

Investigation of Factors Impacting Underutilization of Family Planning in Léogâne, Haiti

by

Sarah Beaverson

Duke Global Health Institute
Duke University
Durham, NC

Date: _____

Approved:

David K. Walmer, MD, PhD, Chair

Melissa Watt, PhD

David Toole, PhD

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1. Introduction

1.1 - Family planning and Contraception

Access to family planning has been shown to improve the health of both women and children. It allows women to have healthier pregnancies, optimizes the desired number of children and places women in control of when they have children. Family planning refers to any considerations or practices to control the number of children in a family and the intervals between their births. In practice, family planning programs aim to achieve universal access to contraceptive information, services, and supplies for women and girls (WHO).

Contraception use is widely known to be an effective approach to family planning (Stover 2010). There are several types of modern contraceptive methods that vary in effectiveness, hormone levels, and the duration of protection (**Figure 1**) (Colquitt & Martin 2015). Modern contraceptive methods can generally be divided into short acting reversible contraceptive (SARC) methods (condoms, hormonal pills) and long acting contraceptive (LAC) methods (Injectables, IUDs and hormonal implants). Given the myriad of options, women should be able to prevent pregnancy by selecting the best method for their needs. However, there is a large disparity in the supply of SARC vs. LARC method and usage, especially in developing countries and limited resource settings (Tibaijuka 2017). Only one-third of facilities in Haiti provide a mix of family planning methods (at least one long-term-acting method, one short-term-acting method, and one barrier method) (Mallick 2017). A study comparing Haiti to two other LMIC countries – Malawi and Tanzania show that Haiti's one-third percentage was significantly lower. Almost two thirds of facilities in Malawi and just over half of facilities in Tanzania providing a mix of family planning methods.

Effectiveness	Birth control method	Does it contain		Made of latex
		hormone?	How it is used	
>99%	Copper IUD	No	Lasts 10 years	No
	Other IUDs	Yes	Lasts 3-5 years	No
	Implant	Yes	Lasts 3 years	No
91% to 94%	Injectable	Yes	Lasts 3 months	No
	Tablets	Yes	1 tablet every day	No
	Patch	Yes	Changed weekly	No
	Ring	Yes	Inserted monthly and left for 21 days	No
78% to 88%	Diaphragm/cervical cap/sponge	No	Inserted before sex and left 6 hours after	No
	Male condom	No	Worn every time before sex	Yes, but nonlatex options available
	Female condom	No	Inserted every time before sex	Yes
	Spermicide	No	Applied every time before sex	No

Abbreviation: IUD, intrauterine device.

Figure 1. Table of modern birth control evaluated by effectiveness, hormone contents and duration of use. Table adapted from *Colquitt & Martin 2015* ‘Table 1. Evaluating Birth Control Methods’

At the global level, access to reproductive health care is a priority. In the United Nations Sustainable Development Goal 5: *Achieve gender equality and empower all women and girls*, one of the targets is to “Ensure universal access to sexual and reproductive health and reproductive rights” (UN DESA 2017). The indicators of this target are both (1) the proportion of women aged 15-49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care and (2) the number of countries with laws and regulations that guarantee women aged 15-49 years access to sexual and reproductive health care, information and education (UN DESA 2017). Recognizing the landscape of current contraception use and the levels of unmet need for family planning can help countries identify if they are meeting standards and, if not, ways to improve their health care services to women.

1.2 - Benefits of Family Planning

Family Planning can reduce deaths, improve health, and facilitate economic development in low resource countries (Canning 2012, Ndayizigiye 2017).

In particular, family planning can reduce maternal mortality and morbidity by reducing the number of births and thus limiting the number of times a woman is exposed to the risks of mortality associated with pregnancy and birth (Canning 2012). Additionally, family planning can reduce the number of high-risk births by improving birth spacing which decreases the chance of high-risk pregnancies (Canning 2012, Ahmed 2012, Conde-Aquidelo 2006).

Family Planning also has economic benefits. By having less children, households are able to accumulate more resources and therefore invest more money into the health and well-being of each child. In addition, reductions in fertility have enhanced economic growth by increasing the number of women participating in the labor force (Canning 2012, Singh 2009). Reducing unintended pregnancies, particularly among adolescents, improves women's ability to take advantage of educational and employment opportunities. This in turn improves the financial status and independence of women, increasing family savings, reducing poverty, and spurring economic growth (Singh 2009). Given these economic benefits, the promotion of family planning is essential to securing the well-being and autonomy of women while also supporting the health and development of countries.

1.3 - Unmet Need for Family Planning

Despite the numerous benefits of family planning, there exists a large unmet need for family planning services across the globe. Unmet need refers to the condition of wanting to avoid or postpone childbearing but not using any method of contraception (Bradley 2014). Unmet need

for modern contraceptives is disproportionately high in low-income countries—54% of women who want to avoid a pregnancy in these countries have unmet need for a modern contraceptive method, compared with 20% in high income countries (Singh 2009). Matched with this unmet need is a low use of family planning. In LMIC countries, fewer than 1 in 5 women use a form of modern family planning (Alder 2017).

There is debate over whether women who use traditional methods should be classified as having an unmet need; however, most research focuses on unmet need for modern methods because traditional methods are less reliable and more likely to fail than modern methods (Singh 2009). Unmet need is particularly higher among women who are younger, have lower levels of education, live in rural areas, and are poor (Singh 2009). The reasons behind the global unmet need for contraception as explained by the World Health Organization include: limited choice of methods; limited access to contraception among young people, poorer segments of the population or unmarried people; fear or experiences of side-effects; cultural or religious opposition; user and provider bias; gender-based barriers; and poor quality of available services (Singh 2009).

1.4 - Family planning and unmet need in Haiti

Haiti is the poorest country in the Latin America and Caribbean region and one of the poorest nations in the world. Approximately 80% of the population lives on less than \$2 a day and 54% live on less than \$1 a day (World Bank Country Data). Economic growth is particularly slow due to a myriad of factors including immense poverty, a lack of basic infrastructure and a lack of assistance from the government. These factors have compounded the high fertility rates, low maternal health care and high unmet need among women for family planning in Haiti.

Typically across the Latin American and Caribbean region, there are high levels of access to reproductive health (United Nations). Despite this trend, this high level of access is not the case in Haiti. Levels of contraception prevalence and unmet family planning need are distinctively worse than that of the surrounding region (World Bank Data: Indicators). Although this has decreased in the last 20 years from 4.8 in 1994, Haiti's total fertility rate remains the highest in the Latin American and Caribbean region at 3.5 (Ward 2015). There still exists a drastic disparity in fertility rate among women by education level. Women with higher education (secondary education and above) have a fertility rate of 2.6 children compared with a 5.4 rate for women with less than a secondary education (Ward 2015).

While Haiti's modern contraceptive prevalence rate has increased from 13.2 % in 1994 to 31.3% in 2012, it remains the lowest in the Latin American and Caribbean region (Ward 2015). More than 35% of women report an unmet need for family planning, with 20% desiring to limit births (i.e. contraception) and 16% wanting control over spacing birth (Kohler 2017). In particular, sexually active never-married women have a greater need for contraception than do married women (Sedgh 2016). In Haiti, 59% of sexually active, never-married women have an unmet need, which is the highest percentage among all Latin American and Caribbean, Asian and African nations (Sedgh 2016).

When examining potential barriers to use among women, concern about side effects or health risks is particularly high in Haiti. About 51% of married women with unmet need cite side effects or health concerns as a reason for nonuse – the highest percentage globally. Additionally, 35% of never-married women with unmet need cite side effects or health concerns as a reason for nonuse – a percentage in the top 5 globally (Sedgh 2016). These stark percentages suggest that side effects or concerns about health risks are a common reason for nonuse among Haitian

women. This concern seems to be particularly high in Haiti - suggesting that either negative experiences with side effects from contraceptive methods are extremely prevalent or there is an ignorance of side effects from contraception methods and the ignorance serves as a deterrent to women's utilization.

1.5 - Social, Cultural and Political Complexity of Haiti's Unmet need

In Haiti, the unmet need for family planning is a peculiar problem that is deeply rooted in economic, social, cultural and political complexity.

Culturally, there does not seem to be an outward resistance to contraceptive use. Although Haiti does have a large Catholic population, opposition due to religious preferences is not a major consideration. In fact, many studies indicate that Haitian couples desire to have smaller families (Gonzalez 2016). Despite this desire, the use of contraception remains low, suggesting barriers to utilization of family planning. Another perplexing paradox is that Haiti has received twice as much FP assistance as any other country in the western hemisphere with minimal decrease in overall fertility rate (UNFPA 2011). These conflicting pieces of evidence suggest that it is not merely financial constraints that are preventing the uptake of modern contraceptives. Even when FP resources are being provided by aid organizations, there is unsuccessful implementation of this aid to reach women. This paradox shows the complexity of Haiti's unmet need and the challenges in delivering effective aid to the population.

In January 2010, Haiti's already fragile economy and tumultuous government was struck with a 7.0 magnitude earthquake. The earthquake destroyed infrastructure across the country including roads, hospitals and homes, severally impacting the health and well-being of citizens (Kent 2010). Additionally, shortly following the earthquake, Haiti was struck with another

disaster – a cholera outbreak that broke out due to UN peacekeepers bringing the disease to the region during their humanitarian relief efforts (Katz 2014). In the midst of these disasters, maintaining the provision of health services and providing sexual health and family planning services to displaced people was a major challenge. The disasters severally destroyed public and governmental sponsored health resources. In their place, private sector and nonprofit organizations filled the gap by offering basic medicines, food, water, nutrient supplements and contraception. In 2012, the public health sector hospitals provided only 23% of contraception use in the country while the private sector agencies provided 58.4% of all contraceptives (Ward). As a result, many citizens have become mostly dependent on NGOs and private organizations to provide healthcare. However, even within these private organizations there is insufficient provision of healthcare. According to recent studies, only 20.2% of women were provided with information on family planning during a recent contact with a health service provider (Haiti 2016 Core Indicator Data Sheets). These temporary private services are by no means a long-term solution and are problematic when envisioning the a sustainable, independent and prosperous health care sector for Haiti.

1.6 – Family Health Ministries and Previous Research in Léogâne, Haiti

This study adds to the growing literature of research on FP practices and FP decision making among Haitian women in Léogâne. Léogâne is a rural town located in the Ouest Department, 20 miles west of the capital Port au Prince. Léogâne was at the epicenter of the 2010 earthquake in Haiti. The town was severely damaged and the majority of the buildings and government infrastructure were destroyed. The Ouest Department of Haiti has been a target area for improved family planning and maternal and child health because, compared to the rest of the

geographic regions, it is the department that has: the lowest percentage of women using modern methods of contraception; the highest percentage of married women with an unmet need for family planning; and the lowest percentage of pregnant women who received antenatal care from a skilled provider and had births assisted by a provider skilled in obstetrics (Ministry of Public Health and Population 2013).

Family Health Ministries (FHM) has devoted many of their resources to research in maternal health and family planning, which is guided by local community priorities in hopes of improving health care programs in Léogâne, Haiti. Family Health Ministries has spent the last 25 years supporting Haitian-run programs and collecting data with the goal of improving maternal and child health. These programs include providing cervical cancer prevention and other maternal and child health services including prenatal care and more recently family planning services. Recently, FHM built the Carmelle Voltaire Women's Center, which includes a birthing center, women's outpatient clinic, education center and access to HPV screening in rural Tom Gato, Haiti in 2016 (“Partner Spotlight”). The women’s health center provides new opportunities to improve the community’s access to health care facilities. The establishment of the women’s health center is also a new opportunity for FHM to try to understand and address the paradox of family planning in Haiti - the high investment in family planning but underutilization of services – through education and research. A primary way Family Health Ministries addresses child and maternal health is through community health research. There is an ongoing community health research program that is being conducted in Léogâne by Family Health Ministries assisted by the Duke Global Health Institute. Several DGHI Master students have added to the research through Master’s theses (Chakhtoura 2012, Yang 2013, Loh 2015, Gonzalez 2016). Their findings provide a deeper context for the location of this research.

Chakhtoura concluded from her study that contraception use in Léogâne has been shown to be influenced by many factors including education, partner influence and fear of side effects. Fear of side effects was the most common reason women identified as not using contraception methods. Specific fears in young adult women were bleeding issues and fear of infertility resulting from contraceptive use prior to first pregnancy. Overall, the predominant factor associated with contraception use among women without children was education and the predominant factor among women with children was number of pregnancies and education. In women without children, a high school level education or higher was associated with 2.81 times greater odds of contraceptive use. In women with at least one child, a high school or higher education was associated with 1.5 times greater odds of contraceptive use. A history of previous pregnancies was associated with 1.28 times greater odds of contraceptive use.

In 2013, Yang investigated women's health beliefs about modern contraception through a series of 16 in-depth interviews with Haitian women living in Leogane of various reproductive ages from 18 to 49 years. The mean age of participants was 30.5 years and the majority of women were unemployed. Participants expressed a perceived threat of unintended pregnancy based in the beliefs that: (1) people can get pregnant by chance if they are not using any birth control; and (2) if unintended pregnancies happen, they will have a negative effect on people's lives. Despite the perceived threat, a majority (55.4%) of respondents do *not* think a FP method should be used before having the first-child. This is consistent with the negative attitudes participants in Chakhtoura's study had towards using FP before child birth. Their beliefs were consistent with their practices: of the 16 respondents, 15 reported that they first began using a birth control method after at least one childbirth (Yang 2013). It is interesting that despite a negative attitude towards unintended pregnancies, the belief that contraception should not be

used before a first-child persists. In addition to this prominent attitude, other perceived barriers of contraception identified by Yang included a fear of infertility caused by using contraception, a fear of side effects, and the financial cost of contraception use, including the cost of transportation to the clinic. Modifying factors that influenced women's beliefs included religious views, traditional contraception methods competing with modern contraception and peer advice from the community particularly community health workers.

In 2015, lack of knowledge about contraceptive methods among Haitian women was investigated by Hwee Min Loh in her qualitative study of the effect of peer-informed learning on increasing contraceptive knowledge among women in rural Haiti. Low levels of knowledge about modern contraceptive methods were reported, especially for LARC methods. The methods known by most participants were oral pills, injectables and male condoms. The methods known by the least participants were implants, IUDs, and female condoms (Loh 2015).

1.7 Hypotheses of Factors that could influence family planning usage

Taking the landscape of previous research into account and the paradox of family planning - the over donation of family planning but underutilization of services – there are several factors that could create barriers to family planning usage (**Figure 1**). The influencing factors range from macro structural factors to micro individual factors. Structurally, the lack of stable public health care facilities and an inadequate public health system across the country creates an accessibility barrier for all Haitian citizens. Because of the recent earthquake and political instability of the nation, establishment of a sufficient public health system has been fruitless and, as a result, many citizens have become mostly dependent on the uncoordinated efforts of NGOs and private organizations to provide healthcare. Because of the various types of

health service delivery centers (public vs. private, short term aid clinics, general hospitals, private clinics, etc.), there is a lack of consistency across providers and a lack of overall guidelines on the information providers should make available to patients during their visits. All these constraints are structural in nature and provide one category of factors that could create barriers to care.

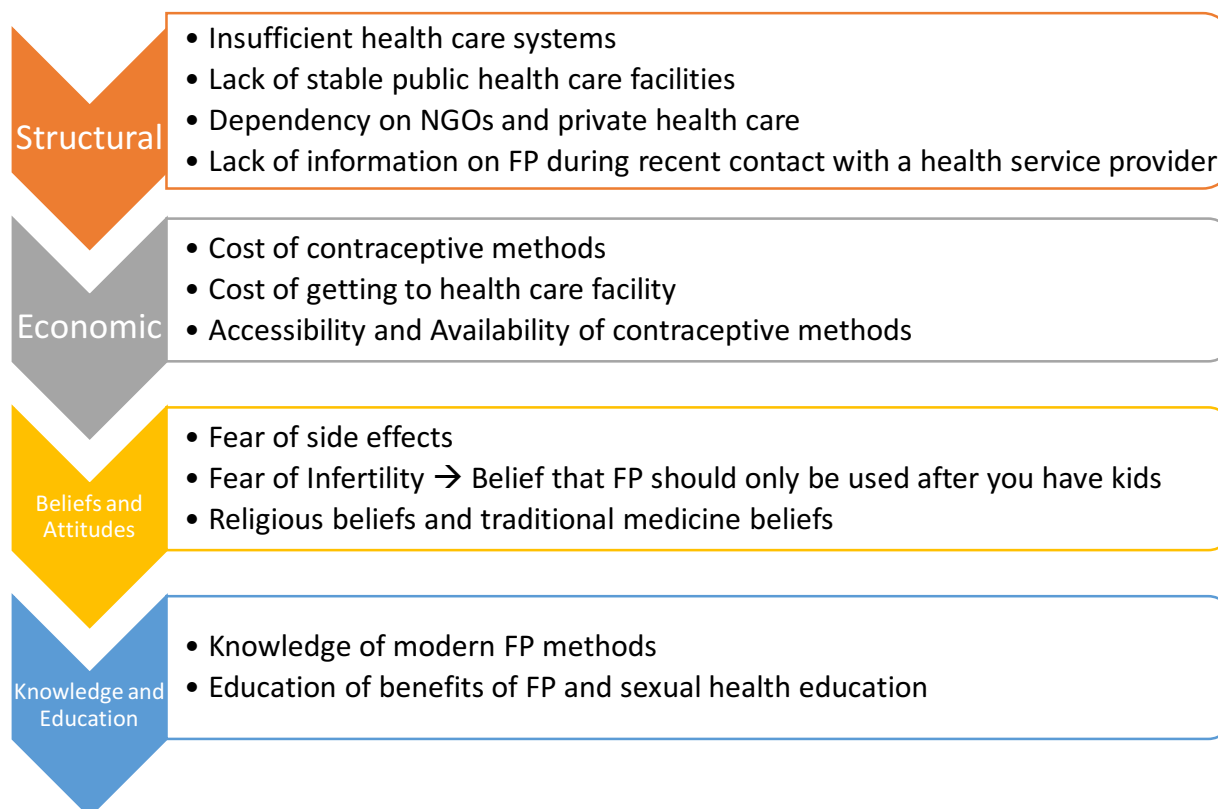


Figure 1. Factors that could influence Family Planning usage

On an individual level, the economic status of individuals is another category that can create a barrier to utilization. The poverty in Haiti is widespread and many families struggle to maintain enough funds for stable food, living and school costs. Thus, additional health costs of contraceptives, or getting to a health center that provides contraceptives, could be a major barrier to utilization.

Women's beliefs and attitudes surrounding the effectiveness and appropriateness of family planning and modern contraceptives influence their decision-making process. As was previously mentioned, research has shown that many women have a fear of side effects from starting a modern family planning method. The largest fear is a fear of infertility. This leads many Haitian women to the common belief that family planning should only be used after you have kids so that you do not risk infertility before you have children. Additionally, individual religious beliefs and community standards (or stigma) can influence women's individual attitudes and decision making.

Lastly, a lack of knowledge of modern family planning methods and the knowledge of their effectiveness can create barriers to utilization. It is interesting to consider the possible difference in knowledge of family planning as a whole, the knowledge of traditional vs. modern methods, and the knowledge of short term vs. long term methods. If women are not aware of all the different types of suitable methods, that lack of knowledge might explain some of the underutilization.

1.8 - Study Goals

Taken together, the previous research illuminates several beliefs about FP held by Haitian women in Léogâne specifically: it identifies factors that influence their decision to use contraception methods and insight into how contraceptive knowledge is spread among women informally through peers and social networks. Our study attempts to combine findings from these previous qualitative studies into a quantitative investigation of contraception and family planning knowledge, attitudes and practices among Haitian women in Léogâne.

The broad goal of this study was to understand factors that influence family planning usage among Haitian Women in Léogâne, Haiti to understand the paradox of high investment in family planning and low utilization of family planning. To meet this goal, the study has two objectives: 1) to describe the landscape of current family planning usage among Haitian women, and 2) to examine predictors of current family planning usage, specifically: (A) knowledge of the effects of contraception, (B) knowledge of contraception methods, and (C) attitudes toward family planning.

2. Methods

2.1 Overview

A cross-sectional survey was conducted on contraception knowledge, attitudes and practices. A population of 725 Haitian women in the rural Léogâne community was recruited via convenience sampling. The survey was interviewer administered in Creole over two eight-week periods in June/July 2015 and 2016. Statistical analysis was performed using RStudio to measure association of variables and differences among stratified groups in line with the proposed goal and objectives of the study.

2.2 Setting

This study was conducted in Léogâne, Haiti, which as stated earlier, is a rural town located 20 miles west of the capital Port-au-Prince and was at the epicenter of the 2010 earthquake. The town was severely damaged and the majority of the buildings and government infrastructure were destroyed. In the wake of the earthquake, the citizens remaining in the town were deprived of food, water, shelter and health care. The lack of health care infrastructure was a barrier to delivering health care to citizens then and now as the city continues to rebuild from the damage.

Léogâne is the home of many NGOs and aid organizations. Maternal and child health care in the town are delivered through the public hospital, NGOs and occasional private practices. Most pills and condoms are sold within the market or can be found at NGO health clinics. Hôpital Sainte Croix is the primary public hospital in Léogâne. In addition to the public hospital, a variety of small clinics and pharmacies provide medical consultation.

2.3 Participants and Procedure

Women aged 16 and above who lived in the Léogâne community were invited to participate. Convenience sampling was conducted in various villages and neighborhoods within the Léogâne Commune.

Procedure

A cross-sectional survey on knowledge, attitudes and practices about modern contraception was administered by a team of Duke University students with the help of local translators. Data were collected during two 8-week periods when Duke students conducted research placements in Léogâne: June to July of 2015 and June to July of 2016. No research incentives were provided. After the survey, educational information about reproductive health clinics, places to get birth control and places to receive further information about family planning were provided to participants upon request. All study procedures were approved by the ethical review boards at Duke University IRB and the Haitian IRB.

Participants were recruited from various neighborhoods in the Léogâne area. Women were invited to participate through an introductory statement explaining the research topic, the organization we were representing, and the purpose of our research. If participants were interested, informed consent was obtained. A consent form in both Creole and English was given to every participant. Because of low literacy levels in Haiti, the consent was verbally read to the participant by the translator to ensure full comprehension. The survey was translated before the study into Creole and the Creole copy was administered to participants by the translators.

Women verbally responded to the questions in Creole. The translator noted the response in Creole on the respective survey. The translator then translated the participant's response to English. The Duke students then recorded the English response and verified it to match with the corresponding question number and response code recorded on the Creole survey.

Throughout the research process, continuous communication between students and translators and participants was used to ensure that the meaning from the original English language was mirrored in the Creole translations and vice versa. Responses to the survey were recorded in an Excel-based data coding sheet that was maintained by Duke students.

Sample size

A total of 725 women were initially surveyed. The data was cleaned by excluding impractical and inadequate responses to eliminate data entry errors. Participants' data were disqualified from analysis if there was no response to questions or if there were incorrect responses to certain questions that provided evidence of coding errors within the data entries. For example, when question 42 was asked (Did you use any form of family planning method before, traditional or modern?), a "yes" response required that you would continue to question 43, while if you answered "no", you would skip to question 44. A failure on the part of the interviewer or the coder to follow the inherent logic of the survey framework resulted in data that was eliminated due to errors in data entry.

Through the data cleaning process, the study sample was reduced to 681 women (n = 681). Following this exercise, the data set was further adjusted to account for age. Women aged 16-50 were included in the statistical analysis. Women aged over age 50 were excluded as

women that were considered at low risk of pregnancy. The final sample size for statistical analysis was $n = 587$.

2.4 Measures

The survey was developed by Duke students based on previous qualitative studies conducted by Family Health Ministries on contraception and family planning (Yang 2013, Chakhtoura 2012). The qualitative findings provided a framework for the quantitative survey, which included four sections: (1) demographics, (2) contraception *knowledge*, (3) contraception *attitudes*, and (4) contraception *practices*.

Demographics

Women were asked their age, education level, employment status, whether they currently live with a male partner, whether they are sexually active, the number of children they have, and the number of children (if any) they plan to have in the future.

Family Planning Knowledge

Knowledge of contraceptive methods and family planning was assessed through questions that asked generally about the effectiveness of family planning methods to control pregnancy, such as: “Can using a family planning method help you decide if you want a child and when you want to have a child?” and “Can you get pregnant even if you used family planning but do not use it consistently or at least when sexually active?” The second half of the knowledge section listed eight common modern family-planning methods: Male Condom, Female Condom, Pill, Injectables, Implant, IUD, Tubal Ligation and Vasectomy. Participants

were asked to indicate if they know about the method, whether they know how to use the method, whether the method is used by men or women, how often the method needs to be used, whether the method requires visiting a health clinic, and whether it can be seen by your partner when used.

Attitudes

Attitudes about birth spacing and FP usage were examined through questions addressing three previous identified modifying factors (Yang 2013) in the contraception seeking process: religious beliefs, competing traditional birth control methods, and the influence of peer interactions. Participants were asked if they believed peers and religious communities would accept that they use a FP method. Knowledge of traditional family planning methods and perceived effectiveness of traditional methods was also assessed. Finally, negatives attitudes towards unintended pregnancies was examined by asking participants whether unintended or unwanted pregnancies are undesirable consequences to family life and whether a family-planning method should be used before having the first child.

Practices

Participants were asked whether they had ever used family planning before. If so, participants were asked if they were still currently using the method. If they were currently using a family planning method, the type of FP method, duration of use, experience of any side effects, and satisfaction with the method were recorded. If not, the reason why they stopped using this method was recorded. If participants had never used a FP method before, they were asked: (1)

whether they would ever consider using a FP method in the future; and, if not, (2) what was their primary reason for deciding not to use modern FP.

Predictors of Family Planning Usage

The independent variables used to determine significant predictors of family planning usage were based on responses to questions in the survey. The independent variables were the three categories: (1) Knowledge about family planning; (2) Knowledge of family planning methods; and (3) Attitudes.

Knowledge was constructed as a predictor variable in two ways: “Knowledge about family planning” was used to evaluate the participant’s general knowledge of how family planning can prevent pregnancy. It was scored on a scale of 0-4, and 1 “point” was awarded for each “correct” answer to a knowledge question on the survey. The following 4 questions are included in this measure (See Appendix 1 for full survey):

Question 14: Can using a family-planning method help you decide if you want a child and when you want to have a child? (y/n)

Question 15: Can using a family-planning method prevent you from having any unwanted/unintended pregnancies? (y/n)

Question 16: Can you get pregnant even if you used planning but do not use it consistently or at least when sexually active?

Question 18: If you are using a non-permanent family-planning method and you are ready to have a child now, do you agree that you can stop using a family-planning method anytime?

The second way knowledge was evaluated is “Knowledge of family planning methods”. This measure was used to evaluate the participant’s knowledge of the 8 modern family planning methods asked about in question 21: Pills, Injectable, Male Condom, Female Condom, Implant, IUD, Tubal Ligation, Vasectomy and Female Condom. It was scored on a scale of 0-8 and 1 point was awarded for knowing each method.

Lastly, attitudes will be used as an independent variable. Various questions from the “Attitudes” section of the survey were used (See **Appendix 1**). Questions will be analyzed individually so that it can be determined which attitudes act as strong or weak predictors.

2.5 Statistical Analysis

All survey responses were coded on a numerical scale and inputted into a Microsoft Excel spreadsheet. Data were then imported from Excel into RStudio, which was used for all statistical analysis.

Aim 1: Landscape of Family Planning

To describe the landscape of current family planning usage among Haitian women in the Léogâne area, I analyzed from my sample: (1) The knowledge of modern family planning methods (both short acting and long acting); (2) The methods of contraception that were most often used; and (3) The most common reason women stopped using contraceptives. These characteristics were analyzed on a basic level generating basic percentages and proportions. The proportions were then compared between 4 subgroups: (1) Women who have used FP methods in the past and still use them; (2) Women who have used FP methods in the past and stopped using

them; (3) Women who have never used FP methods but would consider using a modern FP method in the future; and (4) Women who have never used FP methods and would not consider using a modern FP method in the future. The proportions were compared through a Z-test of proportions. Differences between proportions were identified as significant by a $p < 0.05$ standard significance.

Aim 2: Predictors of Current Family Planning usage

To examine predictors of current family planning usage, a multiple logistic regression was used. The nominal/dependent variable was the use of family planning which is examined on a binomial scale: 0 = no FP, 1 = FP usage (Answers to Question 42 from survey). The independent variables were the three categories: (1) Knowledge of family planning; (2) Knowledge of family planning methods; and (3) Attitudes. The best multiple logistic regression model was found by optimizing by lowest AIC value. A full model was compiled first, and then variables were excluded until the optimal model was found. The model with the lowest AIC value was chosen as the optimal predictive model.

3. Results

3.1 *Demographics*

Table 1 shows the demographic characteristics of the sample. The study included 587 female women aged 16-50 years old. The mean age of respondents was 29.8 years old ($SD \pm 8.7$) and the median age of participants was 28 years old. Participants varied in education level. The majority of participants had completed high school (44.5%), and a quarter (26.5%) had completed only elementary school. Of the participants, 11.0% had never gone to school. A majority of participants were unemployed (60.7%) with the second highest percentage of participants identifying their work status as “other”, of which the responses mostly identified self-employment jobs such as a saleswomen (selling food, goods or supplied), or a cook. Slightly over half of the participants were sexually active (52.8%). The percentage of participants that lived with a male partner (52.8%) and did not live with a male partner (47.2%) were close and reflected no major trend in this demographic characteristic. The majority of participants have children (77.3%) with the median number of children being 2 children per woman.

Table 1. Demographics of Population (n = 584)

Demographics	n (%)
Age	
14-24	186 (31.9%)
25-33	223 (38.2%)
34-42	113 (19.4%)
43-50	62 (10.6%)
Mean age	29.8 (SD±8.7, range = 16-50)
Median age	28
Education Level	
Never went to school	64 (11.0%)
elementary (Grade 7-11)	155 (26.5%)
Middle (Grade 3-6)	72 (12.3%)

High School (Grade 0-2)	260 (44.5%)
Post-high school	33 (5.7%)
Work Status	
Not employed	353 (60.8%)
job with salary	34 (5.9%)
unpaid work	3 (0.1%)
Other	191 (32.9%)
Live With a Male Partner	
no	276 (47.2%)
yes	309 (52.8%)
Sexually Active	
no	146 (25.00%)
yes	438 (75.00%)
Children	
no	132 (22.7%)
yes	449 (77.3%)
Mean number of children	2.3 (SD \pm 1.8, range 0-17)
Median number of children	2

3.2 Landscape of Current Family Planning

Family Planning Usage

Table 2 shows the stratification of participants into 4 groups based on current use or nonuse of modern family planning: (1) Women who have used FP, and still use FP; (2) Women who have used FP, but stopped using FP; (3) Women who have never used FP, but would consider using; and (4) Women who have never used FP, and would not consider using it in the future. Among participants, the majority of women have used FP (75.9%), but this group was generally evenly split between group 1 and 2. About 39.7% of women have used family planning methods and are still using them and 36.2% of women have used family planning

methods but stopped using them. 16.3% of participants have never used FP and would consider using it, while 7.9% of participants have never used FP and would not consider using it in the future.

Table 2. Family Planning usage among 4 subgroups of women

Used, still using	Used, stop using	Never use, would use in future	Never used, would not use in future	Total
227 (39.7%)	207 (36.2%)	93 (16.3%)	45 (7.9%)	572 (100%)

Knowledge

The percentage of participants from each of the 4 stratified groups that indicated that they knew about each method can be seen in **Table 3**. Knowledge of each method was highest among women who have used and are still using contraception for all methods except tubal ligation, of which knowledge was highest among women who have used and stopped using. In each group, pills and condoms (short-acting methods) were the methods most women knew about. In each group, IUDs were the least known about method. The group of women who never used and never would consider using FP methods had the lowest knowledge of all FP methods across the board.

Table 3. Knowledge of Modern Family Planning Methods

FP Method	FP Usage Group				Total (n = 572)
	Used / still using (n = 227)	Used / stop using (n = 207)	Never used / would use in the future (n = 93)	Never used / never would use (n = 45)	
Pills	92.3%	90.6%	77.6%	70.4%	82.7%
Injectable	89.3%	86.5%	73.3%	57.8%	76.7%

Male Condom	97.9%	96.4%	93.9%	87.3%	93.9%
Norplant	70.9%	63.7%	56.0%	52.1%	60.7%
IUDs	13.3%	9.4%	12.1%	14.1%	12.2%
Tubal Ligation	70.1%	72.7%	54.3%	57.8%	63.7%
Vasectomy	17.9%	16.6%	16.4%	16.9%	17.0%
Female Condom	65.8%	53.4%	40.5%	35.2%	48.7%

Family Planning Practices

The most common FP method used by the cohort of women who have used FP before and are still using was male condom (39.0%) (**Table 4**). The second highest reported method was injectable (36.7%), followed by pills (6.0%), tubal ligation (4.1%) and Implant (2.3%). IUDs, female condoms, and vasectomy were all methods identified by less than 1% of the population. The results are reflective of the contraceptive methods women were on at the time the survey was conducted, so women only reported 1 method.

Table 4. Family Planning Method use (n = 218)

Family Planning Method	<i>n</i>	%
Male Condom	85	39%
Injectable	80	36.7%
Pills	13	6.0%
Male Condom and Implant	1	0.5%
Tubal Ligation	9	4.0%
Other	8	3.6%
Implant	5	2.3%
Traditional Methods	4	1.8%
Don't Know	2	0.9%
Vasectomy	1	0.5%
Female Condom	1	0.5%
IUD	1	0.5%
Pills and Injectable	1	0.5%
None	7	3.2%
<i>Total</i>	<i>218</i>	<i>100.0%</i>

The most common reason women stopped using contraception was *experienced side effects* (**Table 5**). A total of 34.6% of women reported this reason as why they stopped using the FP they were using previously. The second most common reason identified was *doesn't have a husband/regular sexual partner* (17.3%), the third was *wanted children again* (12.1%) and the fourth was *no longer sexually active* (6.9%).

Table 5. Reason for Stopping Contraception

Reason	n	%
Side effects	80	34.6%
Other - Doesn't have husband/partner	40	17.3%
Other (nonspecified)	28	12.1%
Wanted children again	18	7.8%
Not sexually active	16	6.9%
Other - menopause / too old / infertile / didn't get period	14	6.1%
Other - didn't want to	11	4.8%
Other - currently pregnant	9	3.9%
No Answer	7	3.0%
Other - Kids/had baby recently	6	2.6%
Partner opposition	2	0.9%
<i>Total</i>	<i>231</i>	<i>100.0%</i>

3.3 Differences in Attitudes and Knowledge Among 4 Subgroups of Women

Table 6 shows the comparison of various characteristics and attitudes across the four subgroups. The percentage of sexually active women amongst the 4 groups remained relatively consistent across each group, suggesting that women who use contraception and don't use contraception have similar levels of sexual activity. Similar percentages were seen for women desiring to have more children. This suggests that the demographic percentages are reflective

across each subgroup for “sexually active” and “more children”. Across all 4 groups the majority of women did not plan their previous pregnancies (57.5%, 57.2%, 54.4% and 59.1% respectively).

Of all the comparisons, there were only two statistically significant difference. A significant difference was found when participants were asked *Do you know where to get MFP methods?* Compared to women who use family planning, there is a statistically significant higher percentage of women who have never used family planning but would consider using it in the future that do not know where to get modern family planning methods ($n = 7$ (7.8%), $p = 0.0158$).

There was no statistically significant difference between the four groups regarding who participants thought should use a family-planning method. The majority of participants believed that either women or both women and men should use a family-planning method. Across all four groups, a low percentage of participants identified that men should use family-planning.

When participants were asked who should decide whether to use a FP method, a large number of participants across all 4 groups identified themselves as the primary decision makers. However, one group identified themselves and their partner at a significantly higher percentage. Compared to women who use family planning, there is a statistically significant higher percentage of women who have never used family planning but would consider using it in the future that believe that both themselves and their partner should decide whether to use a family planning method ($n = 45$ (48.4%), $p = 0.04365$).

The majority of participants reported that both their community and religion allow family-planning methods. The second most common answer was that only their community allowed. A slight majority of participants prefer a short-term method compared to a long-term

family planning method. The majority of women in each group (60.4%, 50.5%, 54.8% and 59.1% respectively) indicated that they believed FP should be used before the 1st child. There were not any significant difference among the percentages across the 4 groups.

Table 6. Landscape of Family Planning usage among 4 subgroups of women

	Used, still using	Used, stop using	Never use, would use	Never use, would consider	Total
	227 (39.7%)	207 (36.2%)	93 (16.3%)	45 (7.8%)	572 (100%)
Sexually Active					
no	64 (28.3%)	48 (23.4%)	18 (19.4%)	11 (24.4%)	141 (24.8%)
yes	162 (71.7%)	157 (76.6%)	75 (80.7%)	34 (75.6%)	428 (75.2%)
Children					
no	45 (20.1%)	45 (21.8%)	25 (27.5%)	9 (20.0%)	124 (21.9%)
yes	179 (79.9%)	161 (78.2%)	66 (72.5%)	36 (80.0%)	442 (78.1%)
Did you plan to have your children?					
no	127 (57.5%)	115 (57.2%)	50 (54.4%)	26 (59.1%)	318 (57.0%)
yes	94 (42.5%)	86 (42.8%)	42 (45.7%)	18 (40.9%)	240 (43.0%)
Do you know where to get MFP methods?					
no	3 (1.5%)	10(5.3%)	7 (7.8%)* (p = 0.0156)	1 (2.4%)	21 (4.0%)
yes	202(98.5%)	177(94.7%)	83 (92.2%)	40 (97.6%)	502 (96.0%)
Who do you think should use a family-planning method?					
men	6 (2.7%)	5 (2.5%)	4 (4.4%)	2 (4.4%)	17 (3.0%)
women	110 (49.1%)	108 (52.9%)	50 (54.4%)	18 (40.0%)	286 (50.6%)

both	108 (48.2%)	91 (44.6%)	38 (41.3%)	25 (55.6%)	262 (46.4%)
Who do you think should decide whether to use a FP method?					
myself	106 (47.3%)	88 (43.6%)	30 (32.4%)	19 (42.2%)	243 (43.1%)
my partner	24 (10.7%)	29 (14.4%)	15 (16.1%)	6 (13.3%)	74 (13.1%)
myself and my partner	88 (39.29%)	77 (38.12%)	45 (48.4%) (p = 0.0437)	19 (42.2%)	229 (40.6%)
other	3 (1.33%)	6 (2.97%)	2 (2.2%)	0	11 (2.0%)
don't know	3 (1.33%)	2 (0.99%)	1 (1.1%)	1 (2.2%)	7 (1.0%)
Does your community or religion allow family-planning methods?					
only community	67 (30.0%)	53 (26.3%)	24 (25.8%)	15 (33.3%)	159 (28.2%)
only religion	5 (2.2%)	5 (2.5%)	3 (3.2%)	1 (2.2%)	14 (2.5%)
both allow	141 (63.2%)	134 (66.3%)	60 (64.5%)	25 (55.6%)	360 (63.9%)
both don't allow	4 (1.8%)	3 (1.5%)	2 (2.2%)	2 (4.4%)	11 (2.0%)
don't know	6 (2.7%)	7 (3.5%)	4 (4.3%)	2 (4.4%)	19 (3.4%)
When choosing a family-planning method, will you prefer a short or long-term method?"					
short-term	125 (55.3%)	123 (59.7%)	55 (60.4%)	23 (57.5%)	326 (57.9%)
long-term	101 (44.7%)	83 (40.3%)	36 (39.6%)	17 (42.5%)	237 (42.1%)
Do you think FP should be used before the 1st kid					
1 = yes	137 (60.4%)	104 (50.5%)	51 (54.8%)	26 (59.1%)	312 (55.3%)
0 - no	44 (19.4%)	51 (24.8%)	23 (24.7%)	11 (25.0%)	129 (22.9%)
0 no (but yes to condoms)	46 (20.3%)	51 (24.8%)	19 (20.4%)	7 (15.9%)	123 (21.8%)

*= significant difference $p < 0.05$

3.4 Predictors of Family Planning Use

The multivariate model identified the following 3 attitude variables as significant predictors of contraception use ($p < 0.05$): (1) Thinking that unintended or unwanted pregnancies are undesirable consequences to family life, (2) Family-planning methods are convenient to get, and (3) Family planning methods are effective. The multivariable logistic model with the lowest AIC value was chosen as the optimal model. It had an AIC value of 594.91 (**Table 3**). Of the variables that were included in the optimal model (See **Table 3**), only the three mentioned previously were significant. Given these three significant variables, our model predicts that women who believed unintended or unwanted pregnancies are undesirable consequences to family life, believed family planning methods are accessible and believe family planning methods are effective *have elevated odds of using family planning*.

Table 6. Optimal model for predicting family planning use.

Attitude		p-value	OR
<i>Sum of knowledge score</i>		0.168	1.05
<i>Can starting a family planning method now affect my chances of getting pregnant later</i>	Yes	0.146	0.95
<i>Do you think that unintended or unwanted pregnancies are undesirable consequences to family life?</i>	Yes	0.014*	2.07
<i>Do you think Family Planning should be used before having the first child?</i>	No, but yes to condoms	0.145	1.62
	Yes	0.984	1.01
<i>Are family-planning methods generally affordable?</i>	Yes	0.425	0.80

<i>Are family planning methods convenient to get?</i>	<i>Yes</i>	<i>0.021*</i>	<i>0.86</i>
<i>Are family planning methods generally effective?</i>	<i>Yes</i>	<i>0.044*</i>	<i>1.61</i>
	Don't know	0.473	1.22

*= significant predictor $p < 0.05$

4. Discussion

4.1 *Summary of Results*

The majority of women have used contraception before but there is an even split between women who continue to use and who stop using. The most popular reason participants stop using FP was because of side effects. The top modern family planning methods used by this community are injectables and male condoms. Both use and knowledge of short acting reversible contraceptive methods (SARC) is higher than long acting contraceptives (LACs). LACs such as IUDs, implants and tubal ligations are not well known or utilized by the population.

There were 2 statistically significant differences when the attitudes of four subgroup were compared to one another: (1) accessibility (2) family planning decision making autonomy. Compared to women who use family planning, there is a statistically significant higher percentage of women who have never used family planning but would consider using it in the future that do not know where to get modern family planning methods and believe that both themselves and their partner should decide whether to use a family planning method. Knowing where to get modern family planning methods is a factor that influences women's ability to access family planning series and this lack of accessibility could show that structural and economic barriers that perpetuate unmet need. Among some women, particularly those whom have never used contraception but would consider using it, they think decisions regarding family planning should be made by *both* themselves and their partner.

Our findings emphasize a need for (1) educating women about the effectiveness of FP methods and their side effects, (2) counseling women through changes in family planning methods, and (3) understanding the joint decision-making process about family planning

between the women and their partner. These efforts will help tackle the factors and barriers that perpetuate the unmet need for family planning among Haitian women.

4.2 Commentary on Results and Future Research Suggestions

Landscape of Current Family Planning

The results of this study add to the growing literature of research on FP practices and FP decision making among Haitian women, particularly in the Léogâne community. In this study, the majority of women had used contraception before (75.88%). Our study reported a higher percentage of women who have used some form of family planning compared to *Chakhtoura 2012* (58%). Chakhtoura's analysis showed that the most common modern contraceptive used was injectables (57%) followed by male condoms (32%). Our results confirm these top two choices at slightly lower percentages (36.7% and 39.0% respectively). Although our results show lower percentages, the Chakhtoura study did not include LAC methods such as implants and IUDs as our study did. This likely accounts for the discrepancy; however, our results taken together with the Chakhtoura study are strong evidence to suggest that male condoms and injectables are the most popular FP methods used in the Léogâne population. As such, both studies highlight the high use of SARC methods compared to LACs.

While it was clear that the use of SARC methods was higher than LACs, women's preference for a method was less clear. Our results found that when participants were asked, "When choosing a family-planning method, will you prefer a short (i.e. 1-3 months) or long-term (more than 2 years) method?", the slight majority of participants preferred a short-term method compared to a long-term family planning method. However, there are a wide variety of methods

even within short acting and long acting methods. These methods can be further divided into reversible/permanent SAC and LAC methods. LAC methods such as IUDs are long term, but reversible, while tubal ligations and vasectomies are very much permanent. Future research should examine these methods more closely and preference for reversible/permanent methods should be taken into account. As mentioned before, only one-third of facilities in Haiti provide a mix of family planning methods (at least one long-term-acting method, one short-term-acting method, and one barrier method) (Mallick 2017). The availability of a variety of methods is thus non-consistent and low. It is important to fully understand the preference of women in the future to better equip health facilities with the most accepted methods.

While the high percentage of women who had used contraception before is encouraging, what was more surprising was the almost equivalent division between those who are still using contraception (39.69%) and those who have stopped using contraception (36.19%). This percentage is similar to the nationally reported 31.3% contraceptive prevalence rate (Ward). Among the participants who have never used contraception before (24.22%), there are more participants that would consider using contraception in the future (16.26%) compared to those that would never use it (7.86%). Taking these percentages into consideration, there emerges a percentage of women who have a desire to start using contraception or use another method. There is a portion of the women in the 36.19% group that stopped using family planning for rationale reasons such as wanting to have children again, not being sexually active, or being too old. However, there is still a significant proportion of women in this group with an unmet need consisting of women (A) who would like to use contraception in the future but don't currently, and (B) have used contraception in the past but stopped using it. Both of these sub-groups could suggest that there are barriers in being able to start a method or continue a method. Although it is

not a perfect approximation, unmet need of Haitian women can be approximated by considering these two subgroups - those whom have stopped using contraception and those whom have never used but would use in the future.

This study shows that use and knowledge of long acting contraceptive methods such as IUDs and implants is low across all participants. Amongst all four participant groups, IUDs were the least known method (average 12.21%) and IUDS were the least utilized method by participants (0.50%). Future research on the perception and accessibility of IUDs in Haiti should be conducted, especially given the relative effectiveness of IUDs and low side effects (Colquitt 2017). As identified by this study, the most popular reason participants stopped using family planning was because of side effects. Thus, efforts to advocate for methods (such as IUDs) that reduce side effects among women should be a priority for future educational interventions.

Factors that influence utilization

When comparing characteristics, knowledge, attitudes, and beliefs of women across the four different subgroups, there were two statistically significant differences. These two differences point to possible factors that could contribute to the barriers in utilization. Both of the statistically significant difference occurred in the group of women who have never used contraception before, but would consider using in the future.

The first significant result of our findings is that significantly more participants did *not* know where to get modern family planning methods in the never use, would use group. This finding provides evidence of two macro-factors – structural barriers and economic barriers (Figure/Flow chart 1). If women do not know where to get modern family planning methods, it could be a result of insufficient health care systems and/or the lack of stable public health

facilities. In rural communities, SARC methods such as condoms and pills are often sold on the streets or at the market and bought outside of a health clinic or pharmacy. Many women use this as the source of their family planning. This reality and our results suggest that there is a need for stable clinics and pharmacies to reach and fulfill the contraception needs of women, especially in rural communities. Having a reliable, dependable place to get modern family planning (SARCs and LACs) could decrease the structural barrier to contraception utilization facing women.

Additionally, as identified by this study, the most popular reason participants stopped using family planning was because of side effects. This issue of side effects is a multi-factorial problem. There are potential side effects from any family planning method, thus the elimination of side effects entirely is unlikely. However, treating the side effects that do occur and providing women with education about the side effects of each method and what to do if unwanted side effects occur are changes that can be implemented. If the place a woman received the family planning method doesn't provide an opportunity to discuss side effects that occur after she's received the method, then treatment of those side effects is unlikely and this could result in a women stopping the use of family planning. Likewise, the absence of a permanent clinic to receive follow up care can exacerbate side effects, and this is a concern that has been expressed by Haitian women before (Walmer 2018). The presence of reliable, dependable venues to get family planning and receive follow up gynecological care could help decrease the issue of side effects as a barrier to contraception utilization.

Economically, accessibility or availability of contraceptive methods could be an explanation of why women do not know where to get MFP methods. In light of our original hypothesis and proposed model of factors (Figure/Flow Chart 1), accessibility and availability were grouped in the "economic" category. Logically, these results suggest that if economic

resources could be provided to women, the problems of accessibility and availability would be alleviated. For example, more contraceptives (increase supply) would increase the availability. More funding towards providing free or discounted contraceptive methods would increase the availability. Increasing transportation to clinics or the proximity of clinics to women (by establishing more clinics, providing mobile services or providing financial assistance to cover bus or taptap fare) could increase the ease of accessibility. Women who have never used contraception, but would consider it, would have fewer barriers to utilizing contraception and thus would be more likely to start using it.

However, this logical progression is not as simple as it seems. Previous research has shown that Haiti has received twice as much family planning assistance as any other country in the western hemisphere with minimal decrease in overall fertility rate (UNFPA 2011). This suggests that despite the provision of economic resources, there is a gap in the successful implementation of this aid. In light of our results and the previous research, it seems like the financial family planning assistance that Haiti has received has not been efficiently put to use. Our findings call for more attention or direction of funds/resources to alleviating the problems of accessibility and availability. Direction of funds into long-term clinics, or direction of funds to support the transportation to clinics could provide needed support in these areas by providing women with stable health clinics and the means to accessing the clinics instead of merely throwing money at the supply side of contraceptive services. Clearly, more research should be done into the economics of the spending of UNFPA funds and how the financial assistance has previously been put to use and what changes could be made to restructure the financial aid distribution system.

The second significant finding is that there was a statistically significant difference in the number of participants in the “never used, would use” group who identified *both themselves and their partner* as people who should decide whether to use a FP method. Significantly more women reported that they believe themselves and their partner should decide whether to use a FP method. This suggests that there is more co-decision making among women who have never used contraception but would consider using it. Thus when counseling women in this situation, it is important to consider both the women’s knowledge and decision-making attitudes, as well as their partner’s. Women who would consider using FP in the future likely will need either approval from their partner or have their partner involved in the decision-making process.

Overall, the responses of women to questions about autonomy in FP decision-making show an increase in autonomy among women compared to previous studies conducted in the Léogâne area. Chakhtoura discusses partner influence in her master thesis results highlighting factors that influence contraception decision making. One of the “influences” on contraception decision making Chakhtoura identified as significant was partner influence. Men were reported as the contraception decision maker 26% of the time, woman 7%, both 14%, and don’t use contraception/didn’t answer was recorded 53% of the time. The results from our study do not align with this previously reported data. In our study, 43.1% of women reported that they should decide whether to use family planning, 40.6% said they and their partner should decide and only 13.1% said their partner should decide. This differs from the results of the Chakhtoura study that suggested that women have lower autonomy in FP making decisions. Our results suggest that many women are confident in making reproductive decisions themselves. Our results seem to suggest that now either only women are making decisions, or more men are making decisions alongside women and that the decision-making process is a mutual one. These results highlight

the importance of educating and discussing family planning with both men and women so both partners can be informed.

4.3 Implications for Practice

Family Health Ministries is in a unique position to be a leader of action in providing family planning services to women in Léogâne. As an organization with more than 25+ years of experience serving the Haitian community, they are a trusted and valued organization in the community. The organization is an ideal model when considering the promotion of long term, sustainable, clinical care. They can be the stable health care facility and pharmacy many Haitian women lack. Women living in the rural villages of Léogâne and in the more rural surrounding area of Fondwa are in particular at a disadvantage in accessing health services as the public hospital and most of the major clinics are in the city. Despite the high density of private organizations and NGOs in the area, there is a lack of women specific health clinics and few of these NGOs reach the rural villages.

In 2016, Family Health Ministries in partnership with the Building Goodness Foundation built The Carmelle Voltaire Women's Health Center – a health center specifically focused on maternal health in the rural Fondwa/Tom Gato area with the goal of increasing safe delivery of Haitian infants, reducing maternal and child birth-related deaths and expanding access to skilled birth attendants for the rural community. It is estimated the community surrounding the birthing center has approximately 20,000 women of whom 56% are 15-54 years of age. This means that the clinic has the potential to provide outreach, education and direct services to approximately 11,200 women in the community of Tom Gato in the Fondwa area (just outside Leogane). In

addition to birthing services, the clinic has a pharmacy and full time OB/GYN physician that can offer education and provision of family planning services.

Family Health Ministries is in a unique position to implement family planning education services, increase knowledge of various contraceptive methods, and provide contraception to a population of women who previously had limited availability and accessibility. In particular, promotion of the clinic and pharmacy can attract women who have never used contraception before but would consider it, which in turn would alleviate some of the unmet need many women face. The results of this study point to important factors that should be considered when crafting interventions, specifically education interventions.

In addition to increasing the delivery and accessibility of services, it is essential to improve the *quality* of services. This responsibility falls mainly on health care workers, nurses, and providers. Providers are in a unique position to educate women about various methods and the effectiveness of each method. Our findings emphasize a need for increased attention on: (1) educating women about the effectiveness of FP methods, (2) negotiating women through changes in FP methods, and (3) the joint decision-making process about family planning between the women and their partner.

As shown by this study and others, knowledge of LACs is generally low across all demographics of women. Providers and health clinics can fill this gap in knowledge and educate women on the effectiveness of LACs. The belief that family planning methods are effective is one of the significant factors predicting contraceptive use, so proper knowledge of effectiveness should be a priority.

Additionally, staff should be trained to increase the provision of accurate information of various methods and side effects and be able to facilitate conversations on the use of various

methods and how to switch methods. Our results show that a significant percentage of women have used contraception before but have stopped using their previous method. Studies show that many women stop using contraception because of undesired side effects (Sedgh 2016). This concern is particularly high in Haiti – suggesting that either negative experiences with side effects from contraceptive methods are extremely prevalent or there is a lack of knowledge of side effects on contraceptive methods and the lack of knowledge serves as a barrier to women’s utilization. Thus, it is essential that health care providers be trained to facilitate conversations on changing methods and *continuing* contraception use while still sexually active after periods of stopping – whether that is from undesired health effects, pregnancy, or another reason. Also, health care workers should be aware of the varying situations of partner’s making FP decision. Our results showed that many women experience a situation where their partner is equally involved in making the decision about family planning. In practice, health care workers should incorporate this nuance into their counseling and explore educating and discussing family planning with both men and women so both partners can be informed.

4.4 Limitations

One limitation of our study was the broad age range of participants. Our study initially included women aged 16+ , and then the age range was limited in our analysis to include women aged 16 – 49. This wide age range can be a strength of the study because it reflects the population of all women in the Léogâne area more accurately than an age limited study. However, it is also a limitation in generalizability. It is well known that family planning decisions may differ among adolescents, young adults, middle-aged adults, and older adults who are post-child bearing age (Darroch 2016). Young women face specific challenges to obtaining

family planning services due to societal stigma around pre-marital sex and fear of unintended pregnancies. Additionally, many adolescent women are rarely financially independent from their parents until they are older or married. The lack of autonomous financial resources creates a barrier to accessing contraception which increases the unmet need among this age group (Darroch 2016).

It would be interesting to see if the answers, particularly attitudes, are different amongst age groups. In the future, I would suggest that studies be designed to target specific age groups to identify particular factors that influence their use of contraception (maturity, money, spouse, desire to have children) from young adolescents to middle aged adult.

Another limitation in the restricted age range is excluding women aged 50+. The restriction was intended to narrow the analysis on women who were making current decisions about family planning use. Women above 50+ were assumed to be past menopause and thus not fertile and actively making reproductive health care decisions. In an effort to achieve my objective of analyzing the *current* landscape of family planning, these women were excluded. However, the excluded age group is a group of women who have had a life-time of experiences making reproductive health care decisions. They likely have insight and knowledge to share and, while they may not be in need of contraception currently, they have experience of what has and hasn't worked and advice for changes they would have made to their use, or non-use, of family planning.

Based on our data collection methodology, stay at home mothers and village sellers may have been over-represented and working women may have been under-represented. Our surveys were conducted by walking door-to-door through neighborhoods in Léogâne during the day. We approached and asked women to participate and the women who were around their houses during

the day, either doing laundry, looking after kids, etc. were usually the women to elect to participate. Thus, the majority of the women that participated were stay-at-home women, unemployed women, or women selling goods or food in the neighborhoods. On the other hand, working women were under-represented because where our recruiting occurred (homes) and the time our recruiting happened (morning/middle of the day) do not favor the recruitment of working women.

Social-desirability bias and respondent bias may also have impacted the validity of our data. The social-desirability response bias recognizes that research participants are often concerned with how they will be perceived and evaluated by researchers or by other participants (Leary 2012). As a result, participants will provide results that they think will reflect better on themselves rather than their honest answers. In our study, this could have impacted the “knowledge of modern contraception methods” responses and the attitudes section. The influence of the social-desirability bias can make it difficult for participants to admit that they do not know a certain method. When participants were asked if they knew about the 8 types of contraception methods, their responses were self-declared which could inaccurately reflect their knowledge of methods in order for the participant to seem more knowledgeable than they actually were. Social desirability response bias can lower the validity of measures. Thus, the “knowledge” and even some “attitudes” measures used in this study should be interpreted with caution.

Respondent bias may have occurred in this study since contraception and sexual activity are sensitive issues. Respondents may have lied or provided inaccurate information in order to protect themselves and their privacy.

Another limitation of this study is that it did not account for male's use of contraception or their family planning attitudes, knowledge and beliefs. Contraception decisions may be made as couple decisions rather than individual decisions. In fact, since many women answered that "both me and my partner decide" upon matters of using family planning or having children, it is important to look at the male perspective in decision making. In the future, it will be important to interview men and women. It would be interesting to see if the answers of men differed from women, and/or if answers differed among married couples and single participants. The results about the autonomy women have in making reproductive decision were not significantly conclusive in one way or the other. Thus, the complexity with which gender roles, gender expectations and decision making impact family planning decisions of women and their partners should continue to be explored in the future.

Additionally, our survey did not account for religion as a demographic characteristic. Although women were asked if their community and religion allow family-planning methods, specific religion and religious denomination were not asked. In general, 80% of Haitian citizens are Roman Catholic and most of the remaining citizens are part of various protestant groups (U.S. Department of State). A recent analysis of Family Health Ministry's CareHPV intervention indicated that there was division in Christian denomination geographically between Catholic and Protestant-affiliated people (Walmer 2018). The majority of study subjects in the Tom Gato/Fondwa area identified themselves as Catholic-affiliated while in Port-au-Prince a majority identified themselves as Protestant-affiliated. One would expect that contraception would not be favorable in dominant Catholic communities. Thus, our results are perplexing and counter the expectation. This could suggest that either rural Catholics are more likely to believe that contraception is okay with the church, or perhaps our sample unintentionally over-sampled

Protestant-affiliated groups. Alternatively, this scenario could reflect a change in the Catholic church's recommendation about contraceptives in light of Haiti's severe poverty. The Catholic Church may have altered contraceptive recommendations in light of the food insecurity and employment challenges which undergird increased population and high fertility rates. It would be interesting in the future to gather data on specific Christian denominations and other religious affiliations of our participants. This data could offer insight on differences between particularly resistant or accepting religious communities.

One of the biggest limitations in the research project was the coding of the survey answers onto the excel sheet of all survey answers. During implementation of the survey, responses were recorded on paper. After surveys were conducted, the answers were coded as nominal variables and recorded in an Excel sheet. In the transfer from paper to excel sheet, there were serious errors. As explained in the methods section, erroneous data were excluded. This reduced the original population size of 725 to 681. Thus, data entry errors eliminated about 6% of the data participants. This is significant, and the data may not accurately reflect our sampled population because of these eliminations. In the future, a double data entry method should be implemented. Each survey's responses should be cross checked by another person to minimize the chance of errors and increase reliability of the data.

4.6 Conclusion / Call to Action

The problem of unmet need for family planning services and education is one of the top concerns in maternal health in Haiti today. Commitment by national governments, international aid organizations, and private NGOs to increase attention and resources towards meeting unmet needs of Haitian women has been demonstrated by previous increased funding directed towards

family planning. Because of the importance of this issue and the lack of high return on the funding that has already been poured into this area, it is essential to have a deep understanding of the most important barriers to utilization in order to better target and direct funding in the most effective ways. The complexity of Haiti's political instability and weak economy have been major factors in limiting the ability of the country to advance in the area of family planning. If both public and private health systems can maintain strong leadership, sustainable services, and adequate human resources and use targeted results of studies like this to guide their investments, education efforts, and programming, then advancements can be made that increase adequate and sustainable access to family planning methods for all Haitian women.

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Appendix 1 – Contraception Survey

Demographic Survey FEMALE

Hello, Good morning/afternoon! My name is _____. I am working with Family Health Ministries and Duke University on this health survey. First, I need to find out, do you recall students asking you questions about Contraceptive use last summer? (Instructions: If no, continue. If yes, discontinue.) Thank you for your willingness to participate.

Before we start, I would like to remind you that there is no right or wrong answer. We are interested in knowing what you think, so please feel free to be honest and share your point of view. At any time if you do not feel comfortable answering the question, we can skip it, and if you do not understand the question well, please let me know and I will be happy to explain further.

Your answers will be used as information to analyze and might be repeated to people outside of this room but your identity will be kept secret. Your name will not be associated with your responses as this is completely anonymous. No one will know what we have said in this meeting. At any time if you need a break, please let me know.

STUDY ID: _____

Demographics

1. How old are you this year? _____
2. Do you own a phone?
 - Yes
 - No
3. What is your highest educational level?
 - Never went to school
 - Elementary (Grade 7-11)
 - Middle (Grade 3-6)
 - High School (Grade 0-2)
 - Post-high school
4. What is your employment status?
 - Not employed
 - Job with salary
 - Unpaid work
 - Other, specify: _____
5. What is your current monthly household income in gourdes? _____ Gourdes
6. What is your current monthly expenditure in gourdes? _____ Gourdes
7. Do you current live with a male partner?
 - Yes
 - No
8. Are you currently sexually active?
 - Yes
 - No
9. Do you have children of your own?

- Yes, how many and how old are they? _____
 - No
10. Do you plan on having (more) children?
- Yes, how many in total? _____
 - No
11. Who decides how many children you should have?
- Myself
 - My partner
 - Family members (e.g. Mother, Grandmother, Aunty etc.)
 - My religion
 - My community
 - Others, please specify _____
12. Did (Will) you plan when to have any of your children?
- Yes
 - No

Contraceptive Knowledge

13. Do you know what are contraceptives/family planning/birth controls?
- Yes
 - i. If yes, who told you about modern contraceptives/family planning or birth spacing?
 1. Male Partner
 2. Family Member
 3. Friend or Neighbor
 4. Pastor or Religious Leader
 5. Health Provider
 6. Exposure to family planning messages (mass media)
 7. Other: _____
 - ii. Do you think that knowing about family planning is important?
 1. Yes
 2. No
 - No (skip to Question 21)
14. Can using a family-planning method help you decide if you want a child and when you want to have a child?
- Yes
 - No
 - Don't know
15. Can using a family-planning method prevent you from having any unwanted/unintended pregnancies?
- Yes
 - No
 - Don't know
16. Can you get pregnant even if you used planning but do not use it consistently or at least when sexually active?
- Yes

- No
 - Don't know
17. Can starting a family-planning method now affect my chances of getting pregnant later?
- Yes
 - No
 - Don't know
18. If you are using a non-permanent family-planning method and you are ready to have a child now, do you agree that you can stop using a family-planning method anytime?
- Yes
 - No
 - Don't know
19. Choose one, if a family planning method is not suitable for me, what can I do:
- Stop using and not look for another method
 - Stop using and look for another method that is suitable for me
 - Continue using the method
 - Don't know
20. Do you know where to get modern family-planning methods?
- Yes, Where?
 - i. Clinic
 - ii. NGO
 - iii. Others, please specify? _____
 - No
21. I am going to list a few modern family-planning methods, tell me if you know about them. *(Probe further if they know about them. Such as if they know how to use them, if the planning method are used for men or women (if applicable), what is the period of each use as in every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent, does it require visiting a health clinic, and whether it can be seen by your partner when used:*
- i. Pills
 - 1. Know/Don't Know *(proceed only if they know)*
 - 2. Know how to use/Don't know how to use
 - 3. For men/for women
 - 4. Every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent
 - 5. Need visit to health clinic/ do not need visit to health clinic
 - 6. Can be seen/Cannot be seen
 - ii. Injectable/ Depo provera (Shot for Birth Control)
 - 1. Know/Don't Know *(proceed only if they know)*
 - 2. Know how to use
 - 3. For men/for women
 - 4. Every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent
 - 5. Need visit to health clinic/ do not need visit to health clinic
 - 6. Can be seen/Cannot be seen
 - iii. Male Condoms

1. Know/Don't Know (*proceed only if they know*)
 2. Know how to use
 3. Every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent
 4. Need visit to health clinic/ do not need visit to health clinic
 5. Can be seen/Cannot be seen
- iv. Norplant or other implants
1. Know/Don't Know (*proceed only if they know*)
 2. Know how to use
 3. For men/for women
 4. Every time you have sex/short term/long term/permanent
 5. Need visit to health clinic/ do not need visit to health clinic
 6. Can be seen/Cannot be seen
- v. IUD/Intrauterine Device/Copper T
1. Know/Don't Know (*proceed only if they know*)
 2. Know how to use
 3. For men/for women
 4. Every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent
 5. Need visit to health clinic/ do not need visit to health clinic
 6. Can be seen/Cannot be seen
- vi. Tubal ligation (female permanent sterilization)
1. Know/Don't Know (*proceed only if they know*)
 2. Know how to use
 3. Every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent
 4. Need visit to health clinic/ do not need visit to health clinic
 5. Can be seen/Cannot be seen
- vii. Vasectomy (male permanent sterilization)
1. Know/Don't Know (*proceed only if they know*)
 2. Know how to use
 3. Every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent
 4. Need visit to health clinic/ do not need visit to health clinic
 5. Can be seen/Cannot be seen
- viii. Female Condom
1. Know/Don't Know (*proceed only if they know*)
 2. Know how to use
 3. Every time you have sex/take it every day/take it every 3 months/more than 3 years/permanent
 4. Need visit to health clinic/ do not need visit to health clinic
 5. Can be seen/Cannot be seen
22. Do you know of any side effects from using any modern family-planning method?
- Yes
 - No (skip to Q24)

23. I am going to list some conditions, please let me know if they can be possible side effects for using a modern family-planning method.
- Bleeding
 - i. Yes/No
 - Headache
 - i. Yes/No
 - Weight Loss
 - i. Yes/No
 - Infertility
 - i. Yes/No
 - Weight gain
 - i. Yes/No
 - Induced Abortion
 - i. Yes/No
 - Nausea
 - i. Yes/No
 - Depression
 - i. Yes/No
 - Mood Swing
 - i. Yes/No
 - No menstruation
 - i. Yes/No
 - Decreased sex drive
 - i. Yes/No
24. Do you know of any traditional family planning method?
- Yes, which one? _____
 - No

Attitudes

25. How long do you think you should wait between having one child and the next?
- 3 months or less
 - 4 to 6 months
 - 6 months to 1 year
 - 2 years
 - More than 2 years
 - Don't know/Never thought about it
26. Can you become pregnant if you had sex without protection?
- Yes
 - No
27. Do you think that unintended or unwanted pregnancies are undesirable consequences to family life?
- Yes
 - No
28. Do you think that a family-planning method should be used before having the first child?
- Yes

- No
29. Who do you think should use a family-planning method?
- Women
 - Men
 - Both
30. Who do you think should decide whether to use a family-planning method?
- Myself
 - My partner
 - Myself and my partner
 - Family member
 - Others _____
 - Don't know/Never thought about it
31. Does your community or religion allow family-planning methods?
- Only community
 - Only religion
 - Both allow
 - Both don't allow
 - Don't know
32. Are family-planning methods generally affordable?
- Yes
 - No
 - Don't know
33. Are family-planning methods convenient to get?
- Yes
 - No
 - Don't know
34. Do you think traditional family-planning methods are effective?
- Yes
 - No (skip to Question 37)
35. Will you continue using traditional family-planning methods if they are proven to be ineffective?
- Yes
 - No
36. Comparing traditional and modern family-planning methods. Do you think that
- Traditional methods are as effective as modern methods
 - Traditional methods are more effective than modern methods
 - Traditional methods are not as effective as modern methods
37. When choosing a family-planning method, will you prefer a short (i.e.1-3 months) or long-term (more than 2 years) method?
- Short
 - Long
38. Would you mind using a family planning method,
- If the method was not hidden from your partner?
 - Yes
 - No

- If the method requires a minor surgery done by a doctor? (E.g. incision under the skins or inside the uterus)
 - Yes
 - No
- 39. When you no longer want to have children, would you consider a family planning method that will make you infertile?
 - Yes
 - No
- 40. Would your _____ accept that you use a family planning method that will make you infertile?
 - Partner
 - Yes
 - No
 - Don't know
 - Community
 - Yes
 - No
 - Don't know
 - Religion
 - Yes
 - No
 - Don't know

Practices

- 41. At what age did you first had penetrative sexual intercourse? _____
- 42. Did you use any form of family planning method before, traditional or modern?
 - Yes
 - No (Skip to Question 44)
- 43. Are you still currently using this family-planning method?
 - Yes
 - I. Which method are you using?
 - Male Condom
 - Female Condom
 - Pills
 - Injectable
 - IUD
 - Implant
 - Tubal Ligation
 - Vasectomy
 - Traditional methods
 - Others, please specify _____
 - II. How long have you been using this family-planning method?
 - Less than 3 months
 - 3-6 months
 - 6-12 months

- 12 month to 2 years
 - More than 2 years
- III. Did anyone discuss with you any possible side effects for that family-planning method?
 - Yes
 - No
- IV. Did you experience any side effects?
 - Yes
 - i. What was the side effect?
 1. Feeling sick
 2. Bleeding
 3. Headache
 4. Others, please specify _____
 - ii. Were you ever told about using another method that may be more suitable?
 - a. Yes
 - b. No
 - No
- V. Did you get the family-planning method on your own?
 - Yes
 - No
 - i. Please specify: _____
- VI. Did anyone tell you if that family-planning method would be suitable for you?
 - Yes
 - No
- VII. Are you satisfied with the method?
 - Yes
 - No
- No (**LAST QUESTION**)
 - i. Why did you stop using this method?
 - Wanted children again
 - Experienced side effect
 - Partner opposition
 - Lack of knowledge
 - Others, please specify _____

(ONLY IF ANSWERED NO IN QUESTION 42)

44. Would you ever use modern family-planning method?

- Yes
 - i. If yes, which method would you prefer to use?
 1. Male Condom
 2. Female Condom
 3. Pill
 4. Injectable

5. IUD
6. Implants
7. Tubal ligation
8. Others, please specify: _____

○ No

45. If no, what is the primary reason you decided not to use modern methods for contraception?

Is there anything else? Do you have any questions?

Initiate closure

Thank you for taking the time to talk to us. This is valuable information that will allow us to understand more about contraception in the community. We hope you have a great evening. Thank you.