS and CONCLUSION

Methods applied employing the descriptive review of the hospital-based case records for women treated for complications of abortion and those seeking medical pregnancy termination at major health facilities of three provinces of Lusaka, Central and Copperbelt yielded more data than expected in the last six months and for the annual period of 2008-2009 abortion incidence estimates. It has demonstrated that unsafe abortion morbidity is highly prevalent in Zambia having greater implications for family planning programme, safe abortion services, sex education, policies and future research approaches.

The magnitude of abortion morbidity continues being a life-threatening as it has affected women at any stage of child bearing age in Zambia determined by mostly parity, social, cultural, legal, and institutional variables, and the preference for abortion seeking care. However, reduction in mortality accounts to improvement in post abortion care employing used of manual vacuum aspiration procedure and the cytotec drug. A highly proportions of women treated for abortion complications and those seeking legal pregnancy termination at the health facilities reflect that family planning in Zambia is not widely used by women. There is a recipient gradual increase in contraceptive prevalence rate to 24.6 percent for 2007 from 7.0 in 1992 for any modern method overtime (CSO et al.2009; Kwesi Gaisie et al. 1992). Unmet need for contraception for the single and adolescents is quite high (CSO et al. 2009). In this study, it is found that unsafe induced abortion is widely common among young women including the adolescents, single women and students reflecting the need for family planning provision in this group. As the root cause of unsafe induced abortion is unwanted or unintended pregnancy, meeting the need for contraception and improving their effectiveness of use among women and couples who are already using contraception are crucial steps towards reducing the incidence of unintended pregnancy.

Estimates of abortion incidence are necessary means of monitoring and responding to the causes, consequences of maternal morbidity and mortality, and unmet need for contraception. Additional research approaches examining variations in the occurrence of unsafe induced abortion directing its primary cause to unwanted or unintended pregnancy, the types of abortion procedures being used, severity of unsafe abortion, and response to safe pregnancy termination and contraception among women with or without recurrent abortion complications would help to identify gaps for abortion service improvements.

The need for policy amendments related to contraception, sex education, and legality in the provision of pregnancy termination, and the indirect laws for marriage and child bearing that seem having negative impact on abortion morbidity and mortality is absolutely imperative. The age at which abortion occurs, demonstrated in this study, as early as at 10 years, shows that early child bearing and early marriage continue to lengthen period of reproduction, increasing the risk of child bearing and abortion consequences on women. Recurrent induced abortions accounting for high parity as a result of early initiation of sex, births and marriage coupled with the limited use of contraception can be anticipated further to increase abortion morbidity in Zambia.

In light of gaps identified in the hospital-based survey data, it is important to ensure that both hospital-based and community-based information system on abortion morbidity and mortality are strengthened. The study identified a couple of missing values that would have complimented to the comprehensive analysis of data on abortion.

Finally, in response to the ICPD+5 and other international conversions for improved reproductive health and to fulfill the Millennium goals towards 2015 of reducing maternal mortality further (UN 2005, Ipas 2004), contraceptives and abortion technologies now available and being strengthened, and the estimates presented in this study, prevention of unsafe abortion is the imperative public health goal that should be achieved by the Zambian Government. Abortion law and contraceptive policy must be legitimized to their fullest capacity and known by the public without prejudice.

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Annex 1

QUESTIONNAIRE

NATIONAL ABORTION SURVE Y IN ZAMBIA: JUNE 2009
RECORD REVIEW CHECKLIST

RECORD REVIEW CHECKLIST NUMBER---------- ☐☐
(USE CODE NUMBER PER HEALTH FACILITY: KABWE GEN= 01; KITWE CENTRAL = 02; NDOLA CENTRAL = 03; UNIVERSITY TEACHING HOSPITAL = 04)

SUMMARY DATA SHEET FOR ABORTION STATISTICS

I. IDENTIFICATION OF HEALTH FACILITY

Province: ----------

District:----------

Health Facility (Name & Type): ----------

(Indicate: Central Hospital, or General Hospital by Name)

Date (collected statistics): ☐☐☐☐☐☐

Day Month Year

II. ABORTION STATISTICS BY CLASSIFICATION

Year 2008/09	Total Number of Legal Abortions (TOPs)	Abortion Complications-Admissions			Number of Abortion Cases Died	Number of all Gynae Admissions
		Number of Abortion Complications Admitted		Number of MVAs		
		Unsafe[13]	Spontaneous/ Missed			
Jun						
July						
Aug						
Sept						
Oct						
Nov						
Dec						
Jan						
Feb						
Mar						
April						
May						
TOTAL						

[13] Self induced, contacted private clinics, or traditional healers, or any family member or friends for seeking abortion

III. CURRENT ABORTION ADMISSION DATA ENTRY FORM: JANUARY 2009

CHARACTERISTICS OF WOMEN PRESENTING WITH ABORTION (USE CASE RECORD FILES)

Case No.	Age As stated in yrs	Marital status (single, married, widowed, separated)	Education (no educ., primary, secondary, college, university)	Occupation (employed, Housewife, business, and other)	Religion (State type of denomination	Abortion status (Induced illegally, Top, spontaneous/ inevitable/missed)	Method used (self, herb, private, TOP, MVA and other	Condition (Discharged/ Survived)	Died, (state date)

III. CURRENT ABORTION ADMISSION DATA ENTRY FORM: FEBRUARY 2009

CHARACTERISTICS OF WOMEN PRESENTING WITH ABORTION (USE CASE RECORD FILES)

Case No.	Age As stated in yrs	Marital status (single, married, widowed, separated)	Education (no educ., primary, secondary, college, university)	Occupation (employed, Housewife, business, and other)	Religion (State type of denomination	Abortion status (Induced illegally, Top, spontaneous/ inevitable/missed)	Method used (self, herb, private, TOP, MVA and other	Condition (Discharged/ Survived)	Died, (state date)

III. CURRENT ABORTION ADMISSION DATA ENTRY FORM: MARCH 2009

CHARACTERISTICS OF WOMEN PRESENTING WITH ABORTION (USE CASE RECORD FILES)

Case No.	Age As stated in yrs	Marital status (single, married, widowed, separated)	Education (no educ., primary, secondary, college, university)	Occupation (employed, Housewife, business, and other)	Religion (State type of denomination	Abortion status (Induced illegally, Top, spontaneous/ inevitable/missed)	Method used (self, herb, private, TOP, MVA and other	Condition (Discharged/ Survived)	Died, (state date)

III. CURRENT ABORTION ADMISSION DATA ENTRY FORM: APRIL 2009

CHARACTERISTICS OF WOMEN PRESENTING WITH ABORTION (USE CASE RECORD FILES)

Case No.	Age As stated in yrs	Marital status (single, married, widowed, separated)	Education (no educ., primary, secondary, college, university)	Occupation (employed, Housewife, business, and other)	Religion (State type of denomination	Abortion status (Induced illegally, Top, spontaneous/ inevitable/missed)	Method used (self, herb, private, TOP, MVA and other	Condition (Discharged/ Survived)	Died, (state date)

III. CURRENT ABORTION ADMISSION DATA ENTRY FORM: MAY 2009

CHARACTERISTICS OF WOMEN PRESENTING WITH ABORTION (USE CASE RECORD FILES)

Case No.	Age As stated in yrs	Marital status (single, married, widowed, separated)	Education (no educ., primary, secondary, college, university)	Occupation (employed, Housewife, business, and other)	Religion (State type of denomination	Abortion status (Induced illegally, Top, spontaneous/ inevitable/missed)	Method used (self, herb, private, TOP, MVA and other	Condition (Discharged/ Survived)	Died, (state date)

III. CURRENT ABORTION ADMISSION DATA ENTRY FORM: JUNE 2009

CHARACTERISTICS OF WOMEN PRESENTING WITH ABORTION (USE CASE RECORD FILES)

Case No.	Age As stated in yrs	Marital status (single, married, widowed, separated)	Education (no educ., primary, secondary, college, university)	Occupation (employed, Housewife, business, and other)	Religion (State type of denomination	Abortion status (Induced illegally, Top, spontaneous/ inevitable/missed)	Method used (self, herb, private, TOP, MVA and other	Condition (Discharged/ Survived)	Died, (state date)

III. CURRENT ABORTION ADMISSION DATA ENTRY FORM: JUNE 2009

CHARACTERISTICS OF WOMEN PRESENTING WITH ABORTION (USE CASE RECORD FILE S)

Case No.	Age As stated in yrs	Marital status (single, married, widowed, separated)	Education (no educ., primary, secondary, college, university)	Occupation (employed, Housewife, business, and other)	Religion (State type of denomination	Abortion status (Induced illegally, Top, spontaneous/ inevitable/missed)	Method used (self, herb, private, TOP, MVA and other	Condition (Discharged/ Survived)	Died, (state date)

Annex II

Table 4. 1: Summary of Field Work Activities

Item	Time Frame	Responsible person
•Submission of Research Proposal to Ipas Africa	6th May 2009	Principal Researcher
•Communicate with Provincial Health Offices, and Hospital Directors	22-24TH June 2009	‘’
•Recruitment and orientation meeting with Provincial Health Offices	22-24th June2009	‘’
•Printing of questionnaires/checklist data forms	22-24th June 2009	‘’
•Field work and Orientation meeting with Provin cial and Hospital Health Offices	6th July-28th August 2009	Principal Researcher & Co - Researcher
•Analysis and Report writing	1stSept–30th November 2009	Principal Researcher
•Review of draft report	December 2009	Principal Researcher & Co - Researcher
•Submission of Research Report	December 2009	Principal Researcher

Annex III

List of Research Assistants and Hospital- Based Support Staff: Zambia Abortion Survey 2009

Name	Location
Ms Rosemary Mwanza	Central Province, Kabwe
Mr Hagar Chungu	Central Province, Kabwe General Hospital
Mr Davis Seti	Central Provinmce, Kabwe General Hopistal
Ms Mavis Chingeji	Copperbelt Province, Kitwe Central Hopsital
Mr Kabika Mwanza	Copperbelt Province, Kitwe Central Hopsital
Ms Musole Mbangu	Copperbelt Province, Kitwe Central Hospital
Ms Julia Muyunda	Copperbelt Province, Ndola Central Hospital
Mr Mwendamena Kabuku	Copperberlt Province, Ndola Central Hospital
Mr Songe Chitusha	Copperbelt Province, Ndola Central Hospital
Ms Jane Chisanga	Lusaka Province, University Teaching Hopsital
Mr Sakala Mavuto	Lusaka Province, The University of Zambia (UNZA)
Ms Esther Mary Kurian	Lusaka Province, UNZA
Mr Clive Banda	Lusaka Province, UNZA
Mr Geofrey Mulota	Lusaka Province, University Teaching Hopsital

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