Chapter 3. Aim, objectives and design of PhD thesis

This chapter provides an overview of the aim, objectives and design of my PhD thesis. The first section outlines the aims of the research and its specific objectives. The second section describes the context of my field research, outlines the framework of the larger project within which my research is embedded and describes my role within the project and how it contributes to my PhD thesis. Subsequent sections describe the sources of ethical approval, funding, fieldwork conducted, and the timeline within which this work was conducted.

3.1 Study aim and objectives

The aims of this PhD research are twofold: first, to contribute towards refinements to the conceptualization of unsafe abortion and to improve its measurement taking into account technological changes in medical provision in low- and middle-income countries where the burden is greatest; and second, to generate new substantive knowledge on the burden of unsafe abortion in Zambia.

The specific objectives of this PhD are:

1. To describe trends in the number of hospitalisations for abortion-related complications within the largest tertiary hospital in Zambia, over a 10-year period (2006 to 2015), and to examine for the effect of contextual changes on these trends using interrupted time series analysis.

2. To estimate the incidence of abortion-related near-miss morbidity in Central, Copperbelt and Lusaka provinces.

3. To estimate and compare the incidence of induced abortion in three provinces in Zambia using two methodological approaches, and to provide an empirical basis for exploring the strengths and limitations of these different methods.

3.2 Study context, project setting and role of the candidate

3.2.1 Study context

Zambia is located in Southern Central Africa and is a landlocked lower middle-income country that shares a border with the Democratic Republic of Congo, Tanzania, Malawi, Mozambique, Zimbabwe, Botswana, Angola and Namibia. Approximately 85% of the population is Christian and 16% of females and 13% of males have never been to school. Zambia attained independence from Britain in 1964, and administratively is divided into ten provinces and 74 districts. Of these ten provinces, Lusaka and Copperbelt provinces are the most urbanized and densely populated whilst the remaining provinces are predominantly rural. Figure 3-1 shows the provinces where the study was conducted highlighted with red stars.

Figure 3-1 Map of Zambia showing where the study was conducted

The 2010 census recorded a population of 13.1 million at the national level and 5.5 million in the provinces included in this study (Central, Copperbelt and Lusaka), and a population growth rate of 3 percent per annum. It also reported that the life expectancy at birth was 49 years for males and 53 years for females. The 2013/14 Zambian Demographic and Health Survey (ZHDS) (136) found a total fertility rate of 5.3 children per woman (136). It also established that the maternal mortality ratio (MMR) was 398 per 100,000 live births and that this was significantly different from the ZDHS 2007 MMR of 591. Data from the 2013/14 Zambian DHS suggests that many women are not fulfilling their reproductive intentions. On the average, Zambian women ages 15-49 had 0.8 more children than they wanted, 37% of births in the five years preceding the survey were unintended, and the contraceptive prevalence rates of modern methods amongst sexually active women was estimated to be 32.5% (136).

Zambia is a paradoxical abortion context. On one hand, it has one of the most liberal laws in Sub-Saharan Africa, allowing for research on induced abortion to be conducted with minimal risks of legal repercussions for participating women and providers. The Termination of Pregnancy Act (Act 26) which was fashioned after British legislation at the time it was enacted in 1972, was amended in 1994 and 2005. It permits pregnancy termination if the pregnancy constitutes a risk to the woman's physical or mental health, or life; involves a risk to the physical or mental health the woman's existing children; if there is substantial risk that the unborn child would suffer from physical or mental abnormalities as to be seriously handicapped or if rape or defilement occurs (17). Additionally, abortion services ought to be free for women at public health facilities with the exception of a registration fee ranging from USD1-11 (137). The government has taken many steps to reduce unsafe abortions and their consequences including: partnering with different organizations such as Ipas, Marie Stopes Zambia, Planned Parenthood Federation of Zambia, Society for Family Health and FHI 360 to increase access to contraceptive services; approving a standards and guidelines for comprehensive abortion care in all health facilities (17); partnering with NGOs to provide CAC training to health facility staff and; approving the combination MA pill and allowing it to be sold in pharmacies (138,139).

On the other hand, there is poor knowledge of the law amongst the public and substantial socio-cultural stigma associated with abortion (20,21,140,141). There are implementation barriers to accessing a safe abortion as termination requires the approval of three registered medical practitioners, one of whom has specialized in the branch of medicine relevant to the patient's reasons for termination (in emergency situations, consent from only one physician is required). Furthermore, Zambia has a very low doctor-to-population ratio of about 1 per 14500 (142). These factors make access to safe abortion difficult for majority of women (143), and poorer and younger women will often resort to clandestine abortions (18). Additionally, a recently proposed change to the constitution may render abortion illegal if it is voted for during the referendum. This is the inclusion of Article 28 which states that "…life beings at conception" and may cause the current Termination of Pregnancy Act to become unconstitutional (144). However, when the Constitution of Zambia Amendment bill of 2015 was signed into law in January 2016, Article 28 was not yet included. The enactment of this Article and other contentious amendments has been deferred till there is a consensus is reached amongst stakeholders (21). It is uncertain how this article will fare during subsequent debate, but the debate process and its subsequent outcome is likely to have a great impact on how the future legality of induced abortion and current social perceptions of abortion in the country.

There are no national data available on the incidence of abortion (19), few recent published studies quantifying or describing abortion-related complications (18) or unsafe abortion, and no studies of near-miss morbidity in Zambia. A 2009 study in 5 major hospitals in Zambia showed that the number of women admitted with abortion complications almost doubled between 2003 and 2008, and that more women are admitted for abortion-related complications than voluntary terminations of pregnancy (about 85 to 1) (19).Evidence from hospital-based studies suggests that complications of illegal, induced abortions have long been an important cause of maternal mortality and the Zambian Government estimates they may have been responsible for up to 30% of deaths in 2007 (141,145). A recent qualitative study by Coast et al interviewing 112 women who had indicated that they had obtained safe and unsafe abortions in a government tertiary hospital in Lusaka suggests that many women use medical abortion

to terminate pregnancies in urban Zambia (140). Although majority of the women in this study (63%) obtained a safe abortion at the hospital, many of them (21%) obtained an unsafe abortion by ingesting or inserting herbs or overdoses of medicines and were subsequently admitted for PAC. Data from this study also suggests that poorer, younger and less educated women are more likely to undergo an unsafe abortion than a safe abortion in hospital (8) . Treating the complications of unsafe abortion cost women up to 70% more than a safe abortion, and in this facility unofficial payments to providers constitute about 32% of the overall cost for abortion care seeking. Overall, providing PAC unsafe abortions was estimated to cost 20% (USD 1.4 million) of the Zambian Health budget in 2013 and the government could potentially save between USD 0.2-0.6 million if women were able to access safe abortion care (137).

3.2.2   Project framework

My PhD research was undertaken as part of the baseline of the external evaluation of the impact of preventing maternal deaths from unwanted pregnancy (PMDUP) program in Zambia. PMDUP is a 5-year DFID-funded program aimed at reducing maternal mortality from unwanted pregnancies by providing family planning and reducing recourse to unsafe abortions originally in 14 countries across sub-Saharan Africa and Asia. PMDUP is implemented by MSI and Ipas. The collaborating institutions for the evaluation and this baseline study are the London School of Hygiene and Tropical Medicine (LSHTM), Population Council and the Guttmacher Institute. Most evaluation activities are in Zambia and India, and my PhD research was conducted in Zambia with Population Council Zambia as the host organization. The PMDUP-funded interventions in Zambia are jointly implemented by Ipas and Marie Stopes International (MSI) and their service activities are concentrated in Central, Copperbelt and Lusaka provinces where the evaluation was conducted. The evaluation of PMDUP in Zambia(EVA-PMDUP) is comprised of 7 sub-studies (sub-study 0- intensity study, sub-study 1- near-miss morbidity study, sub-study 2- community-based survey, sub-study 3- signal functions study, sub-study 4- costs study, sub-study 5- policy study, sub-study 6- household consequences study). My PhD research was conducted within sub-studies 1 and 2, which have the following objectives within the larger evaluation project:

Sub-study 1: The overall near-miss morbidity study is a quasi-experimental study that will use hospital data to track the change over time in severe abortion-related complications (with a baseline and end line) and hospitalizations for post-abortion care over several years. The interventions evaluated were not implemented by the evaluation team and were not part of my PhD. My PhD utilized data from the evaluation baseline for its analyses.

Sub-study 2: The community-based survey is a household survey conducted at baseline and end line. Through this sub-study, EVA-PMDUP investigates the dose response effect of the PMDUP intervention on reproductive health indicators in three provinces in Zambia. My PhD attempted to estimate the annual abortion rate of women of reproductive age using the data collected for the anonymous third party reporting method during the baseline community-based survey"

My PhD research consisted of 4 studies to meet the three objectives. Below is a summary table describing each study and a designation by which it will subsequently be referred to in this chapter and the discussion.

Table 3-1 Summary table briefly describing each study in my PhD and how it will be referred to subsequently

Summary of study	Study designation	Objectives each study addressed
Retrospective data extraction from University teaching hospital, Lusaka registers from 2006-2013	Trend study	Objective 1-To describe trends in the number of hospitalisations for abortion-related complications within the largest tertiary hospital in Zambia, over a 10-year period (2006 to 2015), and to examine for the effect of contextual changes on these trends.
Cross-sectional study collecting hospital data on morbidity from women hospitalized for abortion-related complications in Lusaka, Central and Copperbelt provinces	Near-miss study	Objective 2- To estimate the incidence of abortion-related near-miss morbidity in Central, Copperbelt and Lusaka provinces.
Cross- sectional study collecting data from hospital staff, provincial health registers and top ranking health officials to estimate the incidence of abortion	Abortion incidence hospital study	Objective 3-To estimate and compare the incidence of induced abortion in three provinces in Zambia using three different methodological approaches, and to provide an empirical basis for exploring the strengths and limitations of these different methods

Cross-sectional survey with women in community collecting data on abortions amongst their confidants to estimate the incidence of abortion	Confidants study	Objective 3-To estimate and compare the incidence of induced abortion in three provinces in Zambia using three different methodological approaches, and to provide an empirical basis for exploring the strengths and limitations of these different methods

3.2.3   Role of the Candidate in EVA-PMDUP

I am a medical doctor from Nigeria and received my Medical degree from the Obafemi Awolowo University in Nigeria in 2009 and my MSc in Global health science from University of Oxford in 2012. I developed my PhD research idea on near-miss abortion into a proposal for a different setting (Nigeria) before joining LSHTM. I contributed to writing the overall evaluation protocol and developed a protocol for my doctoral research, which was approved by LSHTM examiners as part of my upgrading document and seminar in July 2013. Thereafter I took the lead on the design and adaptation of the data collection tools for the hospital-based near-miss study at the beginning of my PhD, and subsequently for the trend study. To compare estimates of the incidence of abortion using different methodologies, I adapted data collection tools and conducted additional fieldwork for the abortion incidence hospital study and confidant's study as part of my PhD research.

I lived in Zambia for nine months September 2013 and June 2014 and managed the fieldwork for the near-miss study within EVA-PMDUP. Specifically, I oversaw getting the necessary local ethical and administrative permissions from the Ministry of Health, recruitment of participating hospitals from the public and private sectors, recruitment and training of field staff, data collection and data entry. I was also responsible for the design and implementation of the trend study at the University Teaching Hospital (UTH), Lusaka. I trained the community-survey enumerators to use the confidant study tool and assisted in piloting and implementation of the household survey. I was responsible for all the data analysis and interpretation from the aforementioned studies. I have written the first drafts of the three papers included as results chapters and I am managing the process of collaborating with my co-authors. A summary of my contribution to each research activity and element included in this thesis is provided in Table 3-2.

Table 3-2 Summary of the role of the candidate in EVA-PMDUP research activities

Component	Activity	Responsibility*	Additional input*
Preparatory work	Site selection	VF, JC, OO	
	Ethics approval and amendment	JC, OO, PCZ	
	Ministry of Health, Provincial and District medical office and individual health facility permissions	OO, PCZ	
Trend study, near-miss study and abortion incidence study	Development of near-miss study tool	OO, VF	CR
	Development of retrospective hospitalization (trend study) tool	OO	VF
	Development of AICM (abortion incidence hospital study) tools	OO	GI
		OO	VF, JC
	Piloting of all data collection tools	OO	VF, JC
	Analysis of pilot data	OO	VF, JC
	Modification of tools after pilot	OO	PCZ
	Coordination of field work	OO	
	Development of database for data entry	OO, RAs	PCZ
	Data entry	OO	JC
	Analysis of data	OO	JC, VF
Community-based survey and confidants study	Survey design	JC	VF
	Development of abortion module (confidants study tool)	OO	VF
	Piloting of community survey tool	PCZ, JC, OO	
	Translation of tool	PCZ	
	Design of mobile data collection form for abortion module	OO	PCZ
	Community survey field work	PCZ, OO	JC
	Analysis of abortion component of survey	OO	JC, OC
Research papers	How policy and regulatory changes affect trends in abortion-related complications and deaths: An analysis of Zambian hospital data	OO	Co-authors: JC, MD, SA, MM, BV, OC, VF
	Incidence of abortion-related near-miss complications in Zambia: cross-sectional study in Central, Copperbelt, and Lusaka Provinces	OO	Co-authors: JC, BV, DO, VF
	How do the numbers compare? Estimating the incidence of induced abortion in Zambia using indirect methodologies that rely on community-based and facility-based data	OO	Co-authors: JC, MD, AB, OC, BV, VF
Supervision	Sub-study 1 and 2 within project	VF, JC	PCZ
	Overall PhD/Thesis	VF, JC	

*Individuals or group responsible for each activity denoted with acronym
BV=Bellington Vwalika, CR=Carine Ronsmans, DO=David Osrin, GI=Guttmacher Institute, JC=Jenny Cresswell, MD=Mardieh Dennis, MM=Maurice Musheke, OC=Oona Campbell, OO=Onikepe Owolabi, PCZ=Population Council Zambia, RAs=Research assistants, SA=Schadrac Agbla, VF=Veronique Filippi,

3.3   Ethical approval

Ethical approval was granted by the University of Zambia Biomedical Research Ethics Committee (UNZABREC) on 3 September 2013 (protocol ID:016-04-13), the Population Council IRB on 16 January 2013 (protocol ID: 582), and the London School of Hygiene and Tropical Medicine Research Ethics Committee on 16 August 2013 (protocol ID: 6407).

Ethical review authorities in two of the participating private hospitals independently reviewed and approved the study. Individual written consent was not required for the near-miss, abortion incidence hospital or trend studies as no women or medical personnel were interviewed and anonymous data were extracted solely from hospital records. All women in the community survey gave written informed consent. See appendix 1 for copies of the ethical approval letters and appendix 2 for copies of the consent form.

3.4   Funding

Funding to support this research was received for student fees and allowances from the Economic and Social Research Council (ESRC) UK as an ESRC +3 studentship [grant number ES/J5000021/1], and for fieldwork from the UK Department for International Development through the EVA-PMDUP evaluation. I am also a member of the DFID-funded Research Programme Consortium STEP-UP. Although STEP-UP did not directly contribute funds for fieldwork, I participated in some of its activities such as the consultation meeting on the definition and measurement of unsafe abortion for which I was rapporteur and my current role within STEP-UP is to contribute to the abortion measurement field.

3.5   Research timeline

This section provides a timeline of each of the activities involved in conducting my PhD research (Table 3-3). Over the course of my PhD work, I spent approximately 10 months in Zambia.

Table 3-3 Timeline of PhD research activities

Year	Month(s)	Activities
2012	September	Developed the near-miss morbidity research tool
		Ethical approval granted from LSHTM and TDRC for pilot in Zambia
	October	Piloted near-miss tool in Zambia Pilot analysis Redesign of tool
2013	December 2012- July	Literature review Development of conceptual chapter on defining unsafe abortions Upgraded from MPhil to RD student
	September-October	Obtaining permissions from MoH Introductory visits to eligible hospitals Recruitment and training of field staff
	November	Commenced data extraction for retrospective hospitalization study Training of clinicians in hospitals for near-miss morbidity study AICM commenced
	December	Commenced near-miss morbidity study and supervision visits
2014	January	Field work for AICM continued Near-miss supervision visits continued
	February	Piloted ATPR tool Redesign of tool Translation of tool Programming into open data kit (ODK) Preparation for field work Near-miss supervision visits continued
	March	Community survey commenced Data entry for near-miss study commenced Near-miss study concluded
	May	Oversaw near-miss validation study
	June-December	Data analysis commenced
2015	January	Had a baby
	January-April	Data analysis and writing up
	May-June	Interruption of studies (maternity leave)
	July- April 2016	Data analysis and writing up