

ABSTRACT

Title of Thesis: Family Planning at Primary Health Clinics in Addis Ababa,
Ethiopia

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Ethiopia has decreased its total fertility rate (TFR) and increased its contraceptive prevalence rate (CPR) since the implementation of the health extension program in 2003. The government is intent on further decreasing TFR and increasing CPR. I, along with collaborators at the University of Michigan Medical School and St. Paul's Hospital Millennium Medical College (SPHMMC), created and administered a survey to women attending SPHMMC-associated family planning (FP) clinics to assess women's' FP histories and their sources of FP information. **I hypothesized that higher education and employment is positively associated with usage of long-acting reversible contraceptives (LARCs) and with receiving information from health professionals more so than through general media sources — i.e. television, radio, billboards, etc.** After recruiting 60 survey participants in Addis Ababa, I returned to Michigan and performed binary logistic regression to examine the relationships between the collected independent and dichotomous dependent variables. I found that higher education associates with decreased LARC usage and increased exposure to FP messaging through media sources. Employment also associates with increased exposure to FP through the media. My data points to the potential importance of more research to better study the interactions of various factors with how women learn about FP.

Family Planning at Primary Health Clinics in Addis Ababa, Ethiopia

By

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Chapter 1: Introduction

In 1990, the total fertility rate (TFR) in Ethiopia, or the average number of children born to each woman during her childbearing years, was 7.2. By 2013, this number had fallen to 4.5, a marked decrease. In the same time period the contraceptive prevalence rate (CPR)—the rate of married women between 15 and 49 years old using contraception—increased from 4.8% to 40.2% (World Bank 2015).

Ethiopia's dramatically decreased TFR and increased CPR warrant further investigation. Below, I will explore the factors, both historical and contemporary, that play into the relationship between health and policy in Ethiopia. What social, political, and economic conditions led to Ethiopia's current family planning (FP) situation and policy? What does this policy look like now and how does it work? Lastly, what role did external and internal stakeholders have in shaping Ethiopia's FP policy? Answering these questions might give us insight into how the country with the lowest per capita income in the world (CIA World Fact Book, 2015) has caught up with and in some ways surpassed its neighbors, providing its women with greater control over their bodies and giving families a greater capacity to support their children. This information should provide sufficient context so that we can move to the central question of this thesis: how does education and employment influence women's past contraceptive usage and where they see/hear information about family planning methods?

I worked with Dr. Jason Bell and Dr. Sarah Rominski to create a pilot study with our collaborator Dr. Malede Birara at St. Paul's Hospital Millennium Medical College (SPHMMC) in Addis Ababa, Ethiopia to address this question. We created a survey and administered it to women attending FP clinics at 10 primary health clinics associated with SPHMMC¹. Although

¹ See Chapter 2 for more information on our survey and our methods

my sample size is insufficient to be generalizable — 60 women — certain trends present themselves that might inform further research into how to best educate women attending SPHMMC primary care clinics about their family planning options. In the course of our research, we asked women about their education, employment, previous pregnancies, FP history, and where they see/hear information about family planning. **I hypothesized that higher education and employment is positively associated with usage of long-acting contraceptives reversible (IUDs and implants) and with receiving information from health professionals more so than through general media sources — i.e. television, radio, billboards, etc.** Before examining why I believe these factors are pertinent, however, it is important to provide the historical and social context.

Health Extension Program

In 1993, Ethiopia initiated an ambitious 20-year national health strategy to “serve the health needs of all Ethiopians”, organized into several Health Sector Development Programs (HSDP) (WHO, 2006). The Health Extension Program (HEP), a product of a later HSDP program, began in 2003 with the aim of improving disease prevention, family health, environmental hygiene and sanitation, and health education and communication (Banteyerga, 2011, p. 46). The HEP is carried out on a local level by Health Extension Workers (HEWs), women with a 10th grade or higher education who receive one additional year of specialized training (p. 46). Two HEWs work in each Kebele — Ethiopia’s smallest administrative district — and proceed to advance the goals of the HEP through their community.

To do so, HEWs, in conjunction with local government, choose a family to serve as a model family (p. 47). They then train that family to practice healthy behavior and advocate healthy habits to other families in their community, thereby acting as a spokes-family for the

district's health program (p. 47). The woman in each initial model family then proceeds to train five other families, who in turn train five more families (Ethiopian Ministry of Health, 2015, p. 7). This creates one-to-five networks that, if executed as per the plan, meet regularly and discuss how to best improve their health and the health of their families. This ideally creates a system in which approximately 34,000 HEWs provide the tools and training for three million one-to-five networks (p. 8). The Ethiopian Ministry of Health (EMOH) suggests that these one-to-five networks, also known as 'health development armies' (HDAs), emphasize health within communities as well as interaction with their local health centers (p. 8). They simultaneously note that HDAs may not reach their full potential due to a lack of commitment, skills, or staff in local communities (p. 8). Nonetheless, the decrease in TFR and increase in CPR from 2005 — 5.4 children and 14.7% respectively — to 4.1 children and 41.8% in 2014 indicate progress and warrant further investigation (p. 10-11). Given that these changes coincide with the implementation of the HEP, scholars have found associations between the two (Olson and Piller, 2013, p. 448, Yitayal, Berhane, Worku, & Kebede, 2014, p. 205, etc.).

Though there has certainly been a decrease in TFR and an increase in CPR, there still exists substantial unmet need for contraception in Ethiopia. The 2011 Ethiopian Demographic and Health Survey (DHS) defines unmet need as, "women who say they are not using contraception and who say either that they do not want any more children or that they want to wait two or more years before having another child" (p. 101). It reports unmet FP need among 25.3% of married women between the ages of 15 and 49 (p. 101). This need decreases in Addis, where 10.6% of similarly classified women have unmet FP needs (p. 101). While the ages of 15 to 49 roughly correspond to reproductive age, the stipulation that DHS-counted women are married likely affects the percentage of unmet need among all Ethiopian women since married

and unmarried women have different needs. With approximately a quarter of the married female population wanting but not receiving FP services, strategies for increasing access and/or availability of FP services seem prudent. A more complete understanding of how messaging interacts with women using FP may highlight a new avenue through which Ethiopian women not currently using FP can find out about it and learn about its availability.

Before formulating our hypothesis, however, we must consider how these internal motivators interact with the estimated US\$ 1.874 billion Ethiopia received in 2013, according to the Organization for Economic Cooperation and Development (OECD), for development projects, including FP projects, from external sources.

Internal and External Motivations

This begs the question: what factors motivate the Ethiopia government, which presides over a country often described as the poorest in the world, to initiate and consistently support a program aimed at increasing access to health services, including FP? In combing through analyses of the HEP, there is overwhelming agreement that strong political will, or a commitment by the government to implement a policy that comes from the highest levels of government (“political”, 2016), may have propelled the HEP forward — (Olson & Piller, 2013, p. 448, Koblinsky et al., 2010, p. 105, Workie & Ramana, 2013, p. 11).

The Ethiopian government maintains that it receives such uniform internal popular support because of Ethiopia’s sustained economic growth and development since it came to power approximately 20 years ago (Agence France-Presse, 2015). An analysis by *Business Insider* supports the assertion of Ethiopia’s remarkable economic growth, labeling Ethiopia as the country with the fastest growing economy in the world, according to World Bank data (Holodny, 2015). This, in addition to a rapidly declining TFR, will give Ethiopia a high number

of young people in relation to older people for the next 20 to 30 years, before the number of younger and older Ethiopians equalize, increasing their ability to gain from the demographic dividend (EMOH, personal communication, 2015). A demographic dividend occurs when a society moves from largely agrarian with high fertility rates to predominantly industrial with lower fertility rates (Lee & Mason, 2006). An official at the Ministry of Health explained how Ethiopia is intent on reaping the benefits of such a dividend by attempting to swiftly lower their fertility rate and simultaneously increase their education rates (personal communication, 2015). The HEP and increasing FP use is a significant means to this end and, therefore, elicits sustained support in Ethiopia's halls of government.

Ethiopia, in addition to receiving the ninth highest amount of official development assistance in 2013 at US\$ 1.874 billion (OECD, 2014), also received the fifth most donor support for FP from 2000 to 2010 (Olson and Pillar, 2013, p. 451). Ethiopia's top donors include the World Bank, the United States, and the United Kingdom ("Ethiopia", OECD, 2014). The World Bank currently funds a US\$ 100 million project to improve the delivery and use of maternal and child health services (World Bank, 2014). Furthermore, most international family planning-oriented non-governmental organizations (NGOs) have a branch in Ethiopia — mostly in Addis Ababa — tasked with family planning implementation and marketing (Olson and Pillar, 2013, p. 454). One analysis found that in 2006, over 40% of Ethiopia's reproductive health budget was financed by donors, who managed just over 20% of total reproductive health spending in Ethiopia (Nguyen, Snider, Ravishankar, & Magvanjav, 2011, p. 66-67). With this proportion of money flowing into Ethiopia for FP and related services from outside sources, the influence these resources have on domestic policy, specifically health policy, warrants investigation.

To answer this question, it is useful to turn to the literature on the effectiveness of foreign aid on government policy in general and on health policy in particular. In 2000, Burnside and Dollar wrote a highly influential — and, due to its widespread and sometimes overgeneralized application, simultaneously controversial (among economists) (Easterly, 2003, p.26) — paper in which they posit that aid can reward and further promote development in countries with a good policy environment (p. 864). Reich (2002) follows that foreign donors may have the influence to reshape state priorities by using the promise to provide or retract future aid contingent on national policy and its outcomes (p. 1669). Easterly (2003), however, argues both that Burnside and Dollar’s data are fragile at best (p. 30), and that due to the fact that aid is rarely rescinded, it is reinforcing to whichever policy trajectory a developing country is taking, whether that be good or bad (p. 38). Lastly, Hussein and Lee (2012) argue — dismissing cross-country development studies as too broad (p. 94) — that although Ethiopia is highly aid-dependent, the aid provides a financial cushion that allows the government to focus on physical and human capital (p. 89). Given the apparent disagreement present in the foreign aid literature, it lies beyond the scope of this thesis to determine whether aid plays a major role in developing Ethiopia’s health policy. What I can examine, however, is what steps the Ethiopian government has taken to shelter itself from external influence on its domestic policies and by extension their deployment of the HEP and FP policies.

Ethiopia does not allow Ethiopian Charities, Societies, or Non-Governmental Organizations to receive more than 10% of their funding from foreign sources (Hailegebriel p. 2). This forces local organizations to rely on funding from in-country sources, giving the Ethiopian government control over how they operate (Blystad, Haukanes, & Zenebe, 2014, p. 31). Furthermore, international organizations and Ethiopian residents are not allowed to advocate

for the, “advancement of human rights, gender equality, the rights of children and disabled persons, and the efficiency of the justice system” (Hailegebriel p. 2). This successfully grants Ethiopia’s central government immense control over their messaging on a variety of issues including health and FP services. The merits and flaws of this strategy can, again, be the subject of much debate, however, the focus of this thesis is to understand the current circumstances for what they are and look at their implications for FP policy in this complex socio-political environment.

Formulating our Hypothesis

While the HEP seems to have been successful in reducing TFR and increasing CPR nationally, it would be irresponsible to overlook other factors at play. In addition to the plethora of official development assistance Ethiopia receives each year, they — along with their neighbors — are experiencing a movement of people from rural to urban areas (World Bank, 2015). Urban populations have lower TFRs than rural peoples in both Ethiopia and Africa in general (Tadesse & Headey, 2012, p. 4). Tadesse and Heady (2012) postulate that TFRs are associated with various confounding variables including education and socio-economic factors among others (p. 5). They also suggest that access to a radio may decrease TFR and increase CPR (p. 21). Given our focus on women attending clinics in Addis Ababa, Ethiopia’s largest city, we considered some of the factors unique to Addis in shaping our survey and our hypothesis.

Ethiopia’s 2014 DHS splits the country into 11 regions for the sake of their data presentation, including Addis Ababa (p. 16). While it notes a general disconnect among education in urban versus rural areas — 4.3 to 0.0 median years for women (p. 16) and 6.7 to 0.4 median years for men (p. 17) respectively — Addis Ababa has more years of education than the

urban average, with 5.2 median years for women (p. 16) and 7.3 median years for men (p. 17). Women in Addis Ababa with higher education, specifically those having completed their secondary education — 6.5% of women in Addis compared with 0.7% of women in Ethiopia (p. 16) — have been shown to have an increased likelihood to use an intrauterine device (IUD) (Serawit & Alemayehu, 2012). Haile and Enqueselassie (2006) show that in Jimma town, another urban area in Ethiopia, a woman's highest level of education significantly increased the likelihood of FP usage (p. 147). Other research, however, suggests that while in rural Ethiopia, education significantly increased likelihood of FP usage, similar effects were not observed in urban areas (Gurmu & Mturi, 2013, p. 150). There is, though, an important distinction between these seemingly contradictory studies. Serawit and Alemayehu (2012) looked at IUDs in Addis Ababa, an urban area. Gurmu and Mturi (2013), on the other hand focused on contraception in general in both urban and rural areas. This distinction informed our hypothesis that higher education was expected to positively correlate with IUD and implant usage, like what Serawit and Alemayehu (2012) observed in the past.

Just like education is different in Addis when compared with the rest of Ethiopia, the 2011 DHS survey draws a similar distinction with employment. Women in Addis were more likely to be employed in the last 12 months (51.1%) than their urban (49.9%) and rural (33.8%) counterparts (p. 45). Similarly, 83.9 % of men living in Addis were employed in the last 12 months, compared with 76.6% of urban and 80.7% of rural Ethiopian men (p. 47). Haile and Enqueselassie (2006) found that although a women's employment did not associate with FP usage in Ethiopia, husband's employment significantly increased FP usage (p. 147). This informed our hypothesis that employment — though we looked at women and their husband's employment — would positively associate with LARC use. I could not examine FP use in

general because the survey excluded women not using contraception and therefore picked LARCs because of their status as the most effective form of contraception. I made the assumption, however flawed, that employed women, due to their increased status based on their employment, might be more inclined to utilize the most effective form of FP.

Though Tadesse and Heady (2012) argue that access to a radio associates with decreased TFR and increase CPR (p. 21), I could not find any data on associations between health clinic attendance and FP knowledge and usage. Using the logic that more educated and employed women might enjoy higher social status, I assumed, in the absence of supporting data, that they might look to more official sources than general media, namely health clinics, to get information on FP methods and services.

Thesis Outline

This chapter attempts to contextualize our project within the broader context of FP in Ethiopia. In doing so one needs to consider Ethiopia's history, its health policy, and the internal and external drivers of reproductive health. Chapter 2 will provide an introduction to how we prepared for and conducted our study. It lays out how I approached formulating the survey and what steps I took to ensure that we met international guidelines for best practice in research. It will then explain how I undertook data collection and what ethical considerations were taken before and during data collection. Lastly, it will give a brief explanation of how I undertook data analysis in an attempt to ensure reproducibility. Chapter 3 then provides descriptive data of the study participants. It will consider how those data match or deviate from data from Addis Ababa and Ethiopia as a whole. It will demonstrate that although our data are not representative of women in Addis Ababa due to the small sample size, in some cases our data align with more representative data. Chapter 4 shows the results of the various statistical analyses. It will explore

the associations and trends evident between the collected variables. After a careful analysis, it seems that both propositions in my hypothesis are contradicted by the data. I found that higher education actually negatively associates with LARC use in our study population, instead of increasing LARC use, and positively associates with media, instead of health appointments, as a source of FP information. Furthermore, no association exists between women's employment and LARC use and employed women were more likely associate seeing/hearing about family planning through the media, instead of through health clinics. Chapter 5 will act as a conclusion, describe the limitations of this project, talk about some of the challenges in its implementation, and provide suggestions for how to move forward.

Chapter 2: Data Collection Procedure

This chapter will discuss how I prepared for and organized the project and gathered data. It addresses the logic behind each of my decisions and mentions any issues that came up while implementing the methodology.

Undertaking a successful research project is not easy, but with the help of the outstanding individuals previously mentioned in my “Acknowledgements” section, it has been completely manageable. Once I decided to work in Addis Ababa — because of Dr. Bell’s relationship with Dr. Malede — I undertook a brief literature search exploring the dynamics surrounding family planning (FP) in Ethiopia. Dr. Rominski then conducted focus group discussions while visiting Addis Ababa during a trip for another one of her projects. These recordings — along with discussions with various mentors — allowed me to focus in on what I believed were pertinent issues: FP histories and how information about FP is distributed to women.

After deciding on a research question — as described in Chapter 1 — I undertook the process of finding a source for Ethiopia-appropriate questions. I accomplished this primarily by looking at questions for one of Dr. Bell’s previous projects in Ethiopia and examining the appendices of the 2011 and 2014 Ethiopian Demographic and Health Surveys. Following the creation of our survey, I worked with all of my collaborators to finalize the English version of our survey² and applied for IRB approval — which resulted in exemption³ — from the University of Michigan. Upon arriving in Ethiopia, my research partner and I worked with two Ethiopian translators to translate the survey into Amharic, and apply for approval from the SPHMMC IRB⁴, so that the survey would be ready for use and we could start data collection.

² The finalized version of the survey, with questions in both English and Amharic, is available in Appendix 1

³ University of Michigan Medical School Institutional Review Board: HUM00100382

⁴ St. Paul’s Hospital Millennium Medical College Institutional Review Board: M23/158

Study Site

The study was conducted at outpatient family planning clinics at primary care facilities associated with St. Paul's Hospital Millennium Medical College (SPHMMC), in Addis Ababa, Ethiopia. SPHMMC has 12 outpatient clinics, and our local collaborator, Dr. Malede Birara, chose the ten locations, listed in Figure 2.1 below:

Approximate Clinic Locations in relation to SPHMMC

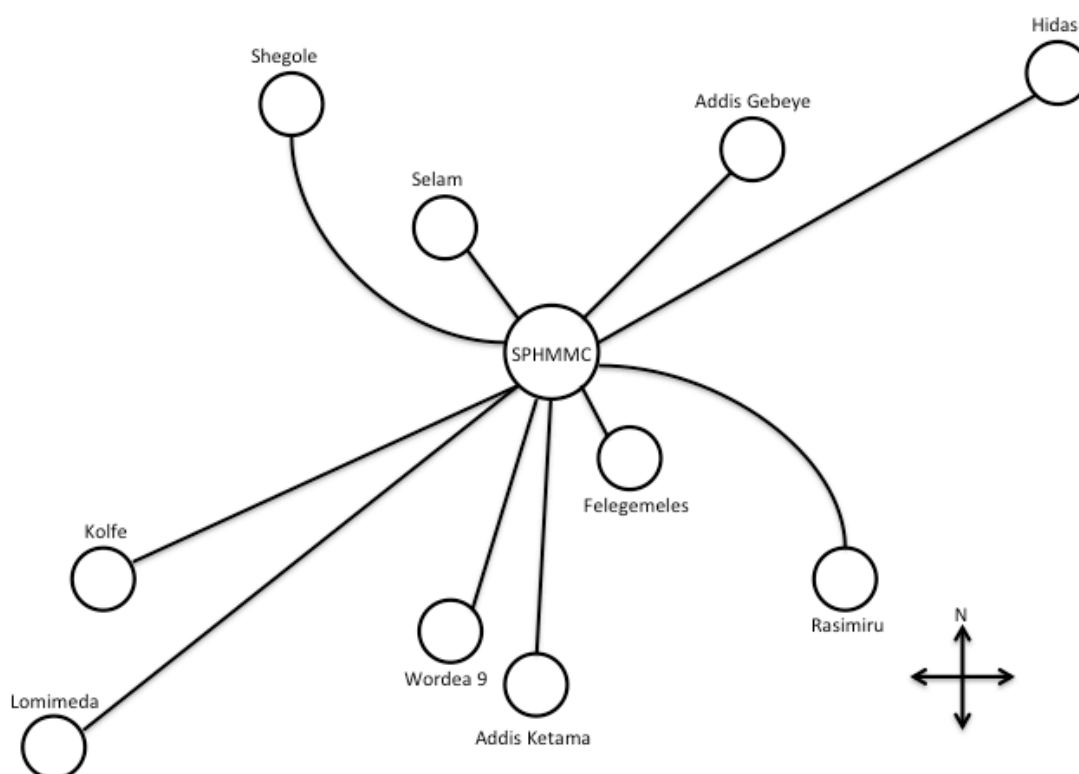


Figure 2.1: This figure is an approximate geographic representation of the SPHMMC-associated primary care clinics. It is not to scale.

SPHMMC was established in 1961 to serve the economically disadvantaged population of Addis Ababa. The hospital was renovated by Emperor Haile Selassie I in 1969 with the help

of the German Evangelical Church. Since its founding, SPHMMC has sought to serve the poor. In 2007, it became a medical college with a modern training curriculum, aspiring to become an Ethiopian center of excellence for women's health. In 2012, an obstetrics and gynecology residency-training program was established. The hospital has 12 outpatient primary health clinics throughout the Addis Ababa municipal area providing an appropriate number of potential patients to generate a sample for our survey such that it represents women attending SPHMMC-associated clinics.

Survey Development

Given our research question — how education and employment influence women's past contraceptive usage and where they see/hear information about family planning methods — we needed to find survey questions that not only measured education and employment but also those that measured FP history's and FP information sources. To place our data in context, we decided to utilize questions from the Ethiopian Demographic and Health Survey (DHS) from 2011 and 2014. These surveys asked questions about education and employment as well as questions about FP history and sources of messaging. We adapted these questions to our survey population in an attempt to place our data in the context of Addis Ababa and Ethiopia as a whole. This also allows us to compare our survey population with those populations (see Chapter 3). We then added some questions (further described in Chapter 3 and written out in Appendix 1) in an attempt to better understand which sources of information were most relevant in FP decisions. We recorded which clinics women attended and asked them some general questions about their reproductive histories to get a better picture of our subject population (see Chapter 3 and Appendix 1).

Two separate translators, who then corroborated on the final version to ensure minimal translation errors, translated both the consent agreement and the survey from English to Amharic⁵. We had hoped that they would translate separately and then translate each other's versions to English before corroborating, however, we did not effectively communicate this. As a result, we only learned of this deviation after they had already completed the translation. Each woman had the survey read to her in Amharic by Dr. Kidus Mengistu, Dr. Fuad Abdulkadir, or Abonesh Eshetu (a medical student). Dr. Kidus and Dr. Fuad are male and were in their internship year while conducting the survey. Abonesh is female and was in her second year of medical school while conducting the survey. It does not seem like the difference in translators' sexes influenced the response rate. Factors that may have influenced the response rate are discussed further in Chapter 5.

Study Design

This survey was conducted in the family planning clinics (Table 2.1) of health posts associated with SPHMMC from June 2015 – August 2015. Due to time constraints with translators, we attended clinics in the following order and on the following days with the listed survey administrators:

⁵ The finalized version of the survey, with questions in both English and Amharic, is available in Appendix 1

Table 2.1: Clinic Visit Schedule and Administrators

<i>Date</i>	<i>Clinics</i>	<i>Survey Administrators</i>
Monday, June 15, 2015	Felegemeles (AM & PM)	Danny, Divya, Caroline, Fuad
Tuesday, June 16, 2015	Addis Ketama (AM & PM) Felegemeles (PM)	Danny, Caroline, Fuad
Wednesday, June 17, 2015	Wordea 9 (AM) Addis Ketama (PM) Felegemeles (PM)	Danny, Caroline, Fuad
Thursday, June 18, 2015	Addis Ketama (AM & PM) Wordea 9 (AM)	Danny, Caroline, Fuad
Friday, June 19, 2015	Selam (AM) Shegole (PM)	Divya, Caroline, Fuad
Monday, June 22, 2015	Addis Gebeya (AM & PM)	Divya, Caroline, Fuad
Tuesday, June 23, 2015	Hidase	Divya, Caroline, Fuad
Wednesday, June 24, 2015	Rasimiru (AM) Felegemeles (PM)	Divya, Caroline, Fuad
Thursday, June 25, 2015	Kolfe (AM & PM)	Divya (AM only), Caroline, Fuad
Friday, June 26, 2015	Lomimeda (AM & PM)	Divya, Fuad
Monday, July 6, 2015	Wordea 9 (AM)	Danny, Divya, Abonesh
Thursday, July 9, 2015	Shegole (PM)	Danny, Divya, Abonesh
Thursday, July 30, 2015	Kolfe (PM)	Danny, Abonesh
Friday, July 31, 2015	Lomimeda (AM)	Danny, Abonesh
Wednesday, August 5, 2015	Rasimiru	Divya, Abonesh
Thursday, August 6, 2015	Shegole (AM) Selam (PM)	Divya, Abonesh
Thursday, August 13, 2015	Lomimeda	Divya, Abonesh

Study Population

The study population included women presenting to the SPHMMC-associated family planning clinics, aged 18 and above. Survey administrators, when present, approached all women attending FP clinics (Table 2.1) during the study period. Only those women meeting the inclusion criteria were enrolled (Table 2.2).

Table 2.2: Inclusion and Exclusion Criteria for Subject Participation

<i>Inclusion Criteria</i>	<i>Exclusion Criteria</i>
Women 18+	Women <18
Willing to provide consent	Unwilling to provide consent
Starting a new FP method	Receiving continuing care for a FP method or ending FP use
Attending a SPHMMC-associated FP clinic	Not receiving FP care

The defining aspect of our inclusion and exclusion criteria was the stipulation that participants be starting a new FP — either for the first time or changing methods. This, we surmised, would allow us to generate more differentiated data on where surveyed women hear about FP, and what factors might associate with both their choice, and how they hear about FP.

Sample Size and Sampling Procedure

We approached all women meeting inclusion criteria during the study period with a goal of consenting between 50 and 200 women during the three-month study period (5-20 women per clinic). We chose 200 participants as our upper bound sample size because we want our work to serve as a pilot study to appropriately inform a larger study to be conducted throughout Addis Ababa by local researchers. This is consistent with a plausibility probe — a study designed to determine whether or not further research is warranted (Eckstein, 1992, p.147) Based on our discussions with Dr. Malede and our translators (Fuad, Kidus, and Abnonesh), we felt confident that the SPHMMC-associated family planning clinics should see enough patients per day to fulfill our goal of 200 participants within the 3-month study period. It was expected that this patient volume would result in adequate recruitment during the study period. We only managed to recruit 60 patients to participate in our survey, a result of various limitations, many beyond our control, that are further discussed in Chapter 5. A table (Table 2.3) of our participants is displayed below:

Table 2.3: Survey Participants by Clinic

<i>Clinic</i>	<i>Total</i>
Felegemeles	6
Selam HC	3
Shegole	5
Addis Ketama	8
Addis Gebeye	13
Woreda 9	6
Kolfe	5
Lomimeda	5
Ras Emiru	4
Hidasie	5
<i>Total</i>	<i>60</i>

Due to how we deployed the survey (see below), we cannot be absolutely sure how many patients would have been eligible for our survey. We do, however, know with certainty that of the 61 women who completed our survey, one was excluded because the subject entered the clinic for emergency contraception, which we post hoc decided was outside the scope of our research. We also can offer an approximation of how many women we approached to participate (91 women), approximations of how many were ineligible (27 women), and how many were eligible but refused to participate (3 women).

Survey Deployment

We stressed coordination between the study team and SPHMMC-associated family planning clinic staff to avoid a disruption in patient flow in the clinic. At some clinics, patient attendance even changed depending on the day we visited a clinic. On/at some days/clinics we surveyed women in the same room as their appointment with the clinician present. On/at other days/clinics we surveyed women in a nearby room, while some days/clinics required us to administer the survey in a hallway outside the clinician's room. All of these factors may have stunted our data collection and may have deterred potential participants or added a significant enough barrier to decrease participation.

When we finally did see patients, our translators read participants the consent agreement. If they indicated that they were willing to participate, but that they could not sign the form because they were illiterate, participants were asked to provide a thumbprint if they consented to the survey. Our translators then administered the surveys to each participant, regardless of their literacy status, and filled out the laminated surveys by hand.

Ethical Considerations

Ethical approval was obtained from both SPHMMC⁶ and University of Michigan⁷ institutional review boards. Given the personal nature of the study, significant measures were taken to ensure patient confidentiality. At the time of informed consent, each study participant was given a unique identifier. This unique identifier was entered onto the survey.

Women who chose to participate in this survey did not directly benefit from their participation. However, we hope that the information gained from this research will eventually improve the provision of contraceptive services in the country and thus the women will indirectly benefit from their participation. Information gained from this research will provide FP stakeholders in Ethiopia with more information on how best to distribute FP information. This will hopefully lead to improved FP services in Ethiopia and potentially beyond.

Given that the subject matter is personal, we can imagine some women being uncomfortable discussing certain aspects of their sexual and reproductive health. We made it clear that participants could skip any questions they did not feel comfortable answering. Furthermore, they could stop the survey at any time if they became uncomfortable or no longer wished to participate.

⁶ St. Paul's Hospital Millennium Medical College Institutional Review Board: M23/158

⁷ University of Michigan Medical School Institutional Review Board: HUM00100382

We can also think of social risks associated with our survey. These include feeling obligated to participate for service at the clinic or being seen taking the survey and therefore being suspected of having pre-marital sex. We believe, however, that both of these risks were rare because the women were specifically told that their service was not contingent on filling out the survey, specifically, by ensuring that they are only presented with the option to take the survey after their visit, and the survey was conducted while seeing the health practitioner, or in the most private manner fit to each individual clinic, so that no one knows they took it. Since the survey was conducted in a clinical environment, we ensured that the participants knew that their participation would not affect their services at the clinic.

The women questioned were all over 18 years of age and signed — or thumb printed — a consent form, indicating that they consented to participate in the survey and that they understood the motivations behind the survey. Both the consent agreement and the survey itself were filled out by hand — the survey on laminated documents — and then entered into Qualtrics, an online survey website with a mobile application that allows offline storage on a phone or tablet. The lamination, in addition to mitigating the risk of losing the paper survey, allowed us to reuse surveys after entering them into Qualtrics, decreasing the amount of materials we had to carry around with us. The information, when uploaded to cloud-based survey software, is encrypted and protected by their firewall system. Survey data is stored on the Qualtrics Server, only accessible to myself, Divya, and Dr. Rominski. The survey itself contained no identifying information — and once entered onto Qualtrics was accessible to no one but the authors. The consent agreement was stored separately.

Data Analysis

I analyzed the survey data in an attempt to compare factors including education levels and employment statuses of the women and their husbands with how each woman found out about FP. I looked at which clinic they attended, how many previous pregnancies they had, and their number of live births and current children. I used these independent variables in a binary logistic regression — which, based “values of explanatory variables” (i.e. education), “gives an estimates probability that a characteristic is present [therefore it needs to be coded as 0 or 1]” (i.e. injectables usage) (STAT 504, 2016) — to determine their relationships (singularly and together) with women’s FP histories and how they found out about FP. I then examined the marginal effects of our independent variables on our outcome variables — FP usage and information source — in STATA v13. Marginal effects were determined using the “margins” code and give a probability of changing the dependent variable from 0 to 1 in a logistic regression. Lastly, I created multivariate logistic regression models — which contain more than one independent variable — to examine potential confounding variables impacts on the outcome variables. The below analysis will demonstrate any associations present between education, occupation, location and information and motivation surrounding FP usage among Ethiopian women.

Chapter 3: Descriptive Statistics

This chapter will provide an in-depth examination of the descriptive data, which will serve two roles. First, it will place this study's population in the context of Ethiopia and Addis Ababa in particular. While, due to the small sample size, the data are not representative of Addis or Ethiopia, I can still examine this cohort for trends that might inform further research. Secondly, the descriptive statistics will allow anyone interested to take these data and ask questions that I may have not included in our analysis. The survey, as described in Appendix 1 has three sections, and this chapter is broken down as such. I also recorded which clinic participants were surveyed, although for the sake of simplicity, I will include that in the 'Demographic Data' section. For each question I will present data in either table form or graph form, depending on which is most appropriate.

Demographic Data

The survey participants' demographic data is presented below in Table 3.1:

Table 3.1: Survey Population General Demographic Information

Clinic Location (A1)			House Sub-City (D6)		
	n = 60	%		n = 60	%
<i>Addis Gebeye</i>	12	20	<i>Addis Ketema</i>	14	23.33
<i>Addis Ketama</i>	8	13.33	<i>Akaki Kality</i>	—	—
<i>Felegemeles</i>	6	10	<i>Arada</i>	5	8.33
<i>Hidase</i>	5	8.33	<i>Bole</i>	—	—
<i>Kolfe</i>	5	8.33	<i>Gullele</i>	28	46.67
<i>Lomimeda</i>	5	8.33	<i>Kirkos</i>	1	1.67
<i>Rasimiru</i>	4	6.67	<i>Kolfe Keraniyo</i>	9	15
<i>Selam</i>	3	5	<i>Lideta</i>	—	—
<i>Shegole</i>	5	8.33	<i>Nefas Silk-Lafto</i>	—	—
<i>Woredea 9</i>	7	11.67	<i>Yeka</i>	—	—
			<i>Other</i>	3	5

Highest Level of Education

	Women (D1)		Husbands (D4)	
	n = 60	%	n = 50	%
<i>None</i>	12	20	4	8
<i>Primary</i>	23	38.33	13	26
<i>Secondary</i>	13	21.67	22	44
<i>Vocational</i>	2	3.33	2	4
<i>Higher</i>	10	16.67	9	18

Employment Status

	Women (D2)		Husbands (D5)	
	n = 60	%	n = 49	%
<i>Employed</i>	22	36.67	41	83.67
<i>Unemployed</i>	38	63.33	8	16.33

Marital Status (D3)

	n = 60	%
<i>Married</i>	50	83.33
<i>Unmarried</i>	10	16.67

Question D6 (Table 3.1) assessed the surveyed women if they lived in Addis, or more broadly, in Ethiopia. It asked: “If you live in Addis Ababa, please indicate your sub-city, otherwise, please note where you live.” I have combined this information with the recorded data

on the number of women we interviewed at each clinic. The ‘other’ answers to question D6 included: Kebele Michael, Shewa Meda, and Mizon Weserbi. Kolfe Keraniyo the sub-city includes Kolfe and Lomimeda health clinics. Ten women attended clinics in Kolfe Keraniyo and nine women lived in that same sub-city. Gulelle includes Addis Gebeye, Selam, Shegole, and Hidase health clinics. Twenty-five women attended clinics in Gulelle and 28 live there. It makes sense that a plurality of the subject population lived in Gulelle, given that SPHMMC is located there and it housed the majority of FP clinics. Kirkos and Arada sub-cities did not include any of the clinics we visited, although they border Gullele and Addis Ketama. Addis Ketama includes the following health clinics: Addis Ketama, Felegemeles, Rasimiru, and Woredea 9. Twenty-five women attended clinics in Addis Ketama and 14 live there. This discrepancy may be due to women who live in Gulelle, Kirkos, and Arada who live closer to Addis Ketama clinics than clinics in their sub-city. It is not a given, however, that women attend the closest FP clinic to their house.

Questions D1 and D4 addressed the educational backgrounds of our participants and their husbands, respectively. It asked about women and their husband’s highest level of education and the data are presented in Table 3.1 above. Nationwide demographic health survey (DHS) data describe 48.6% of women (2014, p. 16) to have no education nationally compared to 37% of men (p. 17). This difference shrinks when looking at urban areas, specifically Addis Ababa, where 22% of women had no education (p. 16), in comparison with 12.3% of men (p. 17). In our sample, 20% of women and 8% of their husbands had no education. My numbers, therefore, seem quite similar to those in the DHS survey, indicating that in this respect, this data aligns with Addis as a whole.

With regards to primary education, the DHS describes 2.9% of women nationally having completed their primary education, compared with 6.5% in Addis Ababa (p. 16). The corresponding data for males was 4.2% nationally and 8.5% in Addis (p. 17). My data indicates that 47.92% of women had completed their primary education and 26% of their husbands had completed theirs. The DHS reports 0.7% of women nationally had completed their secondary education — 6.5% in Addis (p. 16). Among men, they found that 0.9% completed their secondary education nationally compared with 8.2% in Addis Ababa (p. 17). I found that 27.08% of surveyed women had completed their secondary education and 44% of their husbands had as well. This indicates that this cohort of subjects was more educated than one would expect from the general population of Addis Ababa.

In the DHS cohort, 3.3% of women nationally and 13.3% of them in Addis had more than a secondary education (p. 16) compared with 2.1% of men nationally and 20.4% in Addis (p. 17). Though the “more than secondary” category does not quite align with the survey’s questions, it does say something about education levels in Ethiopia. I split this category in two: technical/vocational and higher education. Technical/vocational education includes the years after secondary education but before university and higher education includes university. Among survey participants, 4.17% of women had completed their technical/vocational training and 20.83% had completed their higher education, combining to form a group of women vaguely comparable with the “more than secondary” education group in the DHS survey — 25% of our cohort. Among their husbands, 4% had completed technical/vocational and 18% had completed higher education, creating a 22% category of husbands with more than a secondary education. This data further verifies that when comparing primary and secondary education, although my data align with Addis as a whole among women without education, our cohort is more educated

than the general population of women in Addis Ababa, which may be due to only surveying women attending FP clinics.

Questions D2 and D5 asked about survey participants', and, if applicable, their husbands', employment status at the time of the survey. Though the 2014 DHS does not have employment data, in 2011, a more complete DHS found that 51.5% of women were employed in the 12 months preceding its survey (p. 45) compared with 83.9% of men (p. 47). My data showed 36.7% of women were employed when the survey was conducted versus 83.7% of their husbands. The survey population's husbands appear to be employed at a similar rate to other males in Addis Ababa.

Question D3 asked about marital status among survey respondents. I found that of the 60 participants, 50 (83.33%) responded yes and 10 (16.67%) responded no. The 2014 DHS survey asked about marital status among women aged from 15 to 49. They found that 61.4% of the women surveyed nationally were married and 25.4% were never married (p. 25). Though I did not ask about ages in our survey, our stipulation that women be of reproductive age and older than 18 suggests that all of the women we interviewed fall into the DHS age group.

Reproductive Health Data

The first few questions (R1-R4) on reproductive health established women's reproductive history and are used as independent variables in future analysis. These data are displayed in the table below:

Table 3.2: Reproductive History Among Surveyed Women

	Number (n=60)						
	0	1	2	3	4	5	6+
<i>Pregnancies (R1)</i>	n	12	18	18	7	5	—
	%	20	30	30	11.67	8.33	—
<i>Live Births (R2)</i>	n	16	19	16	6	3	—
	%	26.67	31.67	26.67	10	5	—
<i>Induced Abortions (R2a)</i>	n	50	9	1	—	—	—
	%	83.33	15	1.67	—	—	—
<i>Living Children (R3)</i>	n	16	20	14	17	3	—
	%	26.67	33.33	23.33	11.67	5	—
<i>Desired Children (R4)</i>	n	2	0	10	16	21	7
	%	3.33	0	16.67	26.67	35	11.67

I found that among the surveyed women, each had an average of 1.98 pregnancies per women. Furthermore, surveyed women had, on average, 1.93 live births per woman. This is likely accounted for by the 9 women who reported one induced abortion and the woman who reported two induced abortions. Surveyed women have an average of 1.84 children.

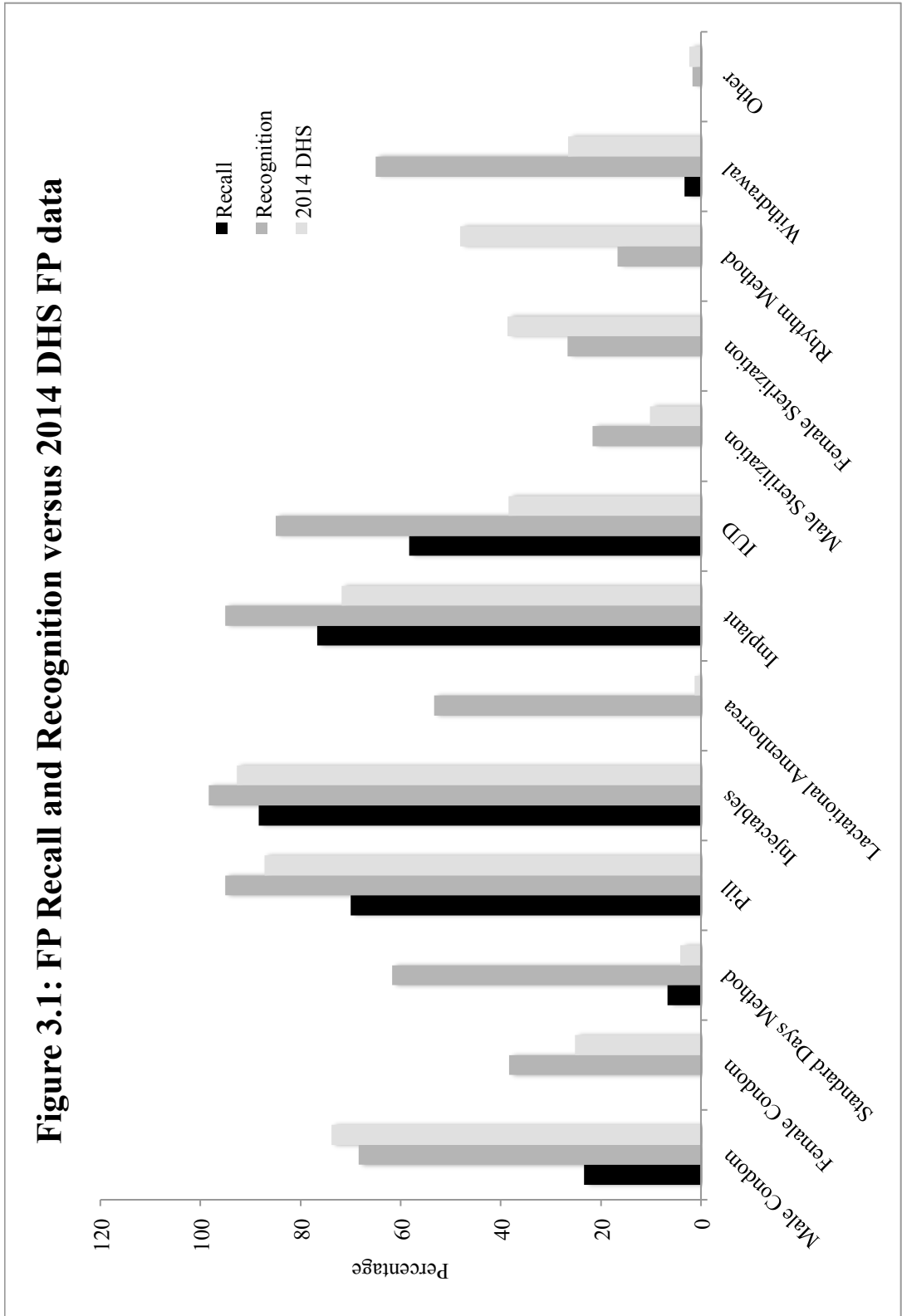
Neither the number of pregnancies nor the number of live births matches DHS data. However, the 2011 DHS does report on the number of children women want. The DHS shows that Ethiopian women, on average, want 4.3 children (p. 89). In Addis Ababa, women want an average of 3.3 children, the lowest desired children of any Ethiopian region (p. 89). Our participants wanted an average of 3.6 children⁸. This demonstrates another similarity between our cohort and Addis in general.

In response to the question: “Have you ever heard of family planning?” I found that 85% (51 of 60) of women answered yes. This inconsistency affirms that survey data cannot be trusted at face value, given that nine of the surveyed women had not heard of the service they attended clinic to receive. Though the survey asked about women’s current FP usage, I had to remove the question from our data because it did not clarify whether it was asking about before or after their health appointment (all surveys were administered after the health appointment). The question about condom usage revealed that 13.56% of women currently used condoms with their partner. I then decided to test for recognition versus recall with regards to FP options. To do so, the survey asked women: “What types of family planning have you heard of” twice. The first time, the translators allowed the women to list all of the FP options they could (R8). They then asked the same question and read a list of 12 FP options and other (R9). My resulting data are displayed as a table and the 2014 DHS data is presented alongside my data in the figure below:

⁸ If we assign the woman who responded with 6+ with 6 children, 3.7 if we assign her 7

Table 3.3: Recall versus Recognition in FP Familiarity

Recalled FP (R8)			Recognized FP (R9)		
	<i>Frequency</i>	<i>Percentage</i>		<i>Frequency</i>	<i>Percentage</i>
<i>Male Condom</i>	14	23.33	<i>Male Condom</i>	41	68.33
<i>Female Condom</i>	—	—	<i>Female Condom</i>	23	38.33
<i>Standard Days Method</i>	4	6.67	<i>Standard Days Method</i>	37	61.67
<i>Pill</i>	42	70	<i>Pill</i>	57	95
<i>Injectables</i>	53	88.33	<i>Injectables</i>	59	98.33
<i>Lactational Amenorrhea</i>	—	—	<i>Lactational Amenorrhea</i>	32	53.33
<i>Implant</i>	46	76.67	<i>Implant</i>	57	95
<i>IUD</i>	35	58.33	<i>IUD</i>	51	85
<i>Male Sterilization</i>	—	—	<i>Male Sterilization</i>	13	21.67
<i>Female Sterilization</i>	—	—	<i>Female Sterilization</i>	16	26.67
<i>Rhythm Method</i>	—	—	<i>Rhythm Method</i>	10	16.67
<i>Withdrawal</i>	2	3.33	<i>Withdrawal</i>	39	65
<i>Other</i>	—	—	<i>Other</i>	1	1.67
<i>Total</i>	60	100	<i>Total</i>	60	100



The DHS survey administrators had a probe for each method and asked by recognition. Therefore, the most comparable data is from our recognition question, demonstrated on the graph by two different shades of grey. The one participant who thought of another form of FP during the recognition question added emergency contraception, which was actually recognized by 18.5% of DHS respondents. Our participants had lower levels of recall than they did recognition, and had mixed levels of recall versus recognition among DHS respondents, likely an example of sample bias since our subjects were surveyed at a FP clinic whereas DHS participants were surveyed at their homes. It seems then, that similarly to our general education data, our participants are more knowledgeable about FP methods than the general population of Ethiopian women. In this case then, our cohort does not align with women in Addis Ababa.

I then asked survey participants which methods of FP they had used in the past. The data is displayed below:

Table 3.4: Previous FP Usage (R10)

	<i>Frequency</i>	<i>Percentage</i>
<i>Male Condom</i>	4	6.67
<i>Female Condom</i>	—	—
<i>Standard Days Method</i>	3	5
<i>Pill</i>	19	31.67
<i>Injectables</i>	32	53.33
<i>Lactational Amenorrhea</i>	1	1.67
<i>Implant</i>	17	28.33
<i>IUD</i>	2	3.33
<i>Male Sterilization</i>	—	—
<i>Female Sterilization</i>	—	—
<i>Rhythm method</i>	—	—
<i>Withdrawal</i>	2	3.33
<i>Other</i>	12	20
<i>Total</i>	60	100

‘Other’ included nine participants who had used emergency contraceptives (15%) and three participants who had not previously used FP (5%). The 2014 DHS survey lists the following percentages nationally for FP usage: female sterilization (0.1%), pill (2.6%), IUD (1.1%), injectables (31.0%), implants (5.0%), male condom (0.3), rhythm (0.8%), withdrawal (0.3%), other (0.6%), and not currently using (58.2%) (p. 37). In Addis, the percentages change to: female sterilization (0.4%), pill (10.7%), IUD (7.5%), injectables (26.5%), implants (8.5%), male condom (3.7), rhythm (5.5%), withdrawal (0.9%), other (0.3%), and not currently using (35.9%). Our participants therefore are more likely to be using contraception than the average Ethiopian women, possibly due to the fact that they are in attending a FP clinic and the associated sampling bias.

I then asked women where they had heard about family planning information and where they go to receive family planning information:

Table 3.5: Source of FP information and Preferred Source of FP information

Where they hear about family planning (R11)			Where they seek FP information (R12)		
	<i>Frequency</i>	<i>Percentage</i>		<i>Frequency</i>	<i>Percentage</i>
<i>Radio</i>	36	60	<i>Radio</i>	5	8.33
<i>Newspaper/ Magazine</i>	10	16.67	<i>Newspaper/ Magazine</i>	1	1.67
<i>Television</i>	43	71.67	<i>Television</i>	4	6.67
<i>Community Event</i>	27	45	<i>Community Event</i>	3	5
<i>Friend</i>	32	53.33	<i>Friend</i>	6	10
<i>Family Member</i>	18	30	<i>Family Member</i>	1	1.67
<i>Billboard/etc.*</i>	17	28.33	<i>Billboard/etc.*</i>	0	0
<i>Prenatal Visit</i>	15	25	<i>Prenatal Visit</i>	1	1.67
<i>Postnatal Visit</i>	17	28.33	<i>Postnatal Visit</i>	3	5
<i>Other Health Visit</i>	20	33.33	<i>Other Health Visit</i>	50	83.33
<i>Other</i>	4	6.67	<i>Other</i>	2	3.33

*Please note that “Billboard/etc.” refers to pamphlets, billboards, posters, and leaflets

Figure 3.2: Family Planning Information Sources

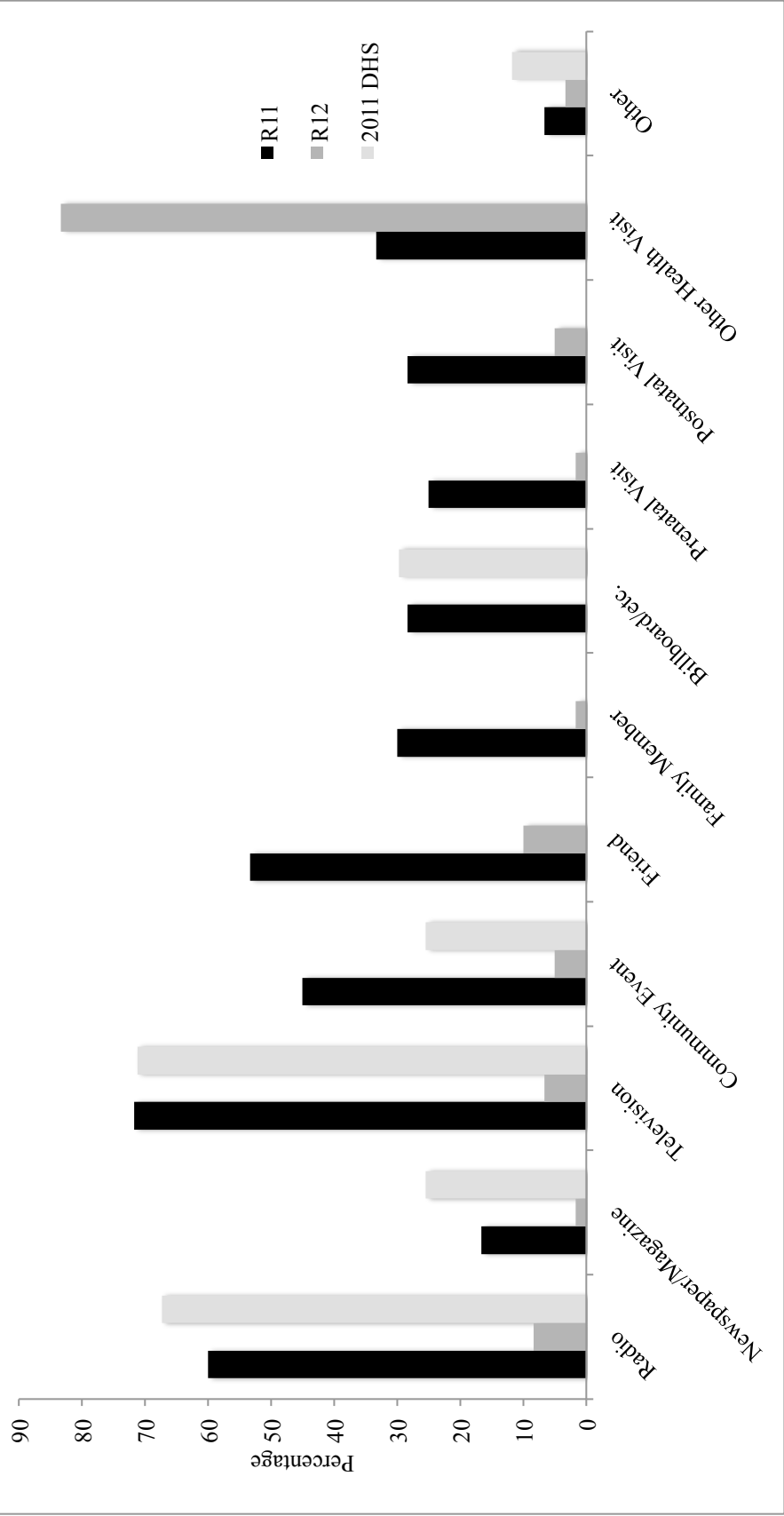


Figure 3.2: Black represents answer to question R11, "Select all of the places from where you have heard about family planning. Please select all that apply." Medium Grey represents the answer to question R12: "Where do you go to get family planning information? Please select all that apply." Light grey represents 2011 DHS data on FP information sources in Addis Ababa.

The 2014 DHS does not have any data on where women hear about FP, however, the 2011 survey has a data table on where women are exposed to FP messaging. “Other” among the survey participants included: one instance of significant other (1.67%), two instances of school (3.33%), and one instance of a woman who had not heard of family planning from any of the above-listed sources (1.67%). This indicates that regarding some categories — radio, television, and pamphlet/billboard/leaflet/poster — these subjects are similar to the average women in Addis Ababa, whereas in others, they are not.

When women were asked where they go for family planning information — in an attempt to parse out which sources they trusted the most — the data indicate a distinct bias towards health appointments. This may be representative of the fact that the survey asked women at FP clinics about where they go to get FP information.

I then asked participants if they had ever had questions about FP and, if yes, where they went to resolve their question. Of the 14 participants who answered yes to the first question, their distribution of answers is below:

Table 3.6: Where women go with FP questions

<i>R13a</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Community Event</i>	2	14.29
<i>Friend</i>	3	21.43
<i>Family Member</i>	4	28.57
<i>Other Health Visit</i>	10	71.43

There are no corollary measures in the 2011 or the 2014 DHS surveys. The survey then followed up with a question that also does not appear in either of the DHS surveys, specifically, which source of information motivated them to attend clinic on the day of their interview. The resulting data are below:

Table 3.7: Motivators for current FP appointment (R14)

	<i>Frequency</i>	<i>Percentage</i>
<i>Radio</i>	3	5
<i>Newspaper/Magazine</i>	1	1.67
<i>Television</i>	2	3.33
<i>Community Event</i>	5	8.33
<i>Friend</i>	9	15
<i>Family Member</i>	3	5
<i>Billboard/etc.</i>	0	0
<i>Prenatal Visit</i>	10	16.67
<i>Postnatal Visit</i>	4	6.67
<i>Other Health Visit</i>	19	31.67
<i>School</i>	0	0
<i>Other</i>	15	25

“Other” included: five women with side effects (8.33%), one woman who wanted to start FP (1.67%), two women with no reason (3.33%), one woman with a health reason (1.67%), one woman whose husband wanted her to start FP (1.67%), two women because of a fear of failure with their current method (3.33%), one woman because she saw someone else getting FP (1.67%), and a woman who wanted to change from an implant to injectables so that her husband would not know that she was still on FP so she could avoid another child against her husband’s wishes (1.67%) — this is actually a well-noted phenomena called, “the secrecy hypothesis” (Adetunji, 2011, p. 598).

The last question addressed which FP messages surveyed women heard. This question came directly from the 2011 DHS survey. I then added one message after a conversation with a local FP expert (personal communication, 2015). The results are as follows:

Table 3.8: Which Messages Women Had Heard (E1)

	<i>Frequency</i>	<i>Percentage</i>
<i>It's wise to have a balanced family life. (1)</i>	42	70
<i>Your family's happiness is in your hands. (2)</i>	49	81.67
<i>Birth spacing makes for a loving, caring, and healthy family. (3)</i>	57	95
<i>Children by choice and not by chance. (4)</i>	50	83.33
<i>It was our decision to plan our family. (5)</i>	53	88.33
<i>Other (6)</i>	—	—

Note: Messages 1-4 were from the 2011 DHS survey and message 5 was from the Ethiopian FP expert

The 2011 DHS survey found the following awareness of the first four messages in Addis Ababa: “It’s wise to have a balanced family life” (84.2%), “Your family’s happiness is in your hands” (83.8%), “Birth spacing makes for a loving, caring, and healthy family” (82.7%), and “Children by choice not by chance” (67.5%) (p. 106). These indicate that our cohort of women, in this regard, is quite similar to the average woman in Addis Ababa.

Though it was evident for the beginning that our study population was too small to be representative of the women in Addis Ababa, much less women nationally, there are some areas where the above data align with national data. The above-presented information demonstrates that our proportion of women with no formal schooling, the average number of desired children, some sources of FP information, and women’s familiarity with popular FP-promotion language is consistent with the more representative data available in the 2011 and 2014 DHS’.

Chapter 4 will start with binary logistic regression analyses that compare individual variables to each other. This will include the marginal effects of appropriate independent variables on contraceptive use and messaging source. It will then proceed with multivariate models that examine the effects of various factors on FP use and messaging source. Along the way I will discuss the importance of our data on FP among our study population.

Chapter 4: Data Analysis and Discussion

This chapter will explore the relationships between many of the variables recorded in our survey. I will start by examining the relationships between an array of variable pairs, during which I will examine the marginal effects of the pair's dependent variable on its independent variable. I will then move to multivariate models in an attempt to show a relationship between various independent variables and dependent variables.

It might, at this point, be useful to restate this thesis' hypothesis: **that higher education and employment is positively associated with usage of long-acting contraceptives (IUDs and implants) and with receiving information from health professionals more so than through general media sources—i.e. television, radio, billboards, etc.** This chapter, then, will focus on the associations between education and employment on the use of long-acting reversible contraceptives (LARCs) and source of FP information. We will also examine whether FP method choice is correlated with source of FP information. Along the way, I hope to draw in contemporary literature to place our results in context, effectively combining the results and discussion sections of this thesis.

Univariate Analysis

For the purpose of the below analysis, p-values of less than 0.05 will be discussed as statistically significant and less than 0.1 will be discussed as trending statistically significant. While I know that social sciences and natural sciences have different definitions of statistically significant, since my project spans both fields I think that it useful to differentiate between the two. Table 4.1, below, is a key, in which each variable is defined. Table 4.2 then shows the relationships between the various variables based on the results of binary logistic regression. I used binary logistic regression because it was most appropriate given my dichotomous dependent

variables. I then used marginal effects to determine the predictable probability of whether or not the dependent variable would occur based on incremental changes in my independent variables.

Table 4.1: Variable Key for Reference

Independent Variables (IVs)	<i>D1</i>	Women's Highest Level of Education
	<i>D2</i>	Women's Employment Status
	<i>D3</i>	Marital Status
	<i>D4</i>	Husband's Highest Level of Education
	<i>D5</i>	Husband's Employment Status
Dichotomous IVs	<i>D6_4</i>	Lives in Gullele or Not
	<i>D6_8</i>	Lives in Addis Ketama or Not
IVs	<i>R1</i>	Number of Pregnancies
	<i>R2</i>	Number of Live Births
	<i>R3</i>	Number of Living Children
	<i>R4</i>	Number of Desired Children
Dichotomous Dependent Variables (DVs) and Occasional IVs	<i>R10_a</i>	Pill (OCP) Use or Not
	<i>R10_b</i>	Injectables (DMPA) Use or Not
	<i>R10_ab</i>	Pills/Injectables or OCP/DMPA Use or Not
	<i>R10_c</i>	LARC Use or Not
	<i>R10_d</i>	Other FP Use or Not
	<i>R10_e</i>	More than one of the Above (R10_a-d) or Not
Dichotomous DVs	<i>R11_a</i>	Media Exposure or Not
	<i>R11_b</i>	Community/Family/Friends Exposure or Not
	<i>R11_c</i>	Health Appointment Exposure or Not

Table 4.2: Binary Logistic Regression Univariate Odds Ratios

Dichotomous Outcome Variables:		Pill	Injectable	OCP/DMPA	LARC	Other FP	>1 FP	Media	Community	Health
n of 60	19	32	41	18	19	26	46	53	25	
<i>Women's Education (D1)</i>	0.784	1.096	0.879	0.213***	1.714**	0.742	1.736*	1.932	1.736	
<i>Women's Employment (D2)</i>	1.011	1.080	0.713	0.566	1.011	0.635	0.328*	0.386	0.328	
<i>Marital Status (D3)</i>	0.485	0.524	0.389	1.000	0.911	0.271	0.220**	0.444	0.220	
<i>Gullele (D6_4)</i>	1.042	0.778	0.960	0.636	1.042	0.733	1.800	1.190	1.800***	
<i>Addis Ketama (D6_8)</i>	1.904	0.840	1.210	0.914	1.270	0.975	0.694	1.950	0.694**	
<i>Pregnancies (R1)</i>	1.567*	1.304	1.650*	2.178***	0.476**	1.667**	1.920**	1.140	1.920	
<i>Births (R2)</i>	1.472	1.162	1.691*	2.016**	0.450**	1.462	1.641	1.060	1.641	
<i>Children (R3)</i>	1.649**	1.157	1.669*	2.122***	0.458**	1.533*	1.622	1.059	1.622	
<i>Desired Children (R4)</i>	1.807**	0.924	1.228	1.036	0.809	1.327	0.997	1.090	0.997	
<i>Pill use (R10_a)</i>	—	—	—	—	—	—	0.788	1.181	0.788**	
<i>Injectable use (R10_b)</i>	—	—	—	—	—	—	1.733	0.840	1.733	
<i>Pill or Injectable use (R10_ab)</i>	—	—	—	—	—	—	1.270	0.847	1.270	
<i>LARC use (R10_c)</i>	—	—	—	—	—	—	1.774	1.081	1.774	
n of 50	17	28	36	15	16	24	41	45	22	
<i>Men's Education (D4)</i>	0.834	0.974	0.910	0.700	1.442	0.859	1.088	1.167	1.088	
n of 49	16	27	35	14	16	23	40	44	22	
<i>Men's Employment (D5)</i>	0.414	1.278	0.806	0.323	4.038	0.470	3.500	4.222	3.500	

Table 4.2: * denotes $p < 0.100$, ** denotes $p < 0.050$, *** denotes $p < 0.010$. Statistical Analysis: binary logistic regression in SPSS v22 (IBM Corp. 2013).

I will now progress through each independent variable, highlighting any trends towards significance, marginal effects (if applicable), and the relevance of such trends in the context of our data.

Demographic Independent Variables

The literature demonstrates evidence of increased education positively associating with IUD usage (Serawit & Alemayehu, 2012, p. 16) and increased FP use in general (Haile & Enqueselassie, 2006, p. 147) in urban environments in Ethiopia. My measure of female education statistically significantly associates with LARC use and ‘other’ FP use — any method other than pills, injectables, and LARCs — and positively associates women receiving FP information from the media — including television, radio, pamphlet/billboard/leaflet/poster, and newspapers/magazines. Marginal effect analysis in STATA v13 reveals the extent of the statistically significant negative association between a woman’s education and her propensity to use LARCs in our study population. As a woman moves from no education, to primary education, etc., her likelihood of using LARCs, on average, decreases by 23.1% per level of education. This negative association seems to contradict some literature on LARC use in Ethiopia — (Serawit & Alemayehu, 2012, p. 16) and (Haile & Enqueselassie, 2006, p. 147). Gurmu and Mturi (2013), however, note that because urban residents often have more access to media and social networking as a function of where they live, the influence of education on FP choice might be diminished when compared to rural areas (p. 151). Another explanation, which seems to align with FP proponents’ — and western biomedicine’s — darker past, would suggest that women without an education are being coerced into using more effective forms of FP as a means of population control (Lurie & Wolfe, 1997, p. 853, Meier, 2002, p. 520, Kaler, 1998, p. 348, Kaler, 2004, p. 105-6). Though this finding has low statistical power due to a small,

unrepresentative sample population, the mere suggestion of coercion to stop uneducated women from having children, calls for more research to refute such a suggestion. I did not find any associations between husband's education and our study population's FP use or messaging sources.

I could not find any evidence in the literature suggesting associations between women's employment status and their FP use and messaging sources, although my literature search may not have been comprehensive. There is evidence that a woman's husband's employment status might increase FP use (Haile & Enqueselassie, 2006, p. 147). I could not measure this relationship, however, because all of our participants were FP users. I did see an association that trended statistically significant between women's employment status — and separately their marital status at a statistically significant level — and their exposure to FP messaging through media sources. This relationship may suggest that an increased level of income or status accompanying employment and marriage may expose women to media sources of FP.

I chose two sub-cities to examine in greater detail than in the descriptive data chapter (Chapter 3), Gullele and Addis Ketama, since they were the only two with over 10 study participants. While I found no associations with type of FP use, I did find a statistically significant relationship between both subsets of women and their exposure to FP messaging through health appointments. This relationship may be due the fact that we interviewed women at FP clinics within SPHMMC-associated primary care clinics, resulting in a response bias. This result may be further complicated by the fact that the sample sizes were particularly low (28 for Gullele and 14 for Addis Ketama).

Reproductive Health Independent Variables

The number of pregnancies for each participant has the most associations with my dichotomous dependent variables. Number of pregnancies is associated with using the oral contraceptive pill and pill/injectables users. Both positively associate with increased pregnancies and marginally increase a woman's likelihood of using each FP method by 9.1% and 10.1% — on average, per pregnancy — respectively. Number of pregnancies' relationship with LARC users and women who changed FP methods positively associate in a statistically significant manner. With each pregnancy, a woman was 13.8% more likely, on average, to use LARCs. 'Other' FP users negatively associate with number of pregnancies. With regards to sources of FP information, a woman's number of pregnancies positively associates with FP exposure in the media in a statistically significant manner. The relationship between the number of live births among participants who used pills/injectables trends statistically significant. Participants who had either used LARCs or 'other' FP methods in the past are statistically significantly associated with the number of live births. Participants' reported number of living children is statistically significantly positively associated with pill use and LARC use, and negatively associates with 'other' method use. The probability of pill and LARC use respectively, rise by the 10% and 13.5%, on average, with each live birth as measured by marginal effect analysis. Live births also trend statistically significant among women using either pills or injectables (marginal effect: 10.4% average increase in likelihood per birth).

My data, therefore, seem to align with contemporary literature on FP in Ethiopia. Germu and Mturi (2013) demonstrated that increased children correlated with a significant increase in FP usage in both rural and urban areas (p. 150). It is plausible, that in our study environment, increased pregnancies, live births, and living children may increase interactions with the health system, which may in turn increase FP use, although it is impossible to make concrete statements

on the subject. Women are also recommended to wait 2-3 years after the birth of one child before having their next (WHO, 2005, p. 1). This recommendation, which is suggested by clinic practitioners in Ethiopia (personal communication, 2015), may explain the association of pregnancies, live births, and living children with pills, LARCs, and changing methods. The similarity between these variables' reported associations with our independent variables led us to only include pregnancies in our subsequent multivariate models. This was to mitigate the collinearity and subsequent confounding effects of pregnancies, live births, and number of children in a multivariate model.

Table 4.2 also suggests a positive association between our participants' desired number of children, and whether or not our participants had previously used pills as contraceptives. Marginal effect analysis suggests that women having an average 11.4% greater chance of using pills with each increased desired child. It is not unreasonable that a woman who desires more children would want the flexibility of month-by-month decision-making as opposed to the longer waiting periods inherent to other methods.

Lastly, Table 4.2 examines the univariate associations between the types of FP utilized by our study cohort and where they find FP information. The only association, according to our data, exists among participants using oral contraceptive pills and those learning about family planning at health clinics. While we do not know why this association exists, or even if it applies to more than just our study population, it might be something that warrants further research.

Before moving onto to our multivariate models, it is important to note that none of our independent variables associated significantly with women who had used injectables (otherwise known as DMPA) in the past. This may further affirm the importance of injectables to the

method mix in Ethiopia, as they are so popular among our study cohort that they are spread evenly, for statistical purposes, across all of the groups that we analyzed.

Multivariate Analysis

After going through the above univariate analysis, I created four logistic regression models that examine various combinations of independent variables that might effect measured dichotomous dependent variables — which influenced my choice of logistic regression. Model’s 1 and 2 explore the effects of independent variables on FP choice and sources of information, while Model 3 and 4 add FP choice as an independent variable and examine its effects on our participants’ source of FP information. Model 1 is displayed in Table 4.3, Model 2 in Table 4.4, Model 3 in Table 4.5, and Model 4 in Table 4.6:

Table 4.3: Multivariate Model 1, Odds Ratios

	Pill	Injectable	OCP/DMPA	LARC	Other FP	>I FP	Media	Community	Health
<i>n</i>	16	27	35	14	16	23	40	44	22
<i>Women's Education (D1)</i>	0.991	0.987	0.694	0.133**	1.959*	0.741	1.780	3.197	0.815
<i>Women's Employment (D2)</i>	0.898	1.331	0.515	0.466	1.209	0.598	0.842	0.168	0.770
<i>Husband's Education (D4)</i>	0.801	1.036	1.269	1.529	0.974	1.060	0.810	0.916	0.752
<i>Husband's Employment (D5)</i>	0.617	1.616	1.537	0.973	2.290	0.860	4.649	3.044	4.002
<i>Gullele (D6_4)</i>	2.611	0.445	1.413	1.422	0.664	1.059	2.315	0.530	4.454*
<i>Addis Ketama (D6_6)</i>	1.552	0.455	1.219	1.692	1.815	0.942	2.251	5.9e8	0.211
<i>Pregnancies (R1)</i>	1.491	1.414	2.058*	1.508	0.547	1.494	1.993	0.985	1.472
<i>Desired Children (R4)</i>	1.573	0.747	0.857	1.340	1.194	1.343	0.965	0.554	0.963
<i>Constant</i>	0.025	1.981	0.735	0.153	0.135	0.146	0.108	41.492	0.171
<i>Log Likelihood</i>	55.245	63.566	51.461	34.377	48.302	60.330	40.271	21.854	51.698
<i>Nagelkerke R²</i>	0.177	0.101	0.195	0.560	0.338	0.187	0.201	0.398	0.367
<i>Predicted Correct</i>	71.40%	61.20%	73.50%	83.70%	81.60%	65.30%	85.70%	89.80%	71.40%

Table 4.4: Multivariate Model 2, Odds Ratios

	Pill	Injectable	OCP/DMPA	LARC	Other FP	>I FP	Media	Community	Health
<i>n</i>	19	32	41	18	19	26	46	53	25
<i>Women's Education (D1)</i>	0.842	1.162	0.922	0.214***	1.709**	0.777	2.054**	2.005	1.057
<i>Women's Employment (D2)</i>	1.132	1.247	0.822	0.430	0.839	0.679	0.423	0.435	0.570
<i>Pregnancies (R1)</i>	1.524*	1.364	1.608*	1.948**	0.453**	1.571*	2.063**	1.181	1.367
<i>Constant</i>	0.185	0.375	0.827	0.559	1.274	0.399	318	3.131	0.351
<i>Log Likelihood</i>	70.784	80.878	70.831	46.689	61.919	75.566	52.467	38.846	78.340
<i>Nagelkerke R²</i>	0.093	0.044	0.092	0.508	0.273	0.139	0.288	0.137	0.069
<i>Predicted Correct</i>	61.70%	58.30%	65.00%	85.00%	71.70%	68.30%	86.70%	88.30%	55.00%

Table 4.5: Multivariate Model 3, Odds Ratios

	<i>Media</i>	<i>Community</i>	<i>Health</i>
<i>n</i>	46	53	25
<i>Women's Education (DI)</i>	2.109**	2.072	1.079
<i>Pregnancies (RI)</i>	2.266**	1.313	1.391
<i>Pill or Injectable use (RI0_ab)</i>	0.862	0.729	1.121
<i>Constant</i>	0.190	1.969	0.247
<i>Log Likelihood</i>	53.950	39.688	79.277
<i>Nagelkerke R²</i>	0.258	0.112	0.049
<i>Predicted Correct</i>	86.70%	88.30%	58.30%

Table 4.6: Multivariate Model 4, Odds Ratios

	<i>Media</i>	<i>Community</i>	<i>Health</i>
<i>n</i>	46	53	25
<i>Woman's Education (DI)</i>	2.487**	2.362*	1.147
<i>Pregnancies (RI)</i>	1.960*	1.122	1.343
<i>LARC use (RI0_c)</i>	2.677	2.286	1.490
<i>Constant</i>	0.145	1.553	0.235
<i>Log Likelihood</i>	52.719	39.181	78.996
<i>Nagelkerke R²</i>	0.283	0.127	0.055
<i>Predicted Correct</i>	83.30%	88.30%	58.30%

Tables 4.3-4.6: Analysis was run in SPSS v22 (IBM Corp, 2013) using binary logistic regression; * denotes $p < 0.100$, ** denotes $p < 0.050$, *** denotes $p < 0.010$.

Model 1 explores all of the independent variables that trended statistically significant in Table 4.2 with the exception of number of births and living children, because of their inherent collinearity with number of pregnancies — pregnancies predicts births, which predicts number of children, even if those numbers are not all equal. Model 2 only includes independent variables that were statistically significant in bivariate regressions (not shown). I ran the independent variables through all varieties of our FP option dichotomous variables (R10_a to R10_e) and FP exposure dichotomous variables (R11_a to R11_c). Model 1, not surprisingly, did not result in as many cases of (trending) statistical significance as Model 2.

Model 1's strongest association was between education level and whether or not women had used LARCs. With the addition of all of the tested independent variables, the negative association between education and LARC usage was lower than on its own. A woman's education's relationship with those who used 'other' FP methods also trended statistically significant in Model 1. Participants from Gullele associated with FP messaging exposure in health clinics and a participant's number of children associated with use of either pills or injectables (but not either by itself), both at p-values that trended statistically significant. The predicted cases correct — a weighted comparison of correctly predicted negatives and correctly predicted positives for each case — ranged from 61.2% (for injectable use) to 89.8% (for messaging from a participant's community). The weighted comparison adjusts for the misleading nature of looking at how the model worked for only true positives and true negatives (Kennedy, 2003, p. 267). Model 2, as expected, indicated more statistically significant associations than Model 1. In Model 2, participants' education and previous pregnancies associate in a manner such that they statistically significantly associate with use of LARCs, 'other' FP methods, and exposure through popular media. Interestingly, women's education and LARC use were

negatively associated, while previous pregnancies and LARC use were positively associated. Furthermore, women's number of pregnancies trends statistically significant when associated with women who had used pills, pills or injectables, and those who had changed FP methods. The predictive percentages in Model 2 range from 55.0% (exposure to messaging through health clinics) to 88.3% (exposure to messaging through community sources).

Models 3 and 4 examine how FP usage associates with FP messaging exposure. I decided to only examine women who had used pills or injectables and women who had used LARCs, as those categories interested me more than the others. Unsurprisingly, neither type of FP method use associated with a particular exposure to FP messaging. In both Models, woman's education and number of pregnancies associated in a statistically significant manner with exposure through a media sources. Interestingly, in Model 4, a woman's education positively associates with FP messaging exposure through a community member, family member, or friend with LARC usage present as an independent variable. Though I cannot think of a good explanation for this association, which may only be due to our small sample size, it might be something that warrants further investigation.

Conclusion

Looking back at my hypothesis, that higher education and employment is positively associated with usage of long-acting contraceptives (IUDs and implants) and with receiving information from health professionals more so than through general media sources — i.e. television, radio, billboards, etc. — my analysis provides some unexpected findings. Contrary to my prediction that higher education would increase LARC use, I found that higher education actually trends towards decreasing LARC use in the study population and positively associates with media as a source of FP information. Though I did not find a relationship between

employment status and LARC use, I did find that employed women were more likely associate seeing/hearing about family planning through the media, also in contradiction to the hypothesis.

The next chapter will elaborate on the implications of such a finding, discuss the limitations inherent to this project, and provide recommendations for how to move forward given the findings of the above-presented analysis.

Chapter 5: Conclusion

This project, as is often the case in research, challenged preconceived notions and provided unanticipated barriers to its implementation. Though it is only a small, non-representative, pilot study, it does, by definition, represent the women I surveyed and therefore its results may give some insight into how to best provide them with FP services. This chapter will further explore the implications of the above findings, describe the challenges inherent to the data collection and the limitations associated with this project, and provide suggestions for how to best utilize my findings in the future.

As I wrote at the end of Chapter 4, the data did not support my hypothesis. The most interesting contradiction was the unexpected relationship between women's education and LARC use. This, though likely a blip due to our small sample size, is an important reminder of the darker history surrounding contraception — and Western biomedicine more generally — in Sub-Saharan Africa. After a brief discussion on said topic, I will highlight the barriers faced in implementing this project; particularly how unavoidable miscommunications may have hampered data collection. Lastly, I will discuss what aspects of the project should be researched further and how to do so most effectively.

Implications

There is a complex, and often unequal, relationship — encompassing cultural, political, and social histories — between the West and Sub-Saharan Africa that health practitioners need to be especially sensitive of, whether they are Western or African. This is particularly relevant to women's reproductive health because of women's historically marginalized place in global society. For reproductive health specifically, the power dynamics present unique challenges in sub-Saharan Africa in particular because they exist between African men and women, African

health providers and women, and Africans and the outside world. Though our small sample size limits the generalizability of our negative association between women's educations and LARC usage, the mere indication that uneducated women are coerced into taking LARC demonstrates the urgency of more research to refute such a suggestion. Due to the limited nature of this research, however, it would be hyperbolic to dwell on this point.

Limitations

When I first approached Dr. Bell about conducting this research, he introduced me to Dr. Malede Birara, an Assistant Professor of Obstetrics and Gynecology at SPHMMC. Though I worked with Dr. Bell, Dr. Rominski, and Divya Nagpal in Ann Arbor to create an outline for how to go about collecting data, I worked with Dr. Malede — in Ethiopia they use what we consider a first name in formal titles — to ensure that Divya and I would have translators available to help us with data collection. We took this to mean that we would have translators available every day for our ten-week stay. We neglected to recognize that, once arriving in Ethiopia, we would need about two weeks on the ground to get final approval on the SPHMMC IRB, translate our survey, and conduct pilot runs to ensure that all of our questions made sense. The IRB approval was not too much of a challenge, other than being time consuming, but the translation and pilot runs were more difficult. After meeting our translators for the first time, Dr. Kidus Mengistu and Dr. Fuad Abdulkadir, we learned that as interns at SPHMMC they would both only have one week off during our time there during which they could attend clinics with us. Regardless, they assured us that they had done research in the past and were confident that we would get 200 participants in the two weeks they were free. Dr. Kidus later remarked, when I asked him to send follow up comments, that:

This is the Second research I ever did and the first research I did with foreigners,
Going out on the fields doing this research *I was expecting things to be easy and*

simple but in fact it wasn't and as to my observation the fact that we went out with foreigners was really a contributing factor, in the older days it was a practice that people from Europe and the US come to this country to perform C/S deliveries and other procedures for women when we didn't have OBGYN's of ours and they put contraceptives like the IUD without the women's consent and some does hysterectomies at the end of the procedures so while doing this research when the women saw people from other nations they feel uncomfortable compared to the research *I did a year back at which time they were so welcoming for us b/c we were people from the same nation and they trusted us*, the other thing is that when we do researches here, like I did on my first research we don't have written consent forms for them to sign, we just tell them about the theme of the research verbally and we conduct the questionnaires compared to this research which has a serious written consent form which made the women cautious and uncomfortable at the beginning while it was a fairly simple questionnaire...

This response, with emphasis added, touches on a few of the limitations that I will highlight and discuss further in the following paragraphs.

The first is that Dr. Kidus noticed wariness among study participants because of our presence in research clinics. This, which he attributes to popular stories of Westerners surreptitiously implanting IUDs in and performing unwanted hysterectomies on Ethiopian women, aligns with the power imbalance narrative discussed above. The subsequent distrust of foreigners may explain why Ethiopian women may have been uncomfortable sharing reproductive health information with foreigners — or *faranji* as we are known to locals — contributing to a smaller survey population than anticipated.

Dr. Kidus also noticed that in previous research he had not used consent forms. Although Dr. Kidus was enthusiastic to use them and wholeheartedly prescribed to their rationale, our other translator, Dr. Fuad, protested their use on the Monday, Tuesday, and Wednesday before finally agreeing to conduct them without an argument on the Thursday and Friday of the week we worked with them. He assured us that by reading the consent agreement, women would ask not to participate. We had to explain that being able to decline the survey was the whole point of

the consent agreement — perhaps an anecdote highlighting our different understandings of doctor-patient relationships.

Another limitation was the translation of the survey and subsequent data collection. We would have liked each translator to translate the English version of the survey separately and then back translate to reach a consensus. Instead, Dr. Kidus made a translation and then Dr. Fuad worked with him to correct it before bringing it to Dr. Malede for final approval. Furthermore, because neither Divya nor I — or Caroline, the other undergraduate student who started working with us once we arrived in Ethiopia — had any working knowledge of Amharic, we had no way of confirming that Dr. Kidus and Dr. Fuad read the survey to women the same way each time. These two inconsistencies work together to decrease the feasibility of easy replication, although these are also likely inconsistencies that play out in research done in foreign languages quite regularly.

I also had factors outside of our control working against us. As it turned out, Ramadan fell during our study period, which Dr. Fuad explained might have limited FP clinic attendance since Muslim women are supposed to practice sexual abstinence during Ramadan and therefore have no need for FP. Several of the clinics surveyed primarily served Muslim women, although I did not, due to lack of foresight, keep track of which. I was also in Addis during the rainy season. Once the rains began in the early afternoons it was unlikely that women would attend FP clinics for the very obvious reason of them not wanting to get wet. These factors, in addition to the ones described above, limited the study population after Dr. Kidus and Dr. Fuad's available two weeks to less than our minimum targeted sample size of 50 women. In an attempt to reach 60 participants, and visit all 10 clinics, I turned to one of the second year SPHMMC medical students, Abonesh Eshetu, to help conduct the remaining surveys. Abonesh gave the time and

energy needed to finish data collection, even if I did not come close to the pre-determined reach goal of 200 surveyed women.

I have already talked at length about how our small sample size limits the conclusions we can draw from our data and at this point it does not seem prudent to belabor that point. I shall now look forward, with suggestions for how I think the above-presented data should be utilized to improve FP in Ethiopia.

Moving Forward

In an ideal world, this project would be repeated by a group of Ethiopian researchers on a slightly larger scale to determine if further research is warranted. Such work may still need to be supported externally by the University of Michigan, but in the long run this project should be one that allows SPHMMC students and professors to utilize the enthusiasm and creativity at their disposal. I still believe that if a relationship between social characteristics or FP history and source of FP information exists, then FP advocates will be able to better target messaging to ensure that Ethiopian women can learn about the costs and benefits of different methods and can choose the best method for themselves. This also aligns with the Ethiopian government's goal of reducing TFR and increasing CPR. That said, as I have written above, such promotion should be done with a comprehensive understanding of the troubled past of biomedical science, and foreign intervention, in Sub-Saharan Africa.

In conclusion, then, like a good academic, I am calling for more research. Are there statistically significant associations between education, employment, or FP use and messaging sources in a larger cohort of women attending SPHMMC-associated, or other Ethiopian, FP clinics? Do such relationships, if they exist, hold among women receiving FP services in other regions of Ethiopia? How could relevant stakeholders take advantage of such correlations to best

provide for the reproductive health services for Ethiopian women who want them? Hopefully this project serves as stepping stone, off which future research can utilize to better study the interactions of various factors with how women learn about FP sources in Ethiopia.

Appendix 1: Survey and Consent Agreement in English and Amharic

Survey

Demographic Information

D1 ከፍተኛ የትምህርት ደረጃ? (What is the highest level of school you have completed?)

- a. አንደኛ ደረጃ (Primary)
- b. ሁለተኛ ደረጃ (Secondary)
- c. ቴክኒክና ሙያ (Technical/Vocational)
- d. ከፍተኛ የትምህርት ተቋም (Higher)
- e. አልተማርኩም (None)

D2 የዕርሶ የስራ የቅጥር ሁኔታ ምን ይመስላል? (What is your current employment status?)

- a. ቅጥረኛ ነኝ (Employed)
- b. ቅጥረኛ አይደለሁም (Unemployed)

D3 ባለትዳር ነሽ ወይስ አግብተሽ ታውቁያለሽ ወይ? (Are you or have you ever been married?)

- a. አዎን Yes
- b. አልነበርኩም (No)

D3a ባለትዳር ከሆኑ የባለቤቶች ከፍተኛ የትምህርት ደረጃ ከሚከተሉት በየትኛው ይመደባል?
If you are married, what is the highest level of school your husband has completed?

- a. አንደኛ ደረጃ (Primary)
- b. ሁለተኛ ደረጃ (Secondary)
- c. ቴክኒክና ሙያ (Technical/Vocational)
- d. ከፍተኛ የትምህርት ተቋም (Higher)
- e. አልተማርኩም (None)

D3b ባለትዳር ከሆኑ የባለቤቶች የቅጥር ሁኔታ ምን ይመስላል?

If you are married, what is your husbands' employment status?

- a. ቅጥረኛ ነኝ (Employed)
- b. ቅጥረኛ አይደለሁም (Unemployed)

D4 ነዋሪነትዎ በአዲስ አበባ ከሆነ በየትኛው ክፍለ ከተማ ይገኛሉ? ካልሆኑም አባኮን የት አካባቢ እንደሚኖሩ ይግለጹ::

If you live in Addis Ababa, please indicate your sub-city, otherwise please note where you live

- a. አቃቂ (Akaki kality)
- b. ንፋስ ስልክ (Nefas silk-lafto)
- c. ኮልፌ ክራኒዮ (Kolfе keraniyo)
- d. ጉሊሌ (Gulele)
- e. ልደታ (Lideta)
- f. ኪርቆስ (Kirkos)
- g. አራዳ (Arada)
- h. አዲስ ከተማ (Addis ketema)
- i. የካ (Yeka)
- j. ቦሌ (Bole)
- k. ሌላ (other) _____

Reproductive Information

R1 እስካሁን ስንት ጊዜ አርግዘሻል? _____

How many times have you been pregnant?

R2 እስካሁን ስንት ጊዜ ልጅ ወልደሻል? _____

How many times have you given birth (to a live child)?
If the value in R1 doesn't equal R2, ask R2a: How many induced abortions have you had? ከዚህ በፊት ስንት ጊዜ ውርጃ ፈፀመሽል? _____

R3 አሁን በሒወት ስንት ልጆች አሉሽ? _____
How many children do you have?

R4 ስንት ልጆች እንዲኖሩሽ ትፈልገሃለሽ? _____
How many children would you like?

R5 ስለቤተሰብ ምጣኔ ሰምተሽ ታውቁኛለሽ? 1 አዎን 2 አይ
Have you ever heard of family planning? Yes No

R6 የወሊድ መቆጣጠሪያ አሁን ትጠቀሚያለሽ? 1 አዎን 2 አይ
Are you currently using family planning? Yes No
ከላይ ላለው ጥያቄ መልስሽ አዎን ከሆነ የትኛውን የወሊድ መቆጣጠሪያ ትጠቀሚያለሽ?

If yes, what type (do not read these allowed): Please circle your current method

- 1 የወንድ ኮንዶም (male condom) 2 የሴት ኮንዶም (female condom)
- 3 የቀን/ካላንደር ቆጠራ (standard days method) 4 እንክብል (pill)
- 5 በክንድ የሚወጋ መርፌ (injectables) 6 ጡት ማጥባት (lactational

amenorrhea

- 7 በክንድ የሚቀበር የወሊድ መቆጣጠሪያ (implant)
- 8 በማህፀን የሚቀበር የወሊድ መቆጣጠሪያ (IUD)
- 9 የወንዶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ (male sterilization)
- 10 የሴቶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ (female sterilization)
- 11 ወርሐዊ ለውጦች (rhythm method)
- 12 የወንድ ልጅ የዘር ፈሳሽ ወደውጭ ማፍሰስ (withdrawal)
- 13 ሌላ (other) _____
- 14 ምንም አይነት መንገድ ተጠቅሜ አለውቅም::
I have never used family planning before

R7 አሁን ጓደኛሽ ጋር ኮንዶም ትጠቀሚያለሽ ወይ? 1 አዎን 2 አይ
Do you currently use condoms with your partner? Yes No

R8 ስለ የትኛው የቤተሰብ ምጣኔ መንገድ ሰምተሽ ታውቁኛለሽ?
What types of family planning have you heard of (do not read choices aloud)?

- Please circle all methods that apply
- 1 የወንድ ኮንዶም (male condom) 2 የሴት ኮንዶም (female condom)
 - 3 የቀን/ካላንደር ቆጠራ (standard days method) 4 እንክብል (pill)
 - 5 በክንድ የሚወጋ መርፌ (injectables) 6 ጡት ማጥባት (lactational

amenorrhea

- 7 በክንድ የሚቀበር የወሊድ መቆጣጠሪያ (implant)
- 8 በማህፀን የሚቀበር የወሊድ መቆጣጠሪያ (IUD)
- 9 የወንዶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ (male sterilization)
- 10 የሴቶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ (female sterilization)
- 11 ወርሐዊ ለውጦች (rhythm method)
- 12 የወንድ ልጅ የዘር ፈሳሽ ወደውጭ ማፍሰስ (withdrawal)
- 13 ሌላ (other) _____

R9 ከሚከተሉት ውስጥ ስለየትኛው ታውቁኛለሽ?

Please indicate which of the following you have heard of (read prompts for methods not selected in R8):

- 1 የወንድ ኮንዶም (male condom)
- 2 የሴት ኮንዶም (female condom)
- 3 የቀን/ካላንዲር ቆጠራ (standard days method)
- 4 እንክብል (pill)
- 5 በክንፍ የሚወጋ መርፌ (injectables)
- 6 ጡት ማጥባት (lactational amenorrhea)
- 7 በክንፍ የሚቀበር የወሊድ መቆጣጠሪያ (implant)
- 8 በማህፀን የሚቀበር የወሊድ መቆጣጠሪያ (IUD)
- 9 የወንዶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ (male sterilization)
- 10 የሴቶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ (female sterilization)
- 11 ወርሐዊ ለውጦች (rhythm method)
- 12 የወንድ ልጅ የዘር ፈሳሽ ወደውጭ ማፍሰስ (withdrawal)
- 13 ሌላ (other) _____

R10 ከዚህ በፊት ምን ዓይነት የወሊድ መቆጣጠሪያ መንገድ ተጠቅመው ያውቃሉ?

What type(s) of family planning have you used before (read the choices aloud with the prompts)?

- 1 የወንድ ኮንዶም male condom
- 2 የሴት ኮንዶም female condom
- 3 የቀን/ካላንዲር ቆጠራ standard days method
- 4 እንክብል pill
- 5 በክንፍ የሚወጋ መርፌ injectables
- 6 ጡት ማጥባት lactational amenorrhea
- 7 በክንፍ የሚቀበር የወሊድ መቆጣጠሪያ implant
- 8 በማህፀን የሚቀበር የወሊድ መቆጣጠሪያ IUD
- 9 የወንዶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ male sterilization
- 10 የሴቶች ዘለቄታዊ የወሊድ መቆጣጠሪያ መንገድ female sterilization
- 11 ወርሐዊ ለውጦች rhythm method
- 12 የወንድ ልጅ የዘር ፈሳሽ ወደውጭ ማፍሰስ withdrawal
- 13 ሌላ other _____

14 ምንም ዓይነት መንገድ ተጠቅሜ አላውቅም::

I have never used family planning before

R11 ስለቤተሰብ ምጣኔ አገልግሎት መረጃዎች ከሰሙባቸውን መንገዶች ከሚከተሉት የትኛው ይገኛባቸዋል?

Select all of the places from where have you heard about family planning?

- 1 ራዲዮ (radio)
- 2 ጋዜጣ (newspaper/magazine)
- 3 ቴሌቪዥን (television)
- 4 ከህብረተሰብ (community event)
- 5 ጎረቤት (friend)
- 6 እናት/ ቤተሰብ (mother/other family member)
- 7 ማስታወቂያ (pamphlet/poster/leaflet/billboard)
- 8 ቅድመ ወሊድ ክትትል (prenatal visit)
- 9 ድህረ ወሊድ ክትትል (postnatal visit)
- 10 ለሌላ የጤና ክትትል (other health appointment)
- 11 ሌላ (other) _____

R12 ስለቤተሰብ ምጣኔ አገልግሎት መረጃ ለማግኘት ወዴት ይሄዳሉ?

Where do you go to get family planning information? (circle all that apply)

- 1 ራዲዮ (radio)
- 2 ጋዜጣ (newspaper/magazine)
- 3 ቴሌቪዥን (television)
- 4 ከህብረተሰብ (community event)

- 5 ገገጽ (friend) 6 እናት/ ቤተሰብ (mother/other family member)
- 7 ማስታወቂያ (pamphlet/poster/leaflet/billboard)
- 8 ቅድመ ወሊድ ክትትል (prenatal visit) 9 ድህረ ወሊድ ክትትል (postnatal visit)
- 10 ለሌላ የጤና ክትትል (other health appointment) 11 ትምህርት ቤት (school) 12 ሌላ (other) _____

13 ስለቤተሰብ ምጣኔ ሰምቼ አላውቅም (I have not heard about family planning)

R13 ስለቤተሰብ ምጣኔ አገልግሎት ጥያቄ ኖሮት ያውቃል? 1 አዎን 2 አይደለም
 Have you ever had a question about family planning? Yes No

R13a ምላሽ አዎን ከሆነ መረጃውን ከየት አገኛለሁ? If yes (in R13), where did you go to get information? (circle all that apply)

- 1 ራዲዮ (radio) 2 ጋዜጣ (newspaper/magazine)
- 3 ቴሌቪዥን (television) 4 ከህብረተሰብ (community event)
- 5 ገገጽ (friend) 6 እናት/ ቤተሰብ (mother/other family member)
- 7 ማስታወቂያ (pamphlet/poster/leaflet/billboard)
- 8 ቅድመ ወሊድ ክትትል (prenatal visit) 9 ድህረ ወሊድ ክትትል (postnatal visit)
- 10 ለሌላ የጤና ክትትል (other health appointment) 11 ትምህርት ቤት (school) 12 ሌላ (other) _____

13 ስለቤተሰብ ምጣኔ ሰምቼ አላውቅም (I have not heard about family planning)

R14 ዛሬ ወደዚህ አገልግሎት ለመምጣትዎ መረጃ ከየት አገኛለሁ?
 Which of the following reasons led you here today?

- 1 ራዲዮ (radio) 2 ጋዜጣ (newspaper/magazine)
- 3 ቴሌቪዥን (television) 4 ከህብረተሰብ (community event)
- 5 ገገጽ (friend) 6 እናት/ ቤተሰብ (mother/other family member)
- 7 ማስታወቂያ (pamphlet/poster/leaflet/billboard)
- 8 ቅድመ ወሊድ ክትትል (prenatal visit) 9 ድህረ ወሊድ ክትትል (postnatal visit)
- 10 ለሌላ የጤና ክትትል (other health appointment) 11 ትምህርት ቤት (school) 12 ሌላ (other) _____

13 ስለቤተሰብ ምጣኔ ሰምቼ አላውቅም (I have not heard about family planning)

Exposure to Family Planning Messaging

E1 ከዚህ በታች የሚከተሉትን መልዕክቶች ሰምተው ያውቃሉ?
 Have you seen any of the following messages?

- 1 የተመጣጠነ ቤተሰብ ባለቤት መሆን ብልህነት ነው 1 አዎን
- 2 አይደለም
 It's wise to have a balanced family life Yes No
- 2 የቤተሰብ ደስታ በእጅ ነው 1 አዎን 2 አይደለም
 Your family's happiness is in your hands Yes No
- 3 አራርቅ መውለድ ለደስተኛና ጤናማ ቤተሰብ ቁልፍ ሚስጥር ነው 1 አዎን 2 አይደለም
 Birth spacing makes for a loving, caring, and healthy family Yes No
- 4 ልጆች በዕቅድ ዕንጂ በድንገት መውለድ የለባቸውም 1 አዎን
- 2 አይደለም
 Children by choice and not by chance Yes No
- 5 የቤተሰብ ምጣኔ ተቃራኒነት ምርጫችን ነው:: 1 አዎን 2 አይደለም

It was our decision to plan our family Yes No
6 ሌላ (other) _____

Consent Agreement

Good afternoon. We are currently conducting a research project among women attending this family planning clinic. This research project is collaboration between researchers from St. Paul Hospital and the University of Michigan. The purpose of this study is to measure your and other clinic attendees' knowledge about family planning methods and messaging. Family planning is a major health policy objective among in Ethiopia. You are being approached because you are over 18 years old and are attending this clinic. Your participation in this research project is completely voluntary and declining to take part in the study will have no impact on your care today or in the future. Participating in this survey will not extend the length of your time in the clinic by more than 15 minutes and should not be associated with any discomfort

A goal of this research project is to evaluate knowledge among women like you attending family planning clinics associated with St Paul's Hospital Millennium Medical College. In total your participation will only require the 15-minute questionnaire. Your involvement in the research study is completely voluntary. All information collected, as part of this research project will be held completely confidential. If after agreeing to participate in the research project you decide that you would like to be removed from the study please let the study team in clinic know and you will be removed from the study. If you have any additional questions at anytime during the study you can contact Dr. Malede Birara at St. Paul Hospital. Thank you for your willingness to help us improve care at St. Paul Hospital.

Agree to Participate (thumbprint) _____

በጥናቱ ለመጠቃለል የሚደረግ የፍቃድ መጠየቂያ ቅጽ

ደህና ዋለችሁ። አሁን ወደ ቤተሰብ ምጣኔ ክሊኒኮች የሚሄዱ ሴቶች ላይ ጥናታዊ ምርመራ በሚደረግ ላይ እንገኛለን። ይህ ጥናታዊ ምርመራ ከጳውሎስ ሆስፒታል እና ከሚቸጋን ዩንቨርሲቲ ከተወጧቸው ግራፖች ጋር በትብብር የሚሰራ ነው። ጥናታዊ ምርመራ የቤተሰብ ምጣኔ ምን ያህል ጥቅም ላይ እየዋለ እንደሆነ እና ስለቤተሰብ ምጣኔ አውቀት ለማስፋት የሚደረግ ነው። ይህን መጠይቅ ያቀረብንሎት ከ18 ዐመት በላይ ስለሆኑ እና ወደዚህ ክሊኒክ ስለመጡ ነው። በዚህ ጥናት ውስጥ መጠቃለል ግዴታ ሳይሆን ሙሉ ለሙሉ በእርሶ ፍቃድ የተመሰረተ ነው። መጠይቁ ከ15 ደቂቃ በላይ አይወስድም።

የጥናቱ አላማ ወደ ቤተሰብ ምጣኔ ክሊኒኮች የሚመጡ ሴቶች ምን ያህል ስለቤተሰብ ምጣኔ አንደሚያቁ ለመገመት ይረዳናል። የእርሶ ትብብር ይህን መጠይቅ በመመለስ ሲሆን ይህም 15 ደቂቃ ያክል ይወስዳል። ይህም ሙሉ ለሙሉ በእርሶ ፍቃድ ጥንት ይሆናል። ለዚህ መጠይቅ የሚሰጡት መልስ ሙሉ ለ ሙሉ ሚስጥረኝነቱ የተጠበቀ ይሆናል። መጠይቁን ከጂኦሚትሪ በውሃ ማቆም ከፈለጉ እናም ከምርመራ መውጣት ከፈለጉ መብቶች የተጠበቀ ነው። ስለ ጥናቱ ምንም ዓይነት በማንኛውም ጊዜ ጥያቄ ካለዎት በ ቅዱስ ጳውሎስ ሆስፒታል ዶ/ር ማለደ ቢራራን አግኝተው መረጃ ማግኘት ይቻላል። በዚህ ጥናት ለመጠቃለል ፍቃድ ስለሆኑ እናመሰግናለን።

በጥናቱ ለመጠቃለል እስማማለሁ
ፊርማ

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