Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Jennifer Wilkers Date

Factors Associated with Attempt of Self-Managed Abortion in the Context of Intention and Prior Pregnancy Outcomes in Urban Haiti: A Secondary Analysis of Survey Data from the Justinien University Hospital in Cap-Haïtien

By

Jennifer Wilkers
Master of Public Health

Hubert Department of Global Health

_____

Eva Lathrop, MD, MPH
Committee Chair

_____

Johnathan Edwards, MSPH
Committee Member

Factors Associated with Attempt of Self-Managed Abortion in the Context of Intention and Prior Pregnancy Outcomes in Urban Haiti: A Secondary Analysis of Survey Data from the Justinien University Hospital in Cap-Haïtien

By

Jennifer Wilkers

Bachelor of Arts
James Madison University
2014

Thesis Committee Chair: Eva Lathrop, MD, MPH
Thesis Committee Member: Johnathan Edwards, MSPH

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Hubert Department of Global Health
2019

ABSTRACT

Factors Associated with Attempt of Self-Managed Abortion
in the Context of Intention and Prior Pregnancy Outcomes in Urban Haiti:
A Secondary Analysis of Survey Data from the Justinien University Hospital in Cap-Haïtien

By Jennifer Wilkers

Objective: Although illegal, abortions in Haiti still occur, the majority of them self-managed and unsafe. Complications from self-managed and unsafe abortions contribute to already-high rates of maternal morbidity and mortality in Haiti. This study aims to examine factors associated with attempt of a self-managed abortion in the context of pregnancy intention and prior pregnancy outcomes to determine potential areas of intervention.

Study Design: This was a secondary analysis of data collected from women (n=263) who presented to Justinien University Hospital in Cap-Haïtien, Haiti from July 2013 - January 2014. Binary logistic regression analyses were run to examine factors associated with pregnancy intention and prior pregnancy outcomes among participants who attempted a self-managed abortion in the current pregnancy, and among those with an ever-attempt of a self-managed abortion.

Results: Women who had completed some secondary school (OR=6.993) and women who had no prenatal visits were more likely to have attempted a self-managed abortion in the current pregnancy as compared to women who completed some primary school or less and women who had one prenatal visit (OR=3.745) or two prenatal visits (OR=4.237). Women who either certain they don't or unsure if they do want children in the future were more likely to have ever-attempted a self-managed abortion (OR=6.067). Having used any method of family planning up to the current pregnancy was a significant risk factor having ever-attempted a self-managed abortion (OR=9.071). Pregnancy intention was not statistically significant among women who attempted a self-managed abortion in the current pregnancy however, women who characterized their current pregnancy as unintended had higher odds of ever-attempting a self-managed abortion as compared with women who characterized her pregnancy as intended (OR=50.0).

Conclusion: Factors that inform women's decisions regarding abortion are complex and difficult to parse to fully capture the context surrounding women's abortion decision-making. Ensuring women have reproductive autonomy to determine the outcome of future pregnancies, control the number and spacing of children, and decide with their provider a suitable contraceptive method consistent with these factors, are critical in reducing maternal morbidity and mortality in Haiti.

Factors Associated with Attempt of Self-Managed Abortion in the Context of Intention and Prior Pregnancy Outcomes in Urban Haiti: A Secondary Analysis of Survey Data from the Justinien University Hospital in Cap-Haïtien

By

Jennifer Wilkers

Bachelor of Arts
James Madison University
2014

Thesis Committee Chair: Eva Lathrop, MD MPH
Thesis Committee Member: Johnathan Edwards, MSPH

A thesis submitted to the
Faculty of the Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in Hubert Department of Global Health
2019

ACKNOWLEDGMENTS

I want to start by thanking Dr. Berry-Bibee, and her work in collecting this data to further contribute to the growing body of literature available on abortion in Haiti. I would also like to thank Alex Edwards, for his unwavering support in guidance for all biostatistics queries, and excitement about this critical topic and willingness to join my committee. I want to extend my sincerest gratitude to my thesis advisor, Dr. Eva Lathrop, for her support and words of encouragement, and allowing me to utilize data collected from research and projects near and dear to her heart.

I want to acknowledge the women who presented to the Justinien University Hospital in Cap-Haitien, for their willingness to participate and share sensitive and personal details with the research staff. I would also like to acknowledge the Justinien University Hospital staff for their partnership and allowing this study to take place.

Lastly, I would like to thank my family and friends, for their unwavering support, compassion, and understanding through highs, lows, and canceled plans, as I undertook this project.

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS

Abbreviation	Definition
BPAS	British Pregnancy Advisory Service
DHS	Demographic and Health Survey
HIV	Human Immunodeficiency Virus
FP	Family Planning
IRB	International Review Board
IUD	Intrauterine Device
JUH	Justinien University Hospital
LARC	Long Acting Reversible Contraceptives
PAC	Postabortion Care
RLP	Reproductive Life Plan
SRH	Sexual and Reproductive Health
STI	Sexually Transmitted Infection
UN	United Nations
WHO	World Health Organization

CHAPTER I: INTRODUCTION

Background and Rationale

According to the World Health Organization (WHO), approximately 830 women die across the globe every day due to complications associated with pregnancy or childbirth, the majority of which are treatable or preventable (2018). Women in more impoverished and rural communities are at disproportionately high risk for maternal mortality, with 99% of all maternal deaths occurring in low-resource settings (World Health Organization, 2018). Roughly 75% of all major complications attributable to maternal mortality can be attributed to five categories: (1) severe bleeding predominately after childbirth, (2) infections predominately after childbirth, (3) high blood pressure during pregnancy, (4) delivery complications, and (5) unsafe abortion (Say et al., 2014). Worldwide between 2010-2014, approximately 56 million pregnancies ended in abortion, (31 million ending safely and 24 million unsafely), of which 97% of unsafe abortions occurred in developing countries (Ganatra et al., 2017). A key component to decreasing maternal mortality is preventing too-early and unwanted pregnancies, by providing all women access to contraceptives, safe abortion services to the full extent the law will permit, and high-quality postabortion care (World Health Organization, 2018).

Haiti's penal code forbids abortion with no explicit legal exceptions, primarily due to cultural beliefs, religion, and social stigma (Maternowska, 2006). However, between 2010-2014, the Caribbean had the highest annual rate of abortion at 59 per 1,000 women of reproductive age (Singh S et al., 2018). The 2016-2017 Haitian Demographic and Health Survey (DHS) surveyed approximately 14,000 women, of which, 4% of women in-union aged 15-49 reported having had at least one abortion in their lifetime (Institut Haïtien de l'Enfance & ICF, 2018). Of women who have had at least one abortion in the past five years, 53% reported having had the abortion in

their home or another home, 30% had the assistance of relatives or friends, and 23% had no assistance (Institut Haïtien de l'Enfance & ICF, 2018). Thus, it is imperative to explore the factors associated with current and ever-attempt of a self-managed abortion in the context of intendedness and prior pregnancy outcomes, to determine areas of intervention and prevent adverse maternal outcomes.

This study took place in Cap-Haïtien, Haiti, the second largest city in the country with a population of 300,000. Approximately 250 kilometers from the capital city of Port-au-Prince, Cap-Haïtien is home to Justinien University Hospital, a 300-bed acute care teaching hospital that serves as the largest governmental hospital north of the capital, and the primary hospital resource for residents of Cap-Haïtien. Cap-Haïtien is also home to Konbit Sante; an organization focused on supporting the development of sustainable health systems in Cap-Haïtien since 2002 by providing the community local direction and support (Mission and values – Building Healthcare Systems for Haiti, n.d.). This study is a collaboration between the Justinien University Hospital, Konbit Sante, and Emory University.

Problem and Purpose Statement

Very little research exists regarding the multiple factors that may be attributed to attempting a self-managed abortion among women in urban Haiti. Examining attempt of a self-managed abortion among women who have currently attempted and have ever-attempted, in the context of intendedness and prior pregnancy outcomes provides important context for a growing body of evidence to be considered for policy and public health intervention strategies. Analyzing these factors within this subpopulation using quantitative methods may guide future

interventions designed to target unmet sexual and reproductive health (SRH) and family planning (FP) needs in Haiti and identify areas for future research.

Research Objectives

In order to adequately describe the variables associated with attempt of a self-managed abortion among women who have currently or ever-attempted, it is imperative to consider the contexts and various interactions between these variables.

The aims of this study are as follows:

Aim 1: To examine the association between pregnancy intent and attempt of a self-managed abortion in the current pregnancy among women in Cap Haïtien, Haiti.

Aim 2: To identify variables and interactions between variables that are associated with: (1) women who have attempted a self-managed abortion in the current pregnancy, and (2) women who have an ever-attempt of a self-managed abortion (either in the current pregnancy or previous pregnancies).

Aim 3: To provide recommendations as to how the Justinien University Hospital in Cap-Haïtien, Haiti, can address the gaps in sexual and reproductive health and family planning among their patients.

Significance Statement

The findings from this study have the potential to be utilized for future public health programming and training, focusing on interventions to adequately and effectively care for women within this vulnerable subpopulation. While the entirety of the study focused on a wide range of sexual and reproductive health topics, the methodology could be adapted for future

research studies, such as altering participant criteria or implementing qualitative questions around characteristics associated with attempt of a self-managed abortion, within other reproductive care providers in Haiti. The findings may also be useful to providers in other countries that have similar populations and health systems.

These data can be used to further support and contribute to the small, yet growing body of literature explicitly addressing unsafe abortion in Haiti. It is especially pertinent for the Haitian Ministry of Health and the Justinien University Hospital to address areas for intervention and reproductive health gaps that may be evident from the data. Documenting the utilization and underutilization of critical reproductive health resources and services illuminates a tangible gap that can be filled with proven methods to reduce unintended pregnancy, maternal and infant mortality, and increase access to contraception and postabortion services.

CHAPTER II: COMPREHENSIVE REVIEW OF THE LITERATURE

Introduction

This chapter provides a synopsis of relevant literature on the foundational elements that must be considered when looking at factors that contribute to unsafe abortion. First, maternal mortality rates are explored along with causes and determinants that contribute to high and low rates across the globe. The review then moves into the discussion of four key factors associated maternal mortality: 1) trends of pregnancy intention, 2) access to sexual and reproductive health services and family planning, 3) access to contraceptives, and 4) availability of safe abortion services. These factors are discussed from a universal perspective, particularly discrepancies pertaining to socioeconomic status. Lastly, the review narrows in scope to examine literature relevant to the context of Haiti, reexamining maternal mortality rates and the following four factors listed above, as it pertains to this specific country and predominately, Haitian women.

GLOBAL LANDSCAPE

Maternal Mortality

The United Nations (UN) Sustainable Development Goal 3.1 is to reduce the global maternal mortality rate by 2030 to less than 70 per 100,000 live births (UN DESA, 2018). Approximately 830 women die across the globe every day due to complications from pregnancy or childbirth, with an estimated 303,000 women in 2015 dying during and following pregnancy and childbirth (World Health Organization, 2018). The UN Maternal Mortality Estimation Inter-Agency Group indicated that almost all of these deaths in 2015 occurred in low-resource settings and could have been prevented (Alkema et al., 2016). The probability that a 15-year-old woman

will eventually die from a maternal cause is 1 in 180 in developing countries and 1 in 4900 in developed countries (World Health Organization, 2018).

Maternal mortality is highest amongst women living in rural areas and more impoverished communities, with 99% of maternal deaths occurring in developing countries (World Health Organization, 2018). In 2015, the maternal mortality rate in developed countries was 12 per 100,000 live births, as compared to 239 per 100,000 in developing countries. Nearly 75% of all maternal deaths are caused by severe bleeding and infections primarily after childbirth, high blood pressure during pregnancy, delivery complications, and unsafe abortion (World Health Organization, 2018). According to the World Health Organization (WHO) (2018), it is crucial to prevent unwanted and too-early pregnancies by ensuring that all pregnancies are intended in order to prevent maternal deaths.

Trends of Pregnancy Intention

Traditionally, an intended pregnancy is classified as one that was desired at the time of conception or sooner, while an unintended pregnancy is classified as one that was either mistimed or unwanted (Singh S et al., 2018). The construct of "intendedness" has been criticized as being incomplete and inadequate, as traditional measures of pregnancy intentions that are dichotomous (i.e. "intended" or "unintended") do not fully capture the nuance and complexity surrounding a woman's plans to become pregnant (Kavanaugh & Schwarz, 2009). There is also discrepancy within the definition of "unintended" as some authors include unplanned as a facet of unintended pregnancy, while others do not (Mumford et al., 2016; Singh S et al., 2018). Even when a survey or questionnaire provides multiple answer choices so that a woman can more definably categorize her pregnancy, considerable variation in the way women assess their

pregnancy and interpret an unwanted, unplanned, or unintended pregnancy have been recorded (Barrett & Wellings, 2002). Furthermore, the myriad of cultural, social, and economic factors at play that informs how a woman defines or categorizes her pregnancy may not align with her behavior, or change over time (Mumford et al., 2016).

Despite recognition that a binary means of determining pregnancy intention does not capture the multidimensionality of a woman's decision-making process or assessment of her pregnancy, available statistics do not typically capture this nuance. Worldwide, between 2010 and 2014, roughly 44% of pregnancies were categorized as unintended, with more than half of these ending in abortion in both developing (59%) and developed regions (55%) (Singh S et al., 2018). Of the world's sub-regions during this same timeframe, the Caribbean and eastern Africa had the highest rates of unintended pregnancy, while the lowest were found in northern and western Europe (Singh S et al., 2018).

In 2010, 51% of the U.S. government budget of $40.8 billion allocated for all publicly funded pregnancy care, was spent on the miscarriages, abortions, and births from unintended pregnancies (Sonfield & Kost, 2016). In the absence of family planning funding for unintended pregnancies that year, it is estimated that public costs might have been 75% higher than reported (Sonfield & Kost, 2016). Data from 2011 shows in the United States shows that 2.8 million of the 6.1 million pregnancies that year were unintended, with the highest proportion of unintended pregnancy among women aged 20-24 (Finer & Zolna, 2016). There are vast racial and economic disparities amongst women in the U.S. during this timeframe who experienced an unintended pregnancy. The highest rates of unintended pregnancy were found among women aged 18-24, minority women, cohabiting women, and poor and low-income women, while the lowest rates of unintended pregnancy were found among white women, higher-income women, married women,

and college graduates (Finer & Zolna, 2016). In the same dataset, black women experienced the highest proportion of unintended pregnancy that ended in abortion as compared to other ethnic and racial groups (Finer & Zolna, 2016).

Access to SRH Services and Family Planning

The World Health Organization (WHO) (2016) defines an unmet need for family planning (FP) as women who are "fecund and sexually active but are not using any method of contraception, and report not wanting any more children or wanting to delay the next child." More than 220 million women in low-income countries who have no desire to become pregnant lack access to voluntary FP information and services, including contraception (Bill & Melinda Gates Foundation, n.d.). Although strides towards meeting the demand are being taken, it is projected that the unmet need for FP will remain above 10% worldwide by 2030 (United Nations, Department of Economic and Social Affairs, Population Division, 2017). As of 2018, the unmet need for family planning among women aged 15-49 globally was 12% (United Nations Population Fund, n.d.).

The range of barriers faced when attempting to access FP services may be "subtle yet so influential that even those couples with a strong desire to space or limit their family size may not be able to achieve their goals" (Campbell et al., 2006). "Access" should not be solely defined by the physical presence of reproductive health services and information but must also consider the presence of systems and procedures that encourage individuals to utilize available FP services. Potential barriers include geography and medical choice, financial cost, the cultural status of women, medical barriers to contraception, provider bias, side effects and misinformation (which

perpetuate fear), and safe access to abortion services (Campbell et al., 2006). Unsurprisingly, it is a challenge for all of these factors to work in concert in the production of effective FP services.

Barriers are ever-present when looking at services for women, pre, during, and post-pregnancy. During their pregnancy, only half of women globally receive the recommended amount of care, and only 60% receive the recommended minimum of four antenatal care visits (UNICEF, 2018). Geographical barriers based on locality and socioeconomic status greatly impact access to care, as urban women and those positioned in the wealthiest quintile are more likely to receive antenatal care, while rural women and those in the poorest quintile are less likely to receive antenatal care (UNICEF, 2018). Marginal groups such as rural populations, the urban poor, unmarried people, people living with HIV, and adolescents, also face barriers to FP services. These marginalized groups meet higher levels of unintended pregnancy and an unmet need for FP, face limited options when choosing contraceptive methods, and are at an increased risk of STIs, including HIV (United Nations Population Fund, 2018). These risks are exacerbated when women and girls are in humanitarian emergency and crisis situations or displaced. In 2015, humanitarian aid serviced 100 million people, of which approximately 26 million were women and girls of reproductive age (World Health Organization, 2017).

Access to Contraception

Worldwide, approximately 63% of women aged 15-49 use some method of contraception, with 57% using a modern method (United Nations Population Fund, n.d.). Roughly 214 million women who are in developing regions, want to avoid pregnancy, and are of reproductive age, are not using a modern method of contraception (World Health Organization, 2017). Methods of contraception are classified as either modern or non-modern/traditional. A modern contraceptive method is a “product or medical procedure that interferes with

reproduction from acts of sexual intercourse" (Hubacher & Trussell, 2015). Roughly 214 million women who are in developing regions, want to avoid pregnancy, and are of reproductive age, are not using a modern method of contraception (World Health Organization, 2017).

Modern methods are comprised of oral contraceptives ("the pill"), male and female condoms, male and female sterilization, emergency contraception pills, and LARC methods. LARCs, or long-acting reversible contraceptives, include injections, intrauterine devices (IUDs), and subdermal contraceptive implants. LARCs are roughly 20 times more effective than oral contraceptive pills (Peipert et al., 2011), and are highly recommended by providers because they are safe, easy to use, long-lasting, and have high patient acceptability (Stoddard, McNicholas, & Peipert, 2011). LARCs can also be administered by a provider the same day as delivery or an abortion. Despite the efficacy of LARC methods, short-term methods, such as male condoms, are often exclusively relied upon to prevent pregnancy. A study in Botswana reported that 88% of women whose current pregnancy was unintended were using male condoms as their only method of contraception (Doherty et al., 2018).

In contrast to modern contraceptives, non-modern or traditional methods have no direct interference with reproduction from acts of sexual intercourse and do not necessarily equate to lower efficacy than modern methods (Hubacher & Trussell, 2015). Access and utilization of contraceptive methods are vital to reducing infant and child mortality and benefitting maternal health through birth spacing. The WHO recommends an interval of at least 24 months after live birth, and at least six months after an induced abortion or miscarriage, before next pregnancy (World Health Organization, 2005).

Availability of Safe Abortion Services

Worldwide between 2010-2014, approximately 56 million pregnancies ended in abortion, (31 million ending safely and 24 million unsafely), of which 97% of unsafe abortions occurred in developing countries (Ganatra et al., 2017). The WHO defines unsafe abortion as "a procedure for terminating an unintended pregnancy carried out either by persons lacking the necessary skills or in an environment that does not conform to minimal medical standards, or both" (Åhman et al., 2011). Thus, an unsafe abortion can be carried out by unskilled providers, including self-induction. A pregnancy can be safely terminated using one of three methods as recommended by the WHO: 1) vacuum aspiration for women up to 12-14 weeks of gestation, 2) combination doses of mifepristone and misoprostol for women up to 12 weeks of gestation, and 3) dilation and evacuation in conjunction with mifepristone and misoprostol for women over 12 to 14 weeks of gestation (World Health Organization, 2012).

Between 2010-2014, the proportion of unsafe abortions was considerably higher in countries with highly restrictive abortion laws as compared to countries with less restrictive laws (Ganatra et al., 2017). Seven primary grounds exist in which laws dictate a woman's ability to receive an abortion. Worldwide, these grounds, from most legally permissible to least legally permissible, include: 1) to save the woman's life, 2) to preserve physical health, 3) to preserve mental health, 4) rape or incest, 5) fetal impairment, 6) economic or social reasons, and 7) on request (Åhman et al., 2011). These legal grounds under which abortion is permissible, however, differ substantially by region. When comparing abortion legality between the 48 regions the WHO defines as "developed, and the 145 "developing" regions, 79% of developed countries legally permit abortion for economic or social reasons, and only 19% of developing countries (Åhman et al., 2011). Only 22 of 145 developing countries and 33 of 48 developed countries

permit abortion on request, with 53 countries total permitting abortion on the grounds to save the woman's life (Åhman et al., 2011).

Roughly 5 million women worldwide are hospitalized each year for abortion-related complications (Haddad & Nour, 2009). Death and disability data related to unsafe abortion are difficult to assess due to fear of legal repercussions and stigma, making maternal deaths from unsafe abortion immensely underreported. Approximately 1 in 4 women who experience an unsafe abortion will develop a temporary or lifelong disability (World Health Organization, 2012). While many countries have the desire to close the gap between unsafe abortion and maternal mortality, many health systems do not have the capabilities to provide basic or comprehensive care for complications, or postabortion care (Guttmacher Institute, 2018).

HAITI

Maternal Mortality

Haiti has the worst health indicators of the Americas, including the highest number of people living with HIV/AIDS and the highest rates of malnutrition, and infant and maternal mortality (World Health Organization, April 13, 2012). According to most recent statistics reported for 2015, the maternal mortality rate in Haiti is an estimated 359 [236-601] per 100,000 live births (Maternal mortality ratio, 2015). Haitian women have a 1 in 90-lifetime risk of maternal death, as compared to Dominican women who have a risk of 1 in 400, or American women who have a 1 in 3800-risk (World Health Organization et al., 2015). Approximately 76% of all births in Haiti occur without medical attention, with only 37% of women giving birth under the care of a skilled birth attendant like a doctor, nurse, or midwife (World Health Organization, April 13, 2012) (Ministry of Public Health and Population, 2013).

Trends of Pregnancy Intention and Fertility

Between 2010 and 2014, the Caribbean had the highest unintended pregnancy rate of the world's sub-regions at 116 per 1000 women aged 15-44 years old (Bearak, Popinchalk, Alkema, & Sedgh, 2018). Unintended pregnancy and maternal mortality are inextricably linked, as maternal mortality decreases in tandem with the decline in unintended pregnancy (Lathrop et al., 2011). Addressing one invariably addresses the other. Trends in fertility among women in Haiti vary greatly depending on socioeconomic factors attributed to the mother and geographic location. Fertility fluctuates from 2.5 and 4.4 children per woman in urban areas and rural areas, respectively. Women with no formal education have an average of 5.4 children, whereas women with secondary or higher education have an average of 2.6 children (Ministry of Public Health and Population, 2013). Regarding economic status, women whose household is reported to be in the lowest wealth quintile have on average three times as many children (5.7) as women living in the highest wealth quintile (1.9) (Ministry of Public Health and Population, 2013). Women age 15-19 currently have children (11%) are expecting their first child (3%) (Ministry of Public Health and Population, 2013). Women in this age range who have no formal education are also three times more likely to have begun childbearing by age 19 (27%) than their counterparts who have secondary or higher education (9%) (Ministry of Public Health and Population, 2013).

Access to SRH Services and Family Planning

Of the 14,371 female respondents in the 2016-2017 Haitian Demographic and Health Survey (DHS), roughly one-quarter of women reported having an unmet need for family planning, with the highest need amongst sexually active women who are not in-union, at 52%

(Institut Haïtien de l'Enfance & ICF, 2018). Approximately 86% of women who were not using a contraceptive method reported that in the last 12 months, they had not discussed family planning at a health facility or with a health worker (Institut Haïtien de l'Enfance & ICF, 2018). The ability to obtain family planning information and resources, at a health facility or from a community health worker, is highly dependent on geography. Almost half of Haiti's health facilities are located in the capital city of Port-au-Prince, and access to quality health services is extremely limited for those living outside of the city (Pan American Health Organization, 2017). Regardless of physical access, men receive the most exposure to family planning messaging through all mediums, regardless of location, yet both men and women receive the highest exposure in urban areas as compared to rural (Institut Haïtien de l'Enfance & ICF, 2018).

According to the 2000 Haiti DHS survey, poor road conditions are associated with decreasing odds of not only early prenatal care, but also of attending the recommended four or more prenatal visits (Cayemittes, Placide, Barrère, Mariko, & Sévère, 2001). Based on 2016-2017 Haiti DHS, 39% of births in the five years preceding the survey occurred in a health facility, and 42% were assisted by a trained health care provider (Institut Haïtien de l'Enfance & ICF, 2018). Among women aged 15-49 who had a delivery in the 2 years prior to the administered survey, 69% received no postnatal care (Institut Haïtien de l'Enfance & ICF, 2018).

Access to Contraception

The number of additional women of reproductive age using a modern method of contraception has been steadily increasing since 2013. Projected at approximately 104,000 additional users in 2018, progress seems promising when compared to the mere 16,000 new users in 2013 (FP2020, n.d.). According to the 2016-2017 Haitian DHS, 100% of male and

female participants reported having ever heard of at least one method of contraception (Institut Haïtien de l'Enfance & ICF, 2018). This progress, however, does not mean that contraceptive use is available and accessible to all. Among in-union women aged 15-49, 34% used a contraceptive method, 32% used a modern contraceptive method, and 3% used a traditional method (Institut Haïtien de l'Enfance & ICF, 2018). The two most common types of contraceptive methods, albeit with a large utilization gap, are injectables, at 21% and male condoms, at 4% (Institut Haïtien de l'Enfance & ICF, 2018).

When assessing the availability of contraceptive method offered, on a given day over 92% of facilities were stocked out of the implant, and over 96% out of the IUD, and necessary supplies to perform male and female sterilization (Institut Haïtien de l'Enfance & ICF, 2018). Only 67.7% of primary service delivery points had at least three modern contraception methods available on a given day (Institut Haïtien de l'Enfance & ICF, 2018). Only 77.8% of secondary or tertiary service delivery points had at least five modern contraception methods on a given day (Institut Haïtien de l'Enfance & ICF, 2018). Roughly 47% of the citizens are reliant on the public sector to supply modern contraceptive methods, with 30% relying on health centers or dispensaries (Institut Haïtien de l'Enfance & ICF, 2018). The public sector predominantly supplies implants, injectables, female sterilization, and the pill, the private medical sector largely supplies pills and male condoms, and the non-institutional medical sector primarily supplies injectables and male condoms (Institut Haïtien de l'Enfance & ICF, 2018). Of women who began a contraceptive method five years before the survey, only 40% received information regarding potential side-effects regarding their chosen method, what to do if experiencing a side effect, and information regarding other methods of contraception (Institut Haïtien de l'Enfance & ICF, 2018).

Availability of Safe Abortion Services

Haiti's penal code forbids abortion with no explicit legal exception, primarily due to cultural beliefs, religion, and social stigma (Maternowska, 2006). However, between 2010-2014, the Caribbean had the highest annual rate of abortion at 59 per 1,000 women of reproductive age (Singh S et al., 2018). Despite its illegality, women in urban areas (which make up 2% of the population) and rural areas (98% of the population) of Haiti are still having abortions (Institut Haïtien de l'Enfance & ICF, 2018). A qualitative study on healthcare workers and women's' beliefs and experiences around abortion reported that although the majority thought abortion was bad, there were certain situations where abortion should be justified, such as economic hardship (Albuja et al., 2017).

According to the 2016-2017 Haiti DHS, 4% of women in-union, aged 15-49, reported having had at least one abortion in their life (Institut Haïtien de l'Enfance & ICF, 2018). Of women who have had at least one abortion in the past five years, 53% reported having had the abortion in their home or another home, 30% had the assistance of relatives or friends, and 23% had no assistance (Institut Haïtien de l'Enfance & ICF, 2018). Among these women, 30% aborted at less than two months of pregnancy, 66% aborted between two and four months, and 4% at 5 months or more (Institut Haïtien de l'Enfance & ICF, 2018). For three-quarters of women, the decision to have an abortion was solely their own, and the majority of women reported using Misoprostol (45%) and dilatation and curettage/aspiration (42%) (Institut Haïtien de l'Enfance & ICF, 2018). Other means to terminate pregnancy were injections and medicinal plants, used by 19% of women, and tablets, used by 15% (Institut Haïtien de l'Enfance & ICF,

2018). Complications postabortion were present in 33% of women who reported having an abortion in the past five years (Institut Haïtien de l'Enfance & ICF, 2018).

Conclusion

This chapter robustly explored the relevant literature surrounding the topic of and factors attributed to unsafe abortion from a global and country-specific standpoint. After outlining global statistics and leading causes of maternal mortality across the globe, the chapter defined intended and unintended pregnancy and the racial and economic disparities that contribute to unintended pregnancy. The chapter then shines a light on global funding and barriers pre, during, and post-pregnancy for women seeking access to sexual and reproductive health and family planning services. Next, the chapter moved into a discussion around global access of contraceptives, including distinguishing between and the outlining of efficacy around modern and traditional methods. This section then moved into a discussion around the myriad of laws and policies across the globe that, depending on the context, limit or grant access to safe abortion services for women, and the subsequent adverse health outcomes that are avoided or transpire. Ultimately, the chapter ended by revisiting these five topics, in the country-specific context of Haiti, to detail precisely how these factors are relevant when discussing maternal mortality.

CHAPTER III: MANUSCRIPT

Contribution of Student

In 2013, Erin Berry-Bibee, MD, MPH began a mixed methods study in collaboration with the Haitian Justinien University Hospital, Konbit Sante, and Emory University to assess illegal abortion practices in urban Haiti. This study has been discussed not only with Dr. Eva Lathrop, a principal investigator on several projects with this collaborative group, including her family planning fellowship project but with the director of the Northern Department of the Haitian Ministry of Health, who was very interested in this work. Dr. Berry's project hoped to continue to build on these research partnerships and continue to work towards improving women's lives in Haiti.

Dr. Berry's findings were published in her thesis, *Assessment of Induced Abortion Practices in Urban Haiti*, submitted to the Faculty of the Rollins School of Public Health of Emory University in partial fulfillment of the requirements for the degree of Master of Public Health in Behavioral Sciences and Health Education in 2014. Erin's findings were also published in the British Medical Journal in 2018, *Self-managed abortion in urban Haiti: a mixed-methods study*, from the same data collection.

I have continued the exploration of the data through a secondary analysis of items in the survey that have not yet been analyzed or published. In collaboration with Dr. Eva Lathrop, I have developed a research question and defined project objectives and aims. I performed an extensive review of the literature and was responsible for all data management and analysis. I wrote all the aspects of this thesis project. Dr. Eva Lathrop was instrumental in providing verbal and written feedback throughout the process of this thesis project.

Factors Associated with Attempt of Self-Managed Abortion in the Context of Intention and Prior Pregnancy Outcomes in Urban Haiti: A Secondary Analysis of Survey Data from the Justinien University Hospital in Cap-Haïtien

Jennifer Wilkers,[1] Erin Nicole Berry-Bibee,[2] Clotilde Josamine St Jean,[3] Nathan M Nickerson,[3] Johnathan Edwards[4], Lisa Haddad,[2] Eva Lathrop[2]

[1]Hubert Department of Global Health, Emory University, Atlanta, Georgia, USA
[2]Department of Gynecology and Obstetrics, Emory University, Atlanta, Georgia, USA
[3]Konbit Sante Cap Haïtien Health Partnership, Portland, Maine, USA
[4]Department of Biomedical Informatics and Department of Biostatistics and Bioinformatics, Emory University, Atlanta, Georgia, USA

Author for Correspondence:

Jennifer Wilkers, MPH
Hubert Department of Global Health
Rollins School of Public Health
1518 Clifton Road, NE
Atlanta, GA 30322
Tel: 410-371-5740
wilkersjen@gmail.com

Journal: BMJ Sexual & Reproductive Health
Title: Factors Associated with Attempt of Self-Managed Abortion in the Context of Intention and Prior Pregnancy Outcomes in Urban Haiti: A Secondary Analysis of Survey Data from the Justinien University Hospital in Cap-Haïtien

ABSTRACT

Objective: Although illegal, abortions in Haiti still occur, the majority of them self-managed and unsafe. Complications from self-managed and unsafe abortions contribute to already-high rates of maternal morbidity and mortality in Haiti. This study aims to examine factors associated with attempt of a self-managed abortion in the context of pregnancy intention and prior pregnancy outcomes to determine potential areas of intervention.

Study Design: This was a secondary analysis of data collected from women (n=263) who presented to Justinien University Hospital in Cap-Haïtien, Haiti from July 2013 - January 2014. Binary logistic regression analyses were run to examine factors associated with pregnancy intention and prior pregnancy outcomes among participants who attempted a self-managed abortion in the current pregnancy, and among those with an ever-attempt of a self-managed abortion.

Results: Women who had completed some secondary school (OR=6.993) and women who had no prenatal visits were more likely to have attempted a self-managed abortion in the current pregnancy as compared to women who completed some primary school or less and women who had one prenatal visit (OR=3.745) or two prenatal visits (OR=4.237). Women who either certain they don't or unsure if they do want children in the future were more likely to have ever-attempted a self-managed abortion (OR=6.067). Having used any method of family planning up to the current pregnancy was a significant risk factor having ever-attempted a self-managed abortion (OR=9.071). Pregnancy intention was not statistically significant among women who attempted a self-managed abortion in the current pregnancy however, women who characterized their current pregnancy as unintended had higher odds of ever-attempting a self-managed abortion as compared with women who characterized her pregnancy as intended (OR=50.0).

Conclusion: Factors that inform women's decisions regarding abortion are complex and difficult to parse to fully capture the context surrounding women's abortion decision-making. Ensuring women have reproductive autonomy to determine the outcome of future pregnancies, control the number and spacing of children, and decide with their provider a suitable contraceptive method consistent with these factors, are critical in reducing maternal morbidity and mortality in Haiti.

INTRODUCTION

According to the World Health Organization (WHO), approximately 830 women die across the globe every day due to complications associated with pregnancy or childbirth, the majority of which are treatable or preventable (2018). Women in more impoverished and rural communities are at disproportionately high risk for maternal mortality, with 99% of all maternal deaths occurring in low-resource settings (World Health Organization, 2018). Roughly 75% of all major complications attributable to maternal mortality can be reduced to five categories: (1) severe bleeding predominately after childbirth, (2) infections predominately after childbirth, (3) high blood pressure during pregnancy, (4) delivery complications, and (5) unsafe abortion (Say et al., 2014). Worldwide between 2010-2014, approximately 56 million pregnancies ended in abortion, (31 million ending safely and 24 million unsafely), of which 97% of unsafe abortions occurred in developing countries (Ganatra et al., 2017). A key component to decreasing maternal mortality is preventing too-early and unwanted pregnancies, by providing all women access to contraceptives, safe abortion services to the full extent the law will permit, and quality postabortion care (World Health Organization, 2018).

Haiti's penal code forbids abortion with no explicit legal exception, primarily due to cultural beliefs, religion, and social stigma (Maternowska, 2006). However, between 2010-2014, the Caribbean had the highest annual rate of abortion at 59 per 1,000 women of reproductive age (Singh S et al., 2018). The 2016-2017 Haitian Demographic and Health Survey (DHS) surveyed a little over 14,000 women, of which 4% of women in-union, aged 15-49, reported having had at least one abortion in their life (Institut Haïtien de l'Enfance & ICF, 2018). Of women who have had at least one abortion in the past five years, 53% reported having had the abortion in their home or another home, 30% had the assistance of relatives or friends, and 23% had no assistance

(Institut Haïtien de l'Enfance & ICF, 2018). Thus, it is imperative to explore the factors associated with current and ever-attempt of a self-managed abortion in the context of intendedness and prior pregnancy outcomes, in order to determine areas of intervention and prevent adverse maternal outcomes.

This study took place in Cap-Haïtien, Haiti, the second largest city in the country with a population of 300,000. Approximately 250 kilometers from the capital city of Port-au-Prince, Cap-Haïtien is home to Justinien University Hospital, a 300-bed acute care teaching hospital that serves as the largest governmental hospital north of the capital, and the primary hospital resource for residents of Cap-Haïtien. Cap-Haïtien is also home to Konbit Sante; an organization focused on supporting the development of sustainable health systems in Cap-Haïtien since 2002 by providing the community local direction and support (Mission and values – Building Healthcare Systems for Haiti, n.d.). This study was a collaboration between the Justinien University Hospital, Konbit Sante, and Emory University.

Very little research exists regarding the myriad of factors that may be attributed to attempting a self-managed abortion among women in urban Haiti. Examining attempt of a self-managed abortion among women who have currently attempted and have ever-attempted, in the context of intendedness and prior pregnancy outcomes provides important context for a growing body of evidence to be considered for policy and public health intervention strategies. Analyzing these factors within this subpopulation using quantitative methods may guide future interventions designed to target unmet sexual and reproductive health (SRH) and family planning (FP) needs in Haiti and identify areas for future research.

The findings from these data have the potential to be utilized for future public health programming and training, focusing on interventions to adequately and efficaciously care for

women within this vulnerable subpopulation. While the entirety of the study focused on a wide range of sexual and reproductive health topics, the methodology could be adapted for future research studies, such as altering participant criteria or implementing qualitative questions around characteristics associated with attempt of a self-managed abortion, within other reproductive care providers in Haiti. The findings may also be useful to providers in other countries that have similar populations and health systems.

These data will be used to further support and contribute to the small, yet growing body of literature explicitly addressing unsafe abortion in Haiti. It is especially pertinent for the Haitian Ministry of Health and the Justinien University Hospital to address areas for intervention and reproductive health gaps that may be evident from the data. Documenting the utilization and underutilization of critical reproductive health resources and services illuminates a substantial gap that can be filled with proven methods to reduce unintended pregnancy, maternal and infant mortality, and increase access to contraception and postabortion services.

METHODOLOGY

This study is a secondary analysis of de-identified data abstracted from a mixed methods study conducted between July 2013 to January 2014 in Cap-Haïtien, Haiti at the Justinien University Hospital (JUH). Recognizing that few data are available regarding abortion practices and maternal morbidity and mortality from abortion in Haiti, Dr. Erin Berry-Bibee and Dr. Eva Lathrop of the family planning team at Emory University Hospital, in partnership with members of Konbit Sante and JUH, including Clotilde Josamine St Jean, Nathan M Nickerson, and Manuchca Marc Alcime, designed and conducted a comprehensive mixed methods study (Berry-Bibee et al., 2018). Objectives of this study were to learn about abortion access, methods, and

perceived barriers to abortion-related care, as well antepartum visits to a public hospital attributable to unsafe abortion in Cap-Haïtien, Haiti (Berry-Bibee et al., 2018). The JUH made available the de-identified data.

Population and Sample

The initial mixed methods study was conducted at the Justinien University Hospital (JUH), alongside Emory University researchers and Konbit Sante, a local, non-governmental organization. JUH is a 300-bed acute care teaching hospital with surgical, pediatric, medical, and obstetrical services, the largest governmental hospital north of the capital, Port-au-Prince, and the primary hospital resource for residents of Cap-Haïtien. A cross-sectional survey was administered between July 2013 to January 2014 at JUH (Berry-Bibee et al., 2018). The study population included all women who met the following criteria: (1) self-reported maximum 20 weeks' gestation or maximum 6 weeks post-pregnancy from a pregnancy of a maximum of 20 weeks' gestation, (2) at least 18 years of age, and (3) spoke Haitian Creole (Berry-Bibee et al., 2018). Only women who answered the primary research question, 'Did you do or take anything to attempt an induced abortion in the current pregnancy?', were included. Current pregnancy is defined to include those within six weeks post-pregnancy for women presenting for care after an induced or spontaneous abortion (Berry-Bibee et al., 2018).

Research Design

A cross-sectional survey was developed based on preceding qualitative focus groups with in-depth interviews, including initial involvement and feedback from women and healthcare workers in Cap-Haïtien regarding the structure, layout, and presenting of questions around these

sensitive topics. The findings from the qualitative focus groups informed the development of a pilot survey, conducted with approximately five context and content experts in Haiti at the JUH to ensure readability, comprehension, and language accuracy. The survey was comprised of multiple choice, dichotomous, and open-ended questions around factors associated with maternal morbidity and mortality. Research nurses at JUH, all of whom had prior experience working on several studies with Konbit Sante, administered the survey verbally in Haitian Creole.

Procedures and Instruments

In the initial study, all women presenting to the JUH maternity ward over six months (July 2013 to January 2014) were screened for eligibility (Berry-Bibee et al., 2018). Eligible participants provided verbal consent and subsequently met with research nurses to begin the survey. Research nurses administered the survey verbally, recorded participant answers, and entered answers into an online database post-survey (FeedbackServer 5.4.1) (Berry-Bibee et al., 2018). Basic demographics were collected, but no patient identifiers were included. Survey data was imported using SPSS version 22 (Armonk, NY: IBM Corp) (Berry-Bibee et al., 2018).

Data Entry and Analysis

Inclusion and Exclusion Criteria

Study participants were included in this secondary analysis if they met the following criteria: (1) Answered the primary research question from the initial study ‘Did you do or take anything to attempt an induced abortion in the current pregnancy?’, and (2) answered the question ‘When you got pregnant, did you want to get pregnant at that time?’ Of the 263 women surveyed, 245 responded to both questions.

Women were excluded if they (1) did not respond to both questions, or (2) answered yes to both questions. Women who answered yes to having intended the current pregnancy and attempted an induced abortion were excluded due to the sociocultural factors that may have resulted in an induced abortion attempt, an examination of which is outside the scope of this survey data (such as medically induced abortion to save the life of the mother). Six women were excluded on these grounds, leaving 239 participants. The subsequent binary logistic regression analysis run excluded participants with any missing data, leaving 216 participants included in the first analysis. The second binary logistic regression analysis included 173 participants, those who had answered 'yes' or 'no' to having attempted a self-managed abortion in the previous pregnancy. This excluded women who stated that the current pregnancy was their first pregnancy, leaving 173 participants included in the second analysis.

Variable Selection

The database included 63 variables in 6 modules: (1) 12 social and demographic, (2) 19 pregnancy history, (3) 19 current pregnancy and hospital visit, (4) 3 relationship, (5) 7 general family planning use and knowledge, and (6) 3 family planning intent during this pregnancy. Variables were selected and categorized based on the initial and published study (Berry-Bibee et al., 2018), existing literature, and a minimum 30% response rate. Seventeen categorical variables (1 dependent, 16 independent), 12 of which were included in the Berry-Bibee study (Berry-Bibee et al., 2018), were selected and included in the analysis (Table 1). The remaining five variables were selected based on pertinence in the literature as associated with maternal mortality. These variables include: (1) current sexual relationship (World Health Organization, 2019), (2) prior birth(s) ending in a stillbirth, miscarriage, or abortion (World Health Organization, 2016), (3)

health provider visit 1-2 months after last delivery (World Health Organization, 2013b), (4) desire for more children (World Health Organization, 2005), and (5) plans of using family planning post-pregnancy (World Health Organization, 2013a).

Analysis

De-identified data of 263 survey participants were received and cleaned in Microsoft Office Excel Version 16.22. All data were analyzed using SPSS version 22.0 (Armonk, NY: IBM Corp). All variables, independent and dependent, used in this study were categorical or dichotomous in nature. Binary logistic regression analyses were run to examine the factors associated among participants who answered 'yes' or 'no' to an attempt of a self-managed abortion in the current pregnancy. Due to the nature of binary logistic regression analysis, participants with missing data were excluded from the final analysis via pairwise deletion, resulting in a decrease from 239 eligible participants to 216 participants in the final analyses. A forward stepwise selection method with likelihood ratios (Table 1) was used, with entry testing based on the significance of a score statistic set at 0.05, and removal set at 0.051 based on the probability of a likelihood-ratio statistic based on the maximum partial likelihood estimates.

A secondary binary logistic regression analysis was run to examine the factors associated among participants with an ever-attempt of a self-managed abortion. Participants who answered 'yes' to an attempt of a self-managed abortion in the current pregnancy and 'yes' to an attempt of a self-managed abortion in a previous pregnancy were set as the dependent variable. A third binary logistic regression analysis was run to examine the factors associated among participants who answered 'yes' to an attempt of a self-managed abortion in the current pregnancy, and 'no' to the intention of the current pregnancy. This analysis, however, was not included in the results

as it yielded identical results as the aforementioned primary analysis. For all protective odds ratios, in which the odds ratio is less than 1, the inverse odds ratio was calculated with the formula $(X)^{-1}$ to aid in the consistent interpretation.

Ethical Considerations

Institution review board (IRB) approval was obtained through Emory University and the Justinien University Hospital (Cap-Haïtien, Haiti) on December 4, 2012. An ethics proposal was written (January 1, 2019) to the Justinien University Hospital for approval to conduct secondary analysis of the data. Further approval was declared unnecessary by the JUH due to the initial IRB approval in 2012.

RESULTS

Demographics

Overall (n=239), participants were an average age of 28.65 years old and reported attending some secondary school as their highest level of formal education (63.2%). The majority of participants were married (59.8%) with an average number of 1.41 children. Over two-thirds of women (78.2%) reported that this was not their first pregnancy, and for the majority of participants (62.8%), their current pregnancy was unintended. Nearly half of participants (49%) reported never use of any method of contraception, while 83.3% reported having not used any method of contraception prior to their current pregnancy. Amongst women who reported an unintended pregnancy, almost half (46.2%) attempted a self-managed abortion in the current pregnancy (Table 1).

Findings

Analysis 1

The binary logistic regression model with "attempt of self-managed abortion in the current pregnancy" as the outcome of interest included two significant variables in the final model: (1) education (p=0.001), and (2) number of prenatal visits for the current pregnancy (p=0.009) (Table 2). Level of education is strongly associated with whether or not a woman attempted a self-managed abortion in the current pregnancy. The odds of a woman attempting a self-managed abortion in the current pregnancy who completed some secondary school are 6.993 times more as compared to a woman who completed primary school or less (95% CI 2.597-18.868) (Table 2).

Similarly, the odds of attempting a self-managed abortion in the current pregnancy varied depending on the number of prenatal visits. Overall, women who had any number of prenatal visits were less likely to attempt a self-managed abortion in the current pregnancy compared to those who had no prenatal visits (Table 2). The odds of a woman attempting a self-managed abortion in the current pregnancy who had no prenatal visits are 3.745 times more as compared to a woman who had one prenatal visit (95% CI 1.471-9.524), and 4.237 times more as compared to a woman who had two prenatal visits (95% CI 1.239-14.706) (Table 2).

Analysis 2

The binary logistic regression model with "attempt of a self-managed abortion in the current pregnancy or previous pregnancy" as the outcome of interest included seven significant variables in the final model: (1) age (p=0.027), (2) education (p=0.001), (3) number of children (p=0.007), (4) having prior pregnancy end in a miscarriage, abortion, or stillbirth (p=0.006), (5)

desire for no more children in the future (p=0.002), use of a family planning method up to the current pregnancy (p=0.001), and (7) categorizing the current pregnancy as intended (p=0.000). Similarly, to findings in the first analysis, education is a significant predictor in ever-attempt of a self-managed abortion. The odds of a woman having ever-attempted a self-managed abortion who completed some secondary school are 4.808 times more as compared to a woman who completed primary school or less (95% CI 2.907-29.412) (Table 3). Unlike the first analysis, pregnancy intention is statistically significant with ever-attempt of a self-managed abortion, where the odds of a woman having ever-attempted a self-managed abortion who currently has an unintended pregnancy is 50.0 times more than those with an intended pregnancy (95% CI 11.494-200.0) (Table 3).

Age was found to be greatly associated with whether or not a woman had ever-attempted a self-managed abortion. The odds of a woman having attempted a self-managed abortion in her life who is 25-35 years old are 3.922 times more than a woman 36 years or older (95% CI 1.103-13.889) (Table 3). The number of children a woman has is protective against the outcome of ever-attempt of a self-managed abortion, as the odds of a woman having ever-attempted a self-managed abortion who has no children are 19.608 times more than a woman who has two children (95% CI 2.695-142.857) (Table 3).

Contrastingly, the odds of a woman having ever-attempted a self-managed abortion who has had a prior pregnancy end in stillbirth, abortion, or miscarriage are 3.993 times the odds of women who have not (95% CI 1.492-10.690) (Table 3). The odds of a woman having ever-attempted a self-managed abortion who does not or is unsure if they want more children in the future are 6.067 times the odds of a woman who is certain she wants children in the future (95% CI 1.970-18.684) (Table 3). The odds of a woman having ever-attempted a self-managed

abortion who used any method of family planning up to her current pregnancy are 9.071 times the odds of a woman who was not using any method of family planning (95% CI 2.462-33.424) (Table 3).

DISCUSSION

Haiti has the highest maternal mortality ratio in the western hemisphere of 359 [236-601] per 100,000, and a 1 in 90-lifetime risk of maternal death (Maternal mortality ratio, 2015; World Health Organization et al., 2015). Sustainable Development Goal 3 - "ensure healthy lives and promote well-being for all at all ages"- has a target of reducing the maternal mortality ratio to less than 70 per 100,000 live births by 2030 (UN DESA, 2018). If maternal mortality continues to decline at the current rate, estimates indicate that the maternal mortality ratio in Haiti will not reach 70 per 100,000 live births until the year 2043 (WHO et al., n.d.). In order to accelerate the decline of maternal mortality in Haiti, action must be taken to address the low prevalence of contraception use, limited access to safe abortion and postabortion care, and high rates of unintended pregnancy. Unintended pregnancy and maternal mortality are inextricably linked, as maternal mortality decreases in tandem with the decline in unintended pregnancy (Lathrop et al., 2011). Addressing one invariably addresses the other.

The purpose of this secondary analysis was to adequately describe the variables associated with attempt of a self-managed abortion in the context of pregnancy intention and prior pregnancy outcomes. The results of this analysis show that the level of education and number of prenatal visits for the current pregnancy are significant predictors of attempt of a self-managed abortion in the current pregnancy. Findings also included a number of variables significantly associated with ever-attempt of a self-managed abortion, of which having a prior

pregnancy end in a miscarriage, abortion, or stillbirth, no desire or unsure of whether to have more children in the future, and use of a family planning method up to the current pregnancy, presented as potential risk factors.

Overall demographic results of survey participants were similar to national data from the 2016-2017 Haiti DHS. Survey participants were an average age of approximately 29 years old, roughly six years older than the national median age of female citizens (Institut Haïtien de l'Enfance & ICF, 2018) (Table 1). The highest level of formal education nationally among women aged 15-49 was some secondary school, followed by some primary school, which aligns with the level of education amongst survey participants (Institut Haïtien de l'Enfance & ICF, 2018) (Table 1). Nationally, 52% of women aged 15-49 years old were married with an average of 3 children, while 59.8% of survey participants were married with an average of 1.41 children (Institut Haïtien de l'Enfance & ICF, 2018) (Table 1). Approximately 78.2% of survey participants stated that their current pregnancy was not their first, and alongside the average age of participants, coincides with national data reports of 22.4 years old as the median age at first birth among women aged 25-49 (Institut Haïtien de l'Enfance & ICF, 2018) (Table 1). Roughly 51% of survey participants reported having used any method (modern or traditional) of contraception in their lifetime, while approximately 31-34% of women aged 15-49 nationally were using a method of contraception at the time of the DHS survey (Institut Haïtien de l'Enfance & ICF, 2018) (Table 1). Data on pregnancy intention and utilization of contraception in the most recent pregnancy are not collected in the DHS.

Study results show that participants who completed some secondary school have higher odds of having attempted a self-managed abortion in the current pregnancy as compared to women who completed primary school or less (OR=6.993) (Table 2). This finding is also

consistent among women with an ever-attempt of a self-managed abortion, as participants who completed some secondary school have higher odds of ever-attempt of a self-managed abortion as compared to women who completed primary school or less (OR=4.808) (Table 3).

Consistent with findings from Brazil, Finland, and the 2012 and 2016-2017 Haitian DHS, studies have found that women with higher education levels are more likely to terminate a pregnancy (Dias et al., 2015; Meffen, Burkhardt, & Bartels, 2018; Institut Haïtien de l'Enfance & ICF, 2018; Jokela et al., 2018). This may in part be due to increased financial opportunity and greater awareness of and access to family planning services. A secondary analysis of data from the 2012 Haitian DHS found that wealthier women were more likely to have an abortion using an evidence-based method, suggesting that access to information and services around safe abortion may correlate with her means to pay (Meffen, Burkhardt, & Bartels, 2018). While abortion in Haiti is illegal, women with higher levels of education may also have higher levels of health literacy (Nutbeam, 2000). Thus, coupled with greater financial means, women may have a higher capacity to act independently on reproductive health knowledge, either accessing safe abortion providers or at the very least, proper postabortion care.

In addition to education, participants in this analysis who had any number of prenatal visits, as compared to women who had no prenatal visits, were less likely to attempt a self-managed abortion in the current pregnancy (Table 2). As the number of prenatal visits increased, the likelihood of attempt of a self-managed abortion in the current pregnancy decreased (Table 2). According to the WHO, pregnant women should have their first prenatal visit in the first 12 weeks' gestation, with up to seven subsequent visits between 20-40 weeks' gestation, becoming more frequent as the pregnancy progresses (World Health Organization, 2017). Among the 4% of women in the most recent DHS, those aged 15-49 reported to having at least one abortion in

their lifetime, with 30% having aborted at less than 2 months, 66% between 2-4 months, and 4% at 5 months or more (Institut Haïtien de l'Enfance & ICF, 2018). Thus, it is consistent with our finding that women who would attempt a self-managed abortion would most likely not attend a prenatal visit, and, if one does, an abortion is more likely to take place after one visit in the first 12 weeks' gestation as compared to the subsequent recommended visit during the 20th week gestation. A recent study in the United States found that at the first prenatal visit, most women are certain of their decision to continue the pregnancy, with a small subset uncertain and wishing to discuss their options (Berglas et al., 2018). According to the first qualitative study examining abortion attitudes and views among female citizens and female healthcare workers in Haiti, women expressed hard stances on the social, cultural, and religious reasons why abortion is 'bad,' with few exceptions where it is deemed appropriate (Albuja et al., 2017). Thus, women may be attempting a self-managed abortion as early as possible, before the pregnancy shows, in order to eliminate social backlash or exile.

Women who used any method of family planning, modern or traditional, up to their current pregnancy had significantly higher odds of having ever-attempted a self-managed abortion as compared to women who were using no method of family planning (OR=9.071). This finding is not unusual for two reasons: (1) women who are using any method of family planning are actively trying to delay or avoid pregnancy as compared to women using no method, and (2) women who use any form of family planning, including LARC methods, are still at risk of pregnancy due to improper use and relying solely on contraception as a means of controlling fertility (British Pregnancy Advisory Service, 2017). Certain groups, such as adolescents, unmarried persons, and the urban poor, face a variety of barriers to family planning, which may lead to limited choice in contraceptive methods, higher levels of unmet needs for

family planning, and increased risk of HIV and STIs (United Nations Population Fund, 2019). Among women who presented at a BPAS clinic in 2016 for an abortion, over half were using at least one form of contraception (British Pregnancy Advisory Service, 2017). A secondary analysis of U.S. data asked patients who were receiving an abortion the type of contraceptive method they had last used and when they had stopped, or if they were still using them (Jones, 2018). Data showed the majority of respondents were still using LARC methods, suggesting that women may have been pregnant at the time of insertion, or experienced failure, migration, or expulsion of the actual method (Jones, 2018). Failures of LARC methods are not rare, as a study of tubal sterilization in the U.S. over a decade has found an increased prevalence of pregnancy among U.S. women (Schwarz, Gariepy, Lewis, Borrero, & Reeves, 2017)

Within particular populations, the prevalence of contraception use, and induced abortion can rise in parallel (Marston & Cleland, 2003). This is primarily seen within populations with some sustained use of effective methods of contraception. The growing need for contraception may surpass use itself, resulting in increased contraceptive use and induced abortion simultaneously (Marston & Cleland, 2003). This may help explain what is occurring in Haiti, as the majority of women use injectables, a LARC method, as their preferred form of family planning (21%). Condoms, a short-term method, are the primary method of contraception for those not in union (23%) (Institut Haïtien de l'Enfance & ICF, 2018). It also speaks as to why women in our survey who are unsure or certain they do not want children in the future are at much higher odds of having ever-attempted a self-managed abortion, as compared to women who are certain they want children in the future (OR=6.067) (Table 3). As contraceptive prevalence rises and fertility starts to fall, the proportion of couples who want to delay or stop

having children increases, and exposure to the risk of unintended pregnancy and potential for an induced or self-managed abortion increase as a result (Marston & Cleland, 2003).

When the intention of the current pregnancy was forced into the final model for analysis 1, it was not statistically significant (p=0.996) in determining whether or not a woman attempted a self-managed abortion in the current pregnancy (95% CI 0.000-.) (Table 2). However, among women who had ever-attempted a self-managed abortion, either in the current pregnancy, in a previous pregnancy, or both, those who characterized their current pregnancy as unintended had higher odds of having ever-attempted a self-managed abortion as compared to those who characterized their pregnancy as intended (OR=50.0) (Table 3). Data show a correlation with unintended pregnancy and abortion attempt, as 40% of all pregnancies worldwide in 2012 were unintended, with half ending in abortion (Sedgh, Singh, & Hussain, 2014). However, when introduced into analysis 1, intention of the current pregnancy was not significantly associated with attempt of a self-managed abortion in the current pregnancy (Table 2). This finding seems counterintuitive, as the data mentioned above and literature detail the strong correlation between unintended pregnancy and abortion.

Numerous explanations can be attributed to this insignificant association in our model, the first being the limited, reductionist nature of the likely flawed construct of "intendedness" in our survey and what it actually demonstrates. Asking women to choose between the binary options of "intended" or "unintended" drastically simplifies the way women view their pregnancy, as many have described it as falling on a continuum between the two, rather than "either, or" (R.A. Aiken, Borrero, S Callegari, & Dehlendorf, 2016). Even within the binary options, women may differ in the type of unintended pregnancy they experience, whether mistimed, unplanned or unwanted (Brown, S. S. & Eisenberg, L., 1995). One study in the United

States found when asked about intention at early and late stages of women's current pregnancy, 12.5% had a shift in positive attitudes towards the pregnancy, and 10% had a negative shift towards the pregnancy over time (Brown, S. S. & Eisenberg, L., 1995). Thus, depending on how long the participant was aware of her pregnancy prior to the survey and how far along as it pertains to eligibility criteria at the time of the survey, women may have responded to the question of intent at the time of the survey based on current feelings towards the pregnancy instead of at the time of conception.

The myriad of cultural, emotional, and psychological factors that determine pregnancy intention are not captured in currently used definitions of intention and assume that pregnancy is a conscious decision and that behaviors align with intentions (Mumford et al., 2016). As aforementioned, intention may change over time, and studies show that often, behaviors do not align with intentions (Mumford et al., 2016). The binary options of intendedness often fail to capture the breadth and depth of experiences and emotion that accompany it. In many cases, women express ambivalence towards their current pregnancy due to experiencing both positive and negative feelings, partner control and emotional ambivalence, or feelings of unpreparedness (Borrero et al., 2015; Higgins et al., 2012; Miller, Barber, & Gatny, 2013)

The factors that inform a woman's decision to have an abortion are multifactorial and difficult to parse, echoing previous findings that information gathered solely around the main reason may not fully capture the context surrounding women's abortion decision-making (Chae et al., 2017). A synthesis of findings from 14 countries found that when asked for the main reason for obtaining an abortion, women chose to focus on the proximal or distal, resulting in limited, nuanced, and potentially simplistic conclusions around women's decision-making (Chae et al., 2017). Thus, our data suggest that for some women, intention may be a primary reason for

obtaining a self-managed abortion, but for some, it may not be. Qualitative studies in Mozambique and Kenya found a collection of factors attributing to the decision to abort, such as socioeconomic stress and lack of support from the male partner, low degree of autonomy for women, and limited availability of health facilities providing abortion (Frederico et al., 2018; Loi et al., 2018). In the south of Haiti, qualitative interviews determined that among women and female healthcare workers, economic reasons were the primary reason Haitian women terminate a pregnancy (Albuja et al., 2017). One participant explained that more so than the number of children, the inability to afford more children was the primary rationale for abortion (Albuja et al., 2017).

As aforementioned, reproductive control and autonomy may also be a deciding factor in obtaining an abortion. Multiple persons other than the pregnant woman herself may have a significant say in deciding whether or not to have an abortion, rendering the woman's "intendedness" insignificant. Focus groups and interviews with Haitien women found that men played a dominant role in the decision-making process around abortion, regarding the procedure itself and procurement of it (Berry-Bibee et al., 2018). Similar findings were found in South Africa and the Philippines, where men felt decision-making around abortion should be made jointly and expressed either the ability to override a woman's reproductive decision or greater capacity to make rational decisions about reproductive events (Macleod & Hansjee, 2013; Hirz, Avila, & Gipson, 2017). In the 2016-2017 Haitian DHS, among women who had at least one abortion in their lifetime, over 20% were forced by a husband, partner, or health professional (Institut Haïtien de l'Enfance & ICF, 2018). Thus, it is difficult to determine if the pregnant women's sense of intendedness would coincide with her partner's.

Strengths and Limitations

The primary strength of this study is its contribution to the small, yet growing body of literature explicitly addressing unsafe abortion and maternal morbidity and mortality in Haiti. It also provides specific ways in which the Justinien University Hospital (JUH), one of four obstetrics and gynecology training programs in the country, can be a leader in championing the development of reproductive life plans for Haitian women. This study analyzed secondary data collected between July 2013 and January 2014 among pregnant women presenting to the JUH, further reducing distress among this subpopulation by only having to ask about sensitive topics such as miscarriage, abortion attempt, and relationship status in one sitting.

This study also has several limitations. While utilizing secondary data alleviates the burden of study participants having to undergo further questioning, it is a hindrance due to the inability to alter or add questions for the desired outcome. Additional questions, such as those that pertain to 'unintended' pregnancy, would have provided more specificity and ability to characterize women even further among those who identified their unintended pregnancy as mistimed, unwanted, or unplanned. Another limitation is the small sample size, which likely reduced the power of the study and subsequent ability of variables to achieve statistical significance when analyzed for predictability against the outcomes of current attempt of a self-managed abortion and ever-attempt of a self-managed abortion. Several variables were automatically removed from the model for not reaching statistical significance, despite its near significance level, and it is probable that this would have been achieved with a larger sample size. The greatest limitation to this study was the fact that it was limited to urban women who sought care in the main hospital in the second largest city in Haiti and were cared for by licensed obstetrician-gynecologists or those in training. Over half of the population live in rural areas,

with only 48% percent living in cities (The World Bank, 2014). According to the 2016-2017 DHS, the majority of women in urban areas gave birth within the past five years in a public sector health institution (46.2%), followed by a house (39%), while the majority of rural women gave birth in a house (70.6%), followed by a public sector health institution (23.0%) (Institut Haïtien de l'Enfance & ICF, 2018). The distribution among demographic results in our study is similar to that in the most recent 2016-2017 DHS data. Thus, these variables contribute to the generalizability of this data and the recommendations and public health implications drawn from this analysis. This study, however, took place in a specific region of the country within a specific population and is limited to the urban teaching hospital setting in which pregnant women participated and assumed to have access to care. However, within this particular setting, the patient demographics are similar to those country-wide. The findings from this study can be beneficial to other teaching hospitals such as Hôpital Universitaire de Mirebalais, or other reproductive care providers in Haiti. The findings may also be useful to providers in other countries that have similar populations and health systems.

Recommendations

This study highlights the characteristics of a specific group of women who have attempted a self-managed abortion. Given that the present legal prohibition of abortion in Haiti is a major driver of the practice of unsafe, clandestine abortion, legislative reform to ensure abortion is legal in all circumstances for all women in Haiti presents the ideal pathway to prevent maternal morbidity and mortality from unsafe abortion. Barring such sweeping legislative reform, however, findings from this study can be used to generate practical recommendations that can mitigate maternal morbidity and mortality from self-managed abortion. The information

from this study should be utilized to inform the development of comprehensive family planning interventions, like that of a reproductive life plan (RLP) protocol, to ensure these groups are strategically targeted. An RLP protocol is used to define a person's intent regarding the quantity and frequency of pregnancies in the context of their personal goals and values, and to raise awareness of risk behaviors to reduce adverse outcome for mother and child (Centers for Disease Control and Prevention, 2006). An RLP protocol is not considered to be a one-time activity, but instead should be continually modified in accordance with one's individual experiences and goals (Files et al., 2011). Thus, based on the significant risk factors in our findings, the implementation of an RLP protocol within healthcare facilities is the most comprehensive way to address the risks that women, and those in this study's particular group, face.

In this study, the level of education and number of prenatal visits for the current pregnancy are significant predictors of attempt of a self-managed abortion in the current pregnancy. Findings also included a number of variables significantly associated with ever-attempt of a self-managed abortion, of which having a prior pregnancy end in a miscarriage, abortion, or stillbirth, no desire or unsure of whether to have more children in the future, and use of a family planning method up to the current pregnancy, presented as potential risk factors.

It is imperative that opportunities for intervention are taken when women present themselves to a health care facility, as it is an opportunity to develop an RLP in a moment when women have contact with health care providers and are already utilizing the health care system. This would allow for all women to be individually counseled, develop a personalized plan, and have access to resources in order to execute that plan (e.g., LARC) and would enable providers to ensure that those vulnerable to having attempted or may attempt a self-managed abortion are targeted. It also provides the opportunity for continual monitoring and intervention if an RLP is

derailed, and action plans in order to manage an unwanted or unplanned pregnancy, or other adverse sexual and reproductive health outcomes such as sexually transmitted infections.

Strategies should also be developed to reduce adverse maternal outcomes among those that are at risk of attempting a self-managed abortion that does not seek health care in a formal setting, or those that seek healthcare in other sectors, such as public, private not-for-profit, mixed not-for-profit with staff paid by the Ministry of Public Health and Population, and private-for-profit (Durham, Michael, Hill, & Paviignani, 2015). Prior successful approaches providing reproductive health services to those outside formal, centralized health care settings should be considered, such as the utilization of community health workers via mobile clinics (Hôpital Albert Schweitzer Haiti, n.d.). These preventative measures of providing education, RLP counseling, and family planning resources like contraception, can drastically reduce the maternal morbidity and mortality due to attempting a self-managed abortion. Targeting women who have limited access to the formal health care system should be a priority, as they may be at the highest risk of maternal morbidity and mortality from a self-managed abortion due to lower health literacy and access to SRH and FP resources.

In order for an RLP protocol to achieve its desired goal of preventing adverse maternal outcomes among women who have attempted a self-managed abortion, the providers who care for women will need to be prepared to care for those who have attempted a self-managed abortion in the past, admit to attempting again if pregnant with a mistimed, unplanned, or unwanted pregnancy, or women who are in need of postabortion care. This will require providers to be adequately trained in postabortion care, staff dedicated to RLP protocol per the extent of the human resource availability and updated on best practice in family planning and sexual and reproductive health care.

Furthermore, additional research is needed to address the discrepancies and nuance of pregnancy 'intention.' It is imperative that future studies expand their definition of an 'unintended' pregnancy to clearly differentiate between mistimed, unplanned, or unwanted, as opposed to the binary option of 'intended' vs. 'unintended.' At a minimum, research should also address that pregnancy may also be characterized by ambivalence (Gomez et al., 2019). It is also crucial that studies provide women the opportunity to prioritize factors that contribute to determining a mistimed, unplanned, or unwanted pregnancy, such as the number of current children, economic status, or age. This will provide more insight into intervention areas to target different areas of unintended pregnancy with specific interventions of which Haitian women have expressed as primary contributing factors. It is also imperative to discern whether intention matters if reproductive autonomy is limited or nonexistent. Determining whether current pregnancy intention aligns with current pregnancy outcome may provide insight as to the ratio of women who have limited reproductive autonomy, and subsequently, who is the judge of an individual's reproductive autonomy. As aforementioned, the factors that inform a woman's decision to have an abortion are multifactorial and difficult to parse, echoing previous findings that information gathered solely around the main reason may not fully capture the context surrounding women's abortion decision-making (Chae et al., 2017).

Conclusion

Under Haiti's penal code, abortion is illegal with no explicit legal exceptions. Despite its illegality, abortions still occur, the majority of them self-managed and unsafe. The purpose of this secondary analysis was to examine the factors associated with current and ever-attempt of a self-managed abortion among currently pregnant women in Cap Haïtien, Haiti. The factors that

inform a woman's decision-making process regarding abortion are multifaceted, proving challenging to compartmentalize due to the myriad of personal, social, cultural, and economic influences at play.

Further research is needed to address the discrepancies and nuance of pregnancy 'intention,' especially among this population, in order to clearly differentiate between women who would further classify their pregnancy as mistimed, unplanned, or unwanted, or express ambivalence and not fall within a category under the umbrella of 'intended' or 'unintended.' Providing women with the opportunity to prioritize factors, such as economic status, marital status, age, or the current number of children, that contribute to determining her pregnancy as ambivalent, intended, mistimed, unplanned, or unwanted. Ensuring that women have reproductive autonomy to determine the outcome of their future pregnancies, control the number and spacing of children, and decide with their provider a suitable contraceptive method constructed around these factors, is essential in reducing maternal morbidity and mortality in Haiti. Integrating holistic family planning services that allow for women to develop a personalized reproductive life plan has been successful among vulnerable and marginalized women in publicly funded clinics, shedding light on feasibility and potential for success.

REFERENCES

Albuja, L. D., Cianelli, R., Anglade, D., Owusu, B., Joseph, L., Sailsman, S., & Ferrer, L. (2017). Women's and Healthcare Workers' Beliefs and Experiences Surrounding Abortion: The Case of Haiti. *Journal of Nursing Scholarship*, *49*(2), 170–176. https://doi.org/10.1111/jnu.12278

Berglas, N. F., Williams, V., Mark, K., & Roberts, S. (2018). Should prenatal care providers offer pregnancy options counseling?. *BMC pregnancy and childbirth*, *18*(1), 384. doi:10.1186/s12884-018-2012-x

Berry-Bibee, E. N., St Jean, C. J., Nickerson, N. M., Haddad, L. B., Alcime, M. M., & Lathrop, E. H. (2018). Self-managed abortion in urban Haiti: a mixed-methods study. *BMJ Sexual & Reproductive Health*, *44*(3), 193. https://doi.org/10.1136/bmjsrh-2017-200009

British Pregnancy Advisory Service. (2017, July). (Issue brief No. 1). Retrieved https://www.bpas.org/media/2027/late-abortion-report-v02.pdf

Borrero, S., Nikolajski, C., Steinberg, J. R., Freedman, L., Akers, A. Y., Ibrahim, S., & Schwarz, E. B. (2015). "It just happens": a qualitative study exploring low-income women's perspectives on pregnancy intention and planning. *Contraception*, *91*(2), 150–156. https://doi.org/10.1016/j.contraception.2014.09.014

Brown, S. S., & Eisenberg, L. (Eds.). (1995). *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families* (pp. 1-378, Publication). Washington D.C.: National Academy of Sciences. doi:10.17226/4903

Chae, S., Desai, S., Crowell, M., & Sedgh, G. (2017). Reasons why women have induced abortions: a synthesis of findings from 14 countries. *Contraception*, *96*(4), 233–241. https://doi.org/10.1016/j.contraception.2017.06.014

Centers for Disease Control and Prevention. (2006). *Recommendations to Improve Preconception Health and Health Care --- United States: A Report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care* (pp. 1–22). Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5506a1.htm

Dias, T. Z., Passini, R., Duarte, G. A., Sousa, M. H. and Faúndes, A. (2015), Association between educational level and access to safe abortion in a Brazilian population. International Journal of Gynecology & Obstetrics, 128: 224-227. doi:10.1016/j.ijgo.2014.09.031

Durham, J., Michael, M., Hill, P. S., & Paviignani, E. (2015). Haiti and the health marketplace:

the role of the private, informal market in filling the gaps left by the state. *BMC Health Services Research*, *15*, 424. https://doi.org/10.1186/s12913-015-1088-5

Files, J. A., Frey, K. A., David, P. S., Hunt, K. S., Noble, B. N., & Mayer, A. P. (2011). Developing a Reproductive Life Plan. *Journal of Midwifery & Women's Health*, *56*(5), 468–474. https://doi.org/10.1111/j.1542-2011.2011.00048.x

Frederico, M., Michielsen, K., Arnaldo, C., & Decat, P. (2018). Factors Influencing Abortion Decision-Making Processes among Young Women. *International Journal of Environmental Research and Public Health*, *15*(2). Retrieved from https://doi.org/10.3390/ijerph15020329

Ganatra, B., Gerdts, C., Rossier, C., Johnson, B. R., Tunçalp, Ö., Assifi, A., … Alkema, L. (2017). Global, regional, and subregional classification of abortions by safety, 2010–14: estimates from a Bayesian hierarchical model. *The Lancet*, *390*(10110), 2372–2381. https://doi.org/10.1016/S0140-6736(17)31794-4

Gomez, A. M., Arteaga, S., Villasenor, E., Arcara, J., & Freihart, B. (2019). The Misclassification of Ambivalence in Pregnancy Intentions: A Mixed-Methods Analysis. *Perspectives on Sexual and Reproductive Health*, *51*(1), 7–15. https://doi.org/10.1363/psrh.12088

Higgins, J. A., Popkin, R. A. and Santelli, J. S. (2012), Pregnancy Ambivalence and Contraceptive Use Among Young Adults in the United States. Perspect Sex Repro H, 44: 236-243. doi:10.1363/4423612

Hirz, A. E., Avila, J. L., & Gipson, J. D. (2017). The role of men in induced abortion decision making in an urban area of the Philippines. *International Journal of Gynaecology and Obstetrics: The Official Organ of the International Federation of Gynaecology and Obstetrics*, *138*(3), 267–271. https://doi.org/10.1002/ijgo.12211

Hôpital Albert Schweitzer Haiti. (n.d.). Our Network of Care. Retrieved from https://hashaiti.org/vision/our-network-of-care/

Institut Haïtien de l'Enfance, & ICF. (2018). *Enquête Mortalité, Morbidité et Utilisation des Service 2016-2017 - EMMUS-VI*. Pétion-Ville, Haïti: IHE/Haiti, ICF. Retrieved from http://dhsprogram.com/pubs/pdf/FR326/FR326.pdf

Jokela, S., Lilja, E., Kinnunen, T. I., Gissler, M., Castaneda, A. E., & Koponen, P. (2018). Births and induced abortions among women of Russian, Somali and Kurdish origin, and the general population in Finland -comparison of self-reported and register data. *BMC Pregnancy and Childbirth*, *18*(1), 296. https://doi.org/10.1186/s12884-018-1931-x

Jones, R. K. (2018). Reported contraceptive use in the month of becoming pregnant among

U.S. abortion patients in 2000 and 2014. *Contraception*, *97*(4), 309–312. https://doi.org/10.1016/j.contraception.2017.12.018

Lathrop, E., Telemaque, Y., Goedken, P., Andes, K., Jamieson, D. J., & Cwiak, C. (2011). Postpartum contraceptive needs in northern Haiti. *International Journal of Gynaecology and Obstetrics: The Official Organ of the International Federation of Gynaecology and Obstetrics*, *112*(3), 239–242. https://doi.org/10.1016/j.ijgo.2010.09.012

Loi, U.R., Lindgren, M., Faxelid, E.A., Oguttu, M.A., & Klingberg-Allvin, M. (2018). Decision-making preceding induced abortion: a qualitative study of women's experiences in Kisumu, Kenya. *Reproductive health*.

Macleod, C. I., & Hansjee, J. (2013). Men and talk about legal abortion in South Africa: equality, support and rights discourses undermining reproductive "choice". *Culture, Health & Sexuality*, *15*(8), 997–1010. https://doi.org/10.1080/13691058.2013.802815

Marston, C., & Cleland, J. (2003). Relationships between contraception and abortion: a review of the evidence. *International Family Planning Perspectives*, *29*(1), 6–13. https://doi.org/10.1363/ifpp.29.006.03

Meffen, K., Burkhardt, G., & Bartels, S. (2018). Abortion care in Haiti: A secondary analysis of demographic and health data. *PLOS ONE*, *13*(11), e0206967. https://doi.org/10.1371/journal.pone.0206967

Miller, W. B., Barber, J. S., & Gatny, H. H. (2013). The effects of ambivalent fertility desires on pregnancy risk in young women in the USA. *Population Studies*, *67*(1), 25–38. https://doi.org/10.1080/00324728.2012.738823

Nutbeam, D. (2000). Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, *15*(3), 259–267. https://doi.org/10.1093/heapro/15.3.259

Maternal mortality ratio (modeled estimate, per 100,000 live births): estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2015. Retrieved from https://data.worldbank.org/indicator/SH.STA.MMRT?locations=HT

Maternowska, M. C. (2006). *Reproducing Inequities: Poverty and the Politics of Population in Haiti*. Rutgers University Press; None ed. edition.

Marston, C., & Cleland, J. (2003). Relationships between contraception and abortion: a review of the evidence. *International Family Planning Perspectives*, *29*(1), 6–13. https://doi.org/10.1363/ifpp.29.006.03

"Mission and Values - Building Healthcare Systems for Haiti." *Konbit Sante*. Retrieved from konbitsante.org/mission-values/.

Mumford, S. L., Sapra, K. J., King, R. B., Louis, J. F., & Buck Louis, G. M. (2016). Pregnancy intentions-a complex construct and call for new measures. *Fertility and Sterility*, *106*(6), 1453–1462. https://doi.org/10.1016/j.fertnstert.2016.07.1067

R.A. Aiken, A., Borrero, S., S Callegari, L., & Dehlendorf, C. (2016). *Rethinking the Pregnancy Planning Paradigm: Unintended Conceptions or Unrepresentative Concepts?* (Vol. 48). https://doi.org/10.1363/48e10316

Schwarz, E. B., Gariepy, A., Lewis, C. A., Borrero, S., & Reeves, M. (2017). Pregnancy after tubal sterilization in the United States, updated estimates. *Contraception*, *96*(4), 268. https://doi.org/10.1016/j.contraception.2017.07.029

Sedgh, G., Singh, S., & Hussain, R. (2014). Intended and unintended pregnancies worldwide in 2012 and recent trends. *Studies in Family Planning*, *45*(3), 301–314. https://doi.org/10.1111/j.1728-4465.2014.00393.x

Singh S et al. (2018). Abortion Worldwide 2017: Uneven Progress and Unequal Access. *Guttmacher Institute*. Retrieved from: https://www.guttmacher.org/sites/default/files/report_pdf/abortion-worldwide-2017.pdf

UN DESA (2018), *The Sustainable Development Goals Report 2018*, UN, New York. Retrieved from https://doi.org/10.18356/7d014b41-en.

United Nations Population Fund. (2019). Family planning. Retrieved from https://www.unfpa.org/family-planning

WHO, UNICEF, UNFPA, World Bank Group, & United Nations Population Division Maternal Mortality Estimation Inter-Agency Group. (n.d.). Maternal mortality in 1990-2015. Retrieved from https://www.who.int/gho/maternal_health/countries/hti.pdf

The World Bank. (2014, July 11). Living Conditions in Haiti's Capital Improve, but Rural Communities Remain Very Poor. Retrieved from http://www.worldbank.org/en/news/feature/2014/07/11/while-living-conditions-in-port-au-prince-are-improving-haiti-countryside-remains-very-poor

World Health Organization. (2005). Report of a WHO Technical Consultation on Birth Spacing. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/69855/WHO_RHR_07.1_eng.pdf?sequence=1

World Health Organization. (2013a). *Programming Strategies for Postpartum Family*

Planning (pp. 1-45, Rep.). Geneva, Switzerland.

World Health Organization. (2013b). WHO recommendations on postnatal care of the mother and newborn. Retrieved from https://www.who.int/maternal_child_adolescent/documents/postnatal-care-recommendations/en/

World Health Organization. (2016, January 20). Stillbirths. Retrieved from https://www.who.int/maternal_child_adolescent/epidemiology/stillbirth/en/

World Health Organization. (2017). New guidelines on antenatal care for a positive pregnancy experience. Retrieved from https://www.who.int/reproductivehealth/news/antenatal-care/en/

World Health Organization. (2018, February 16). Maternal mortality. Retrieved from https://www.who.int/news-room/fact-sheets/detail/maternal-mortality

World Health Organization. (2019, February 28). Sexually transmitted infections (STIs). Retrieved from https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis)

World Health Organization, UNICEF, United Nations, Department of Economic and Social Affairs, Population Division, & World Bank. (2015). *Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division*. Retrieved from http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2015/en/

TABLES AND FIGURES

Figure 1. Women presenting to Justinien University Hospital labor and delivery unit between July 2013 and January 2014.

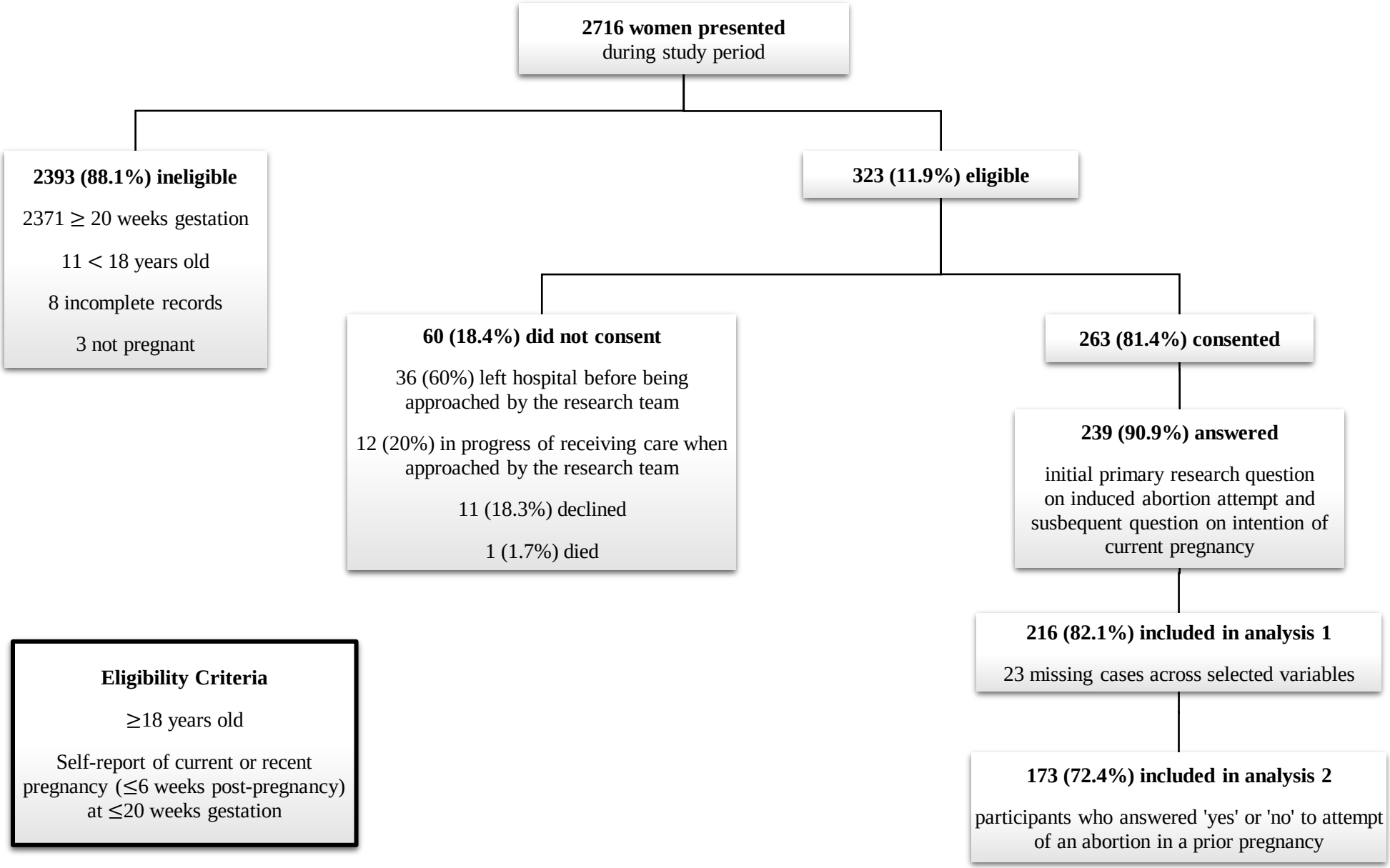

Table 1 Characteristics of all survey participants and women who were included in analysis 1 and analysis 2

Variable	All survey participants (n=239) [n (%)]	Participants included in Analysis 1 (n=216, 90.4%) [n (%)]	Participants included in Analysis 2 (n=173, 72.4%) [n (%)]
Demographics			
Age (years)			
18-24	74 (31.0)	59 (27.3)	32 (18.5)
25-35	123 (51.5)	118 (54.6)	105 (60.7)
36+	42 (17.6)	39 (18.1)	36 (20.8)
Education			
Completed primary school or less	67 (28.0)	57 (26.4)	55 (31.8)
Some secondary school	151 (63.2)	139 (64.4)	106 (61.3)
Completed secondary school or beyond	21 (8.8)	20 (9.3)	12 (6.9)
Relationship Status			
Married or living together	143 (59.8)	133 (61.6)	121 (69.9)
Single/divorced/widowed/not living together	95 (39.7)	83 (38.4)	52 (30.1)
Missing	1	0	0
Children (n)			
0	81 (33.9)	66 (30.6)	26 (15%)
1	64 (26.8)	61 (28.2)	61 (35.3)
2	44 (18.4)	43 (19.9)	43 (24.9)
3+	50 (20.9)	46 (21.3)	43 (24.9)
Current sexual relationship			
Monogamous, both partners	46 (19.2)	42 (19.4)	33 (19.1)
Monogamous, unsure about partner	177 (74.1)	160 (74.1)	129 (74.6)
More than one partner	12 (5.0)	11 (5.1)	9 (5.2)
No sexual relationship/Don't know	4 (1.7)	3 (1.4)	2 (1.2)
Pregnancy-Related Characteristics			
First Pregnancy			
Yes	52 (21.8)	40 (18.5)	0
No	187 (78.2)	176 (81.5)	173 (100)
Intention of current pregnancy			
Intended	89 (37.2)	84 (38.9)	67 (38.7)
Unintended	150 (62.8)	132 (61.1)	106 (61.3)
Prior birth ending in miscarriage/abortion/stillbirth			
Yes	82 (34.3)	77 (35.6)	77 (44.5)
No	107 (44.8)	100 (46.3)	96 (55.5)
No prior pregnancy	49 (20.5)	39 (18.1)	0
No response	1	0	0
Attempt of self-managed abortion in a previous pregnancy			
Yes	28 (11.7)	26 (12.0)	26 (15)
No	155 (64.9)	147 (68.1)	147 (85)
No prior pregnancy	54 (22.6)	43 (19.9)	0
Missing	2	0	0
Attempt of a self-managed abortion in the current pregnancy			
Yes	71 (29.7)	61 (28.2)	46 (26.6)
No	168 (70.3)	155 (71.8)	127 (73.4)
Pregnancy resulted from			
Primary relationship	203 (84.9)	181 (83.8)	144 (83.2)
Secondary Relationship	36 (15.1)	35 (16.2)	29 (16.8)
Health provider visit 1-2 months after last delivery			
Yes	115 (48.1)	114 (52.8)	111 (64.2)

No	49 (20.5)	43 (19.9)	43 (24.9)
No prior delivery	60 (25.1)	59 (27.3)	19 (11.0)
Missing	15	0	0
Number of prenatal visits for current pregnancy			
0	97 (40.6)	85 (39.4)	69 (39.9)
1	75 (31.4)	69 (31.9)	53 (30.6)
2	40 (16.7)	38 (17.6)	32 (18.5)
3+	27 (11.3)	24 (11.1)	19 (11.0)
Family Planning and Contraception Characteristics			
Desire for more children in the future			
Yes	122 (51.0)	111 (51.4)	75 (43.4)
No/Not sure/Don't know	117 (49.0)	105 (48.6)	98 (56.6)
Ever-use of contraception			
Yes	121 (50.6)	116 (53.7)	113 (65.3)
No	117 (49.0)	100 (46.3)	60 (34.7)
Missing	1	0	0
Use of FP method up to the current pregnancy			
Yes	28 (11.7)	27 (12.5)	27 (15.6)
No	199 (83.3)	189 (87.5)	146 (84.4)
Missing	12	0	0
Planning on using FP method post-pregnancy			
Yes	165 (69.0)	147 (68.1)	123 (71.1)
No	62 (25.9)	59 (27.3)	40 (23.1)
Not sure	11 (4.6)	10 (4.6)	10 (5.8)
No response	1	0	0

Table 2 Analysis 1: Participants who answered 'yes' or 'no' to an attempt of a self-managed abortion in the current pregnancy

Variable	**B**	**Sig.**	**Exp(B)**	**95% Confidence Interval**	
				Lower	**Upper**
Education		0.001			
Completed primary school or less	-1.946	0.000	0.143[A]	0.053[B]	0.385[B]
Some secondary school	*Ref*				
Completed secondary school or beyond	-0.354	0.996	0.965	0.187	4.990
Number of prenatal visits for current pregnancy		0.009			
0	*Ref*				
1	-1.321	0.006	0.267[A]	0.105[B]	0.680[B]
2	-1.443	0.023	0.236[A]	0.068[B]	0.817[B]
3+	-1.703	0.052	0.182	0.033	1.018
Intention of current pregnancy					
Intended	*Ref*				
Unintended	-20.839	0.996	0.000	0.000	.

A: Interpreted in the text as $(OR)^{-1}$
B: Interpreted in the text as $(CI)^{-1}$

Table 3 Analysis 2: Participants who answered 'yes' or 'no' to an attempt of a self-managed abortion in the current pregnancy and the previous pregnancy

Variable	**B**	**Sig.**	**Exp(B)**	**95% Confidence Interval**	
				Lower	**Upper**
Age		0.027			
18-24	0.878	0.144	2.405	0.741	7.809
25-35	*Ref*				
36+	-1.366	0.035	0.255[A]	0.072[B]	0.907[B]
Education		0.001			
Completed primary school or less	-2.222	0.000	0.208[A]	0.034[B]	0.344[B]
Some secondary school	*Ref*				
Completed secondary school or beyond	-0.264	0.786	0.768	0.114	5.151
Children (n)		0.007			
0	*Ref*				
1	-0.954	0.246	0.385	0.077	1.929
2	-2.981	0.003	0.051[A]	0.007[B]	0.371[B]
3+	-1.426	0.170	0.240	0.031	1.842
Prior birth ending in miscarriage/abortion/stillbirth					
Yes	1.385	0.006	3.993	1.492	10.690
No	*Ref*				
Desire for more children in the future					
Yes	*Ref*				
No/Not sure/Don't know	1.803	0.002	6.067	1.970	18.684
Use of FP method up to current pregnancy					
Yes	2.205	0.001	9.071	2.462	33.424
No	*Ref*				
Intention of current pregnancy					
Intended	-3.900	0.000	0.020[A]	0.005[B]	0.087[B]
Unintended	*Ref*				

A: Interpreted in the text as $(OR)^{-1}$

B: Interpreted in the text as $(CI)^{-1}$

CHAPTER IV: RECOMMENDATIONS, IMPLICATIONS, AND CONCLUSIONS

This study highlights the characteristics of a specific group of women who have attempted a self-managed abortion. Given that the present legal prohibition of abortion in Haiti is a major driver of the practice of unsafe, clandestine abortion, legislative reform to ensure abortion is legal in all circumstances for all women in Haiti presents the ideal pathway to prevent maternal morbidity and mortality from unsafe abortion. Barring such sweeping legislative reform, however, findings from this study can be used to generate practical recommendations that can mitigate maternal morbidity and mortality from self-managed abortion. The information from this study should be utilized to inform the development of comprehensive family planning interventions, like that of a reproductive life plan (RLP) protocol, to ensure these groups are strategically targeted. An RLP protocol is used to define a person's intent regarding the quantity and frequency of pregnancies in the context of their personal goals and values, and to raise awareness of risk behaviors to reduce adverse outcome for mother and child (Centers for Disease Control and Prevention, 2006). An RLP protocol is not considered to be a one-time activity, but instead should be continually modified in accordance with one's individual experiences and goals (Files et al., 2011). Thus, based on the significant risk factors in our findings, the implementation of an RLP protocol within healthcare facilities is the most comprehensive way to address the risks that women, and those in this study's particular group, face.

In this study, significant risk factors were found among women who attempted a self-managed abortion in the current pregnancy, including those who had no prenatal visits, and those who had completed some secondary education. Significant risk factors among women with

with an ever-attempt of a self-managed abortion included having a prior birth ending in a miscarriage, abortion, or stillbirth, no desire for children in the future or unsure of that desire, and the use of a family planning method up to the current pregnancy. While number of prenatal visits and having a primary or less level of education does not appear to be significant risk factors for attempt of a self-managed abortion in the current pregnancy in this sample, these may have clinical importance and should still be considered during RLP protocol design. It is imperative that opportunities for intervention are taken when women present themselves to a health care facility, as it is an opportunity to develop an RLP in a moment when women have contact with health care providers and are already utilizing the health care system. This would allow for all women to be individually counseled, develop a personalized plan, and have access to resources in order to execute that plan (e.g. LARC) and would enable providers to ensure that those vulnerable to having attempted or may attempt a self-managed abortion are targeted. It also provides opportunity for continual monitoring and intervention if an RLP is derailed, and action plans in order to manage an unwanted or unplanned pregnancy, or other adverse sexual and reproductive health outcomes such as sexually transmitted infections.

Strategies should also be developed to reduce adverse maternal outcomes among those that are at risk of attempting a self-managed abortion that do not seek health care in a formal setting, or those that seek healthcare in other sectors, such as public, private not-for-profit, mixed not-for-profit with staff paid by the Ministry of Public Health and Population, and private-for-profit (Durham, Michael, Hill, & Paviignani, 2015). Prior successful approaches to provide reproductive health services to those outside formal, centralized health care settings should be considered, such as utilization of community health workers via mobile clinics (Hôpital Albert Schweitzer Haiti, n.d.). These preventative measures of providing education, RLP counseling,

and family planning resources like contraception, can drastically reduce the maternal morbidity and mortality due to attempting a self-managed abortion. Targeting women who have limited access to the formal health care system should be a priority, as they may be at the highest risk of maternal morbidity and mortality from a self-managed abortion due to lower health literacy and access to SRH and FP resources.

In order for an RLP protocol to achieve its desired goal of preventing adverse maternal outcomes among women who have attempted a self-managed abortion, the providers who care for women will need to be prepared to care for those who have attempted a self-managed abortion in the past, admit to attempting again if pregnant with a mistimed, unplanned, or unwanted pregnancy, or women who are in need of postabortion care. This will require providers to be adequately trained in postabortion care, staff dedicated to RLP protocol per the extent of the facility supply chain and updated on best practice in family planning and sexual and reproductive health care.

Furthermore, additional research is needed to address the discrepancies and nuance of pregnancy 'intention.' It is imperative that future studies expand their definition of 'unintended' to clearly differentiate between mistimed, unplanned, or unwanted, as opposed to the binary option of 'intended' vs. 'unintended.' It is also crucial that studies provide women the opportunity to prioritize factors that contribute to determining a mistimed, unplanned, or unwanted pregnancy, such as number of current children, economic status, or age. This will provide more insight into intervention areas to target differing areas of unintended pregnancy with specific interventions Haitian women have expressed as primary contributing factors. It is also imperative to discern whether intention matters if reproductive autonomy is limited or nonexistent. Determining whether current pregnancy intention aligns with current pregnancy

outcome may provide insight as to the ratio of women who have limited reproductive autonomy, and subsequently, who is the arbiter of an individual's reproductive autonomy. As aforementioned, the factors that inform a woman's decision to have an abortion are multifactorial and difficult to parse, echoing prior findings that information gathered solely around the main reason may not fully capture the context surrounding women's abortion decision-making (Chae et al., 2017).

Conclusion

The purpose of this secondary analysis was to examine the factors associated with current and ever-attempt of a self-managed abortion among currently pregnant women in Cap Haïtien, Haiti. While the findings of this study are limited to urban women who sought care at a primary hospital in the second largest city in Haiti, demographic characteristics are similar to those country-wide and they are nevertheless critical for future interventions to this vulnerable subpopulation. Ensuring that women have reproductive autonomy to determine the outcome of their future pregnancies, control the number and spacing of children, and decide with their provider a suitable contraceptive method constructed around these factors, is essential in reducing maternal morbidity and mortality in Haiti. Conducting research that addresses the discrepancies and nuance of pregnancy 'intention,' especially among this population, in order to account for the the myriad of personal, social, cultural, and economic influences at play, is critical in providing targeted and effective interventions. Furthermore, integrating holistic family planning services that allow for women to develop a personalized reproductive life plan that take into account these influences, has been successful among vulnerable and marginalized women in publicly funded clinics, shedding light on feasibility and potential for success.

REFERENCES

Åhman, E., Shah, I. H., World Health Organization, & Special Programme of Research, D., and Research Training in Human Reproduction (World Health Organization). (2011). *Unsafe abortion: global and regional estimates of the incidence of unsafe abortion and associated mortality in 2008.* Geneva, Switzerland: World Health Organization.

Albuja, L. D., Cianelli, R., Anglade, D., Owusu, B., Joseph, L., Sailsman, S., & Ferrer, L. (2017). Women's and Healthcare Workers' Beliefs and Experiences Surrounding Abortion: The Case of Haiti. *Journal of Nursing Scholarship*, *49*(2), 170–176. https://doi.org/10.1111/jnu.12278

Alkema, L., PhD, Chou, D., MD, Hogan, D., PhD, Zhang, S., BSc, Moller, A., PhD, Gemmill, A., MA, . . . Say, L., MD. (2016). Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: A systematic analysis by the UN Maternal Mortality Estimation Inter-Agency Group. *The Lancet, 387*(10017), 462-474. doi:https://doi.org/10.1016/S0140-6736(15)00838-7

Barrett, G., & Wellings, K. (2002). What is a "planned" pregnancy? Empirical data from a British study. *Social Science & Medicine (1982)*, *55*(4), 545–557.

Bearak, J., Popinchalk, A., Alkema, L., & Sedgh, G. (2018). Global, regional, and subregional trends in unintended pregnancy and its outcomes from 1990 to 2014: estimates from a Bayesian hierarchical model. *The Lancet Global Health*, *6*(4), e380–e389. https://doi.org/10.1016/S2214-109X(18)30029-9

Bill & Melinda Gates Foundation. (n.d.). Family Planning. Retrieved from https://www.gatesfoundation.org/What-We-Do/Global-Development/Family-Planning

Campbell, M., Sahin-Hodoglugil, N. N., & Potts, M. (2006). Barriers to Fertility Regulation: A Review of the Literature. *Studies in Family Planning*, *37*(2), 87–98. https://doi.org/10.1111/j.1728-4465.2006.00088.x

Cayemittes, M., Placide, M. F., Barrère, B., Mariko, S., & Sévère, B. (2001). *Enquête Mortalité, Morbidité et Utilisation des Services 2000*. Calverton, Maryland, USA: Ministère de la Santé Publique et de la Population/Haïti, Institut par l'Institut Haïtien de l'Enfance and ORC Macro. Retrieved from http://dhsprogram.com/pubs/pdf/FR121/FR121.pdf

Chae, S., Desai, S., Crowell, M., & Sedgh, G. (2017). Reasons why women have induced abortions: a synthesis of findings from 14 countries. *Contraception*, *96*(4), 233–241. https://doi.org/10.1016/j.contraception.2017.06.014

Centers for Disease Control and Prevention. (2006). *Recommendations to Improve Preconception Health and Health Care --- United States: A Report of the CDC/ATSDR Preconception Care Work Group and the Select Panel on Preconception Care* (pp. 1–22). Retrieved from https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5506a1.htm

Doherty, K., Arena, K., Wynn, A., Offorjebe, O. A., Moshashane, N., Sickboy, O., … Morroni, C. (2018). Unintended Pregnancy in Gaborone, Botswana: A Cross-Sectional Study. *African Journal of Reproductive Health; Benin City*, *22*(2), 76–82. http://dx.doi.org.proxy.library.emory.edu/10.29063/ajrh2018/v22i2.8

Durham, J., Michael, M., Hill, P. S., & Paviignani, E. (2015). Haiti and the health marketplace: the role of the private, informal market in filling the gaps left by the state. *BMC Health Services Research*, *15*, 424. https://doi.org/10.1186/s12913-015-1088-5

Files, J. A., Frey, K. A., David, P. S., Hunt, K. S., Noble, B. N., & Mayer, A. P. (2011). Developing a Reproductive Life Plan. *Journal of Midwifery & Women's Health*, *56*(5), 468–474. https://doi.org/10.1111/j.1542-2011.2011.00048.x

Finer, L. B., & Zolna, M. R. (2016). Declines in Unintended Pregnancy in the United States, 2008–2011. *New England Journal of Medicine*, *374*(9), 843–852. https://doi.org/10.1056/NEJMsa1506575

FP2020. (n.d.). Estimate Tables. Retrieved from http://progress.familyplanning2020.org/sites/default/files/FP2020_2018_FullEstimateTables_ONLINE.pdf

Ganatra, B., Gerdts, C., Rossier, C., Johnson, B. R., Tunçalp, Ö., Assifi, A., … Alkema, L. (2017). Global, regional, and subregional classification of abortions by safety, 2010–14: estimates from a Bayesian hierarchical model. *The Lancet*, *390*(10110), 2372–2381. https://doi.org/10.1016/S0140-6736(17)31794-4

Guttmacher Institute. (2018, November 29). Despite Widespread Support for Postabortion Care, Many Countries' Health Systems Do Not Have the Capacity to Provide Essential Services | Guttmacher Institute. Retrieved from https://www.guttmacher.org/news-release/2018/despite-widespread-support-postabortion-care-many-countries-health-systems-do-not

Haddad, L. B., & Nour, N. M. (2009). Unsafe Abortion: Unnecessary Maternal Mortality. *Reviews in Obstetrics and Gynecology*, *2*(2), 122–126.

Hubacher, D., & Trussell, J. (2015). A definition of modern contraceptive methods. *Contraception*, *92*(5), 420–421. https://doi.org/10.1016/j.contraception.2015.08.008

Hôpital Albert Schweitzer Haiti. (n.d.). Our Network of Care. Retrieved from https://hashaiti.org/vision/our-network-of-care/

Institut Haïtien de l'Enfance, & ICF. (2018). *Enquête Mortalité, Morbidité et Utilisation des Service 2016-2017 - EMMUS-VI*. Pétion-Ville, Haïti: IHE/Haiti, ICF. Retrieved from http://dhsprogram.com/pubs/pdf/FR326/FR326.pdf

Kavanaugh, M. L., & Schwarz, E. B. (2009). Prospective assessment of pregnancy intentions using a single- versus a multi-item measure. *Perspectives on Sexual and Reproductive Health*, *41*(4), 238–243. https://doi.org/10.1363/4123809

Lathrop, E., Telemaque, Y., Goedken, P., Andes, K., Jamieson, D. J., & Cwiak, C. (2011). Postpartum contraceptive needs in northern Haiti. *International Journal of Gynaecology and Obstetrics: The Official Organ of the International Federation of Gynaecology and Obstetrics*, *112*(3), 239–242. https://doi.org/10.1016/j.ijgo.2010.09.012

Maternal mortality ratio (modeled estimate, per 100,000 live births): estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division. Geneva: World Health Organization; 2015. Retrieved from https://data.worldbank.org/indicator/SH.STA.MMRT?locations=HT

Maternowska, M. C. (2006). *Reproducing Inequities: Poverty and the Politics of Population in Haiti*. Rutgers University Press; None ed. edition.

Ministry of Public Health and Population [le Ministère de la Santé Publique and de la Population] (MSPP), Haitian Childhood Institute [l'Institut Haïtien de l'Enfance] (IHE) and ICF International. 2013. 2012 Haïti Mortality, Morbidity, and Service Utilization Survey: Key Findings. Calverton, Maryland, USA: MSPP, IHE, and ICF International.

"Mission and Values - Building Healthcare Systems for Haiti." *Konbit Sante*. Retrieved from konbitsante.org/mission-values/.

Mumford, S. L., Sapra, K. J., King, R. B., Louis, J. F., & Buck Louis, G. M. (2016). Pregnancy intentions-a complex construct and call for new measures. *Fertility and Sterility*, *106*(6), 1453–1462. https://doi.org/10.1016/j.fertnstert.2016.07.1067

Pan American Health Organization. (2017, September 18). Haiti. Retrieved January 9, 2019, from https://www.paho.org/salud-en-las-americas-2017/?p=4110

Peipert, J. F., Zhao, Q., Allsworth, J. E., Petrosky, E., Madden, T., Eisenberg, D., & Secura, G. (2011). Continuation and Satisfaction of Reversible Contraception. *Obstetrics and Gynecology*, *117*(5), 1105–1113. https://doi.org/10.1097/AOG.0b013e31821188ad

Say, L., MD, Chou, D., MD, Gemmill, A., MPH, Tunçlap, Ö, MD, Moller, A., MSc, Daniels, J., PhD, . . . Alkema, L., PhD. (2014). Global causes of maternal death: A WHO systematic analysis. *The Lancet*, *2*(6), E323-E333. doi:https://doi.org/10.1016/S2214-109X(14)70227-X

Singh S et al. (2018). Abortion Worldwide 2017: Uneven Progress and Unequal Access. *Guttmacher Institute*. Retrieved from: https://www.guttmacher.org/sites/default/files/report_pdf/abortion-worldwide-2017.pdf

Sonfield, A., & Kost, K. (2016, January 27). Public Costs from Unintended Pregnancies and the Role of Public Insurance Programs in Paying for Pregnancy-Related Care: National and State Estimates for 2010. Retrieved from https://www.guttmacher.org/report/public-costs-unintended-pregnancies-and-role-public-insurance-programs-paying-pregnancy

Stoddard, A., McNicholas, C., & Peipert, J. F. (2011). Efficacy and Safety of Long-Acting Reversible Contraception. *Drugs*, *71*(8), 969–980. https://doi.org/10.2165/11591290-000000000-00000

UN DESA (2018), *The Sustainable Development Goals Report 2018*, UN, New York. Retrieved from https://doi.org/10.18356/7d014b41-en.

UNICEF. (2018, June). Antenatal care. Retrieved from https://data.unicef.org/topic/maternal-health/antenatal-care/

United Nations, Department of Economic and Social Affairs, Population Division (2017). World Family Planning 2017 - Highlights (ST/ESA/SER.A/414).

United Nations Population Fund. (2018, August 17). Family planning. Retrieved January 9, 2019, from /family-planning

United Nations Population Fund. (n.d.). World Population Dashboard | UNFPA - United Nations Population Fund. Retrieved from https://www.unfpa.org/data/world-population-dashboard

World Health Organization. (2005). Report of a WHO Technical Consultation on Birth Spacing. Retrieved from http://apps.who.int/iris/bitstream/handle/10665/69855/WHO_RHR_07.1_eng.pdf?sequence=1

World Health Organization. (2012, April 13). Haiti: Country profile. Retrieved from https://www.who.int/hac/crises/hti/background/profile/en/

World Health Organization. (2012). *Safe Abortion: Technical and Policy Guidance for Health Systems* (2nd ed.). Geneva: World Health Organization.

World Health Organization. (2016, May 06). Unmet need for family planning. Retrieved from https://www.who.int/reproductivehealth/topics/family_planning/unmet_need_fp/en/

World Health Organization. (2017). WHO | Countries need to do what works to improve contraceptive access, provision and choice for women and girls. Retrieved from http://www.who.int/reproductivehealth/topics/family_planning/contraceptive-access-women-and-girls/en/

World Health Organization. (2018, February 16). Maternal mortality. Retrieved from https://www.who.int/news-room/fact-sheets/detail/maternal-mortality

World Health Organization, UNICEF, United Nations, Department of Economic and Social Affairs, Population Division, & World Bank. (2015). *Trends in maternal mortality: 1990 to 2015: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division*. Retrieved from http://www.who.int/reproductivehealth/publications/monitoring/maternal-mortality-2015/en/