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Signature:

“When you are willing, you can do it” Changes in Knowledge, Self-Efficacy, and Hope among Zambian providers receiving LARC training. A mixed-methods study.

By

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2010

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An abstract submitted to the Faculty of the
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of Master
Master of Public Health in Behavioral Sciences and Health Education
2014

Abstract

Background: Zambians face a number of obstacles in achieving reproductive health including a high total fertility rate, a high maternal mortality rate, and a high infant mortality rate – all of which are linked to poor access to and use of family planning methods. Additionally, there is a high adult HIV prevalence. These factors combine to make unplanned pregnancies even more dangerous. One way to combat these obstacles is to increase access, use and adherence to family planning methods, specifically long acting reversible contraception (LARC) methods. LARC methods are safe, highly effective, long-lasting and cost-effective. Trained health care providers are fundamental in increasing access, use and adherence to LARC methods, thus considering their attitudes, motivations, perceptions and struggles is warranted.

Objectives: Two theories were used in a mixed methods approach to examine how health care providers perceived LARC methods and how impactful LARC insertion and removal training was on their knowledge, self-efficacy, and general sense of hope.

Methods: In the summer of 2013 in various cities in Zambia, 14 qualitative interviews were performed with female health care providers. The providers were asked about their perceptions of and attitudes towards LARC methods in addition to general questions regarding work experiences and goals. Thematic analysis, with influences from grounded theory, was used to analyze the interviews. Two LARC insertion and removal trainings were also observed, during which pre and post assessments were given to measure knowledge, self-efficacy, and hope. Paired sample t-tests were run to assess whether participants' knowledge, hope, and self-efficacy changed significantly from baseline to post-training.

Results: Several pervasive and influential themes emerged from the interviews, including the attitudes and perceived benefits of both the LARC methods and the LARC insertion and removal training. Additionally, other prominent themes were identified including: the importance of the role of the client-provider relationship, the prevalence of past experiences contributing to a sense of self-efficacy, and barriers to the provision of LARC methods. Quantitative results demonstrated significant changes post-training in both knowledge and hope, but not self-efficacy.

Conclusion/Implications: As health care providers are integral in the dissemination of LARC methods, understanding their attitudes and perceptions is necessary. Evaluating the effectiveness of LARC training to increase provider knowledge, self-efficacy, and hope is an important step to increasing LARC dissemination. Future LARC training and research should consider ways to enhance and measure self-efficacy, decrease barriers to the provision of LARC methods, and focus on the role of culture and the client-provider relationship.

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CHAPTER I: INTRODUCTION

Global Health Issue: Risks of Unplanned Pregnancies

While sexual intercourse is a natural part of a full life course and can often be pleasurable, it presents a plethora of risks including unplanned and unwanted pregnancy. These risks are particularly dangerous for women living in developing countries. According to the World Health Organization (2013), roughly 800 women die daily due to preventable causes related to childbirth and pregnancy, with 99% of these deaths taking place in developing countries. Young girls face higher risks of complications and death, and the lifetime risk of pregnancy related death is higher in developing countries, partially due to disproportionally high birth rates (WHO, 2013). These high birth rates are also contributing to unsustainable population expansion which is a driver of poverty and environmental damage. Above and beyond the inherent risk of pregnancy and childbirth, women are also at greater risk for contracting diseases such as HIV and other STIs (WHO, 2013). While these are significant health challenges for the infected woman, these infections can also be transmitted from mother to child during pregnancy, labor, delivery or breastfeeding (WHO, 2013). Consequently, in developing countries HIV/AIDS and complications related to pregnancy and childbirth are the first and second leading causes of death among women of reproductive age (WHO, 2013).

Increased Access to FP as a Promising Solution

Due to the general risk of pregnancy and associated infections, it is clear that preventative programs, interventions and increased access to care should be in place globally, and particularly in developing countries. While many types of interventions and programs have been created to decrease risky pregnancy and childbirth, one type has been particularly promising: increased access to family planning. Several studies and reports have found significant benefits to increasing access to family planning methods, especially to those infected with HIV. These benefits include the prevention of

unplanned HIV positive births, a reduction of unsafe abortions and maternal and child mortality, and an increase of empowerment for both women and men (Reynolds, 2006; Allen et al, 2007; Delvaux, 2007).

A category of family planning methods that have proved to be particularly successful in preventing pregnancy are Long-Acting Reversible Contraception (LARC) methods. According to a CDC report (2013), LARC methods are safe, 99% effective at preventing pregnancy, and have the highest ratings of satisfaction and continued use of all reversible contraceptives. In addition to their efficacy, LARC methods are user friendly; they do not require the user to remember to take a pill or pick up a prescription, reducing the number of user-related errors and stress related to these errors. Additionally, unlike sterilization, LARC options do not result in infertility and are reversible. While LARC methods do not prevent the transmission of STIs or HIV, they can be used successfully with other protective methods, such as condoms. Finally LARC methods, such as the copper intrauterine device (IUD) and hormonal implant are cost-effective and long-lasting, often costing half the price of oral contraceptives and lasting up to 12 years and 5 years, respectively (Lipetz, Phillips, and Fleming, 2009; WHO, 2013).

Despite the benefits, there remains an unmet need for long-term family planning methods, particularly in developing countries. According to the WHO (2013), over 200 million women in developing countries would like to delay or avoid pregnancy but are not using any method of contraception. This lack of use is due to a variety of contextual factors including: limited access to methods, low access to health care and skilled health workers, gender-based barriers, and fear of side-effects (WHO, 2013).

Increasing Access Through Trained Health Care Providers

One way to combat the contextual factors preventing the use of family planning methods is to increase the number of skilled health care providers (WHO, 2013). According to a WHO 2012 policy brief focused on strategies to increase use of LARC methods, integral steps to increasing LARC use include providing training for IUD and implant insertion and removal techniques and increasing the range of health care providers competent in these skills.

As health care providers prove to be fundamental in increasing access, use and adherence to LARC methods, considering their attitudes, motivations, perceptions and struggles is warranted. This is supported by research. For example, the manner in which clinicians communicate and support their patients impacts patient acceptance of, hope for, and adherence to the health treatment being advised, ranging from HIV medication adherence to uptake and adherence of LARC methods (Snyder, 1994; Westburg & Guindon, 2004; Khu et al., 2013). Thus, a provider who perpetuates myths and misperceptions surrounding the use and delivery of LARC methods can be a barrier to uptake (WHO, 2013). Additionally, insufficient training, lack of provider motivation, staff frustration, heavy workload and burnout have all been found as impediments to integrating sexual and reproductive health into other care services (Church et al., 2010; Church & Mayhew, 2009; Dehne & Snow, 1999; Rutenberg, Kalibala, Mwai, & Rosen, 2002). Luckily, opportunities for career development and continuing education are top motivators among health care workers in developing countries. Furthermore, studies suggest that hope for client improvement and future career opportunities can be protective against burnout and work-related stress (Mathauer & Imhoff, 2006; Sherwin et al 1992). Given the necessity and impact of health care providers on the uptake and adherence to LARC methods, a more thorough understanding of their perceptions and experiences is needed. Further, few researchers have focused on how knowledge, self-efficacy and hope influence provider perception and communication of LARC-related services. An increased awareness can help create more sustainable and successful LARC-based family planning interventions in countries that need them most.

The Case for ZEHRP

The work of the Zambia Emory HIV Research Project (ZEHRP, the Rwanda Zambia HIV Research Group RZHRG group in Zambia) provides a compelling opportunity to investigate the perceptions and experiences of health care providers who will be delivering LARC methods. Located in Zambia, ZEHRP partners with 50 government clinics to provide Couples Voluntary Counseling and Testing (CVCT) for HIV. CVCT is delivered to clients by a range of health care providers including nurses, midwives and clinical officers, trained by ZEHRP. Building upon their success, ZEHRP recently

began collaborating with the U.K. Department for International Development (DFID) to implement Couples Family Planning and Counseling (CFPC) and LARC services in the government-partner clinics. This integration of CVCT, CFPC and LARC services was purposeful, as many sites have demonstrated success with the integration of care for all types of clients (HIV-positive, HIV-negative, Discordant couples). For example, studies in Haiti, Rwanda, Uganda, and Cambodia showed that the integration of services increased contraceptive use and reduced unwanted pregnancies (King, Etsey, and Allen, 1995; Pazol, Peck, Fitzgerald, and Liautad, 2003; Family Health International, 2004). In Zambia this integrative method has also been successful, particularly for HIV-discordant couples (one partner is HIV-positive, one partner is HIV-negative) (Khu et al., 2013).

As part of the implementation, ZEHRP will train health care providers (nurse counselors, midwives and clinical officers) in the insertion and removal techniques of IUDs and implants. The clinicians attending training are those with the most experience and client interaction, particularly of the target population - women.

ZEHRP's location and work is particularly relevant to the global health issue of the riskiness of unplanned pregnancies. Zambian's face a disproportionate amount of obstacles in achieving reproductive health. This disparity is evident in the WHO 2010 Zambia statistics: a high infant mortality rate of 69 per 1000, which is linked to poor access to family planning; a high total fertility rate (TFR) of 6.3 which contributes to the high maternal mortality rate of 440 per 100,000 live births and makes Zambia one of three African countries with an increasing fertility rate. Additionally, the high adult HIV prevalence of 15% makes unplanned pregnancies even more dangerous (WHO, 2013).

While it is evident that Zambia would benefit from the provision and use of LARC devices, they are not widely used. Based on the benefits and convenience of LARC, their uptake in Zambia would be advantageous for preventing unintended pregnancies, empowering couples in family planning decisions particularly when HIV status is known, contribute to the well-being and autonomy of Zambian women, decrease the risk of maternal and child mortality, and create a healthier community (WHO, 2013). Yet, according to a U.N. report (2010) only 26.5% of women between the ages of 15-49 are using any modern

method of contraceptive, with 0.4% using an implant and a sparse 0.1% using an IUD. The low use is due to a variety of factors including a limited choice in options, inadequate access to qualified providers, and a lack of knowledge of effective contraceptive methods (WHO, 2013). Thus an integral step to increasing access, use and adherence to LARC methods is increasing the number of qualified providers who are trained in LARC insertion methods.

As previously mentioned, a large body of research has indicated that provider characteristics and perceptions can impact client uptake and adherence to an advised treatment, with the majority of research focused on clients' perspectives. Yet, research is sparse on how knowledge, self-efficacy, and hope influence health care providers' perceptions of LARC methods. Thus, assessing the health care providers that ZEHRP is training on insertion and removal of LARC methods provides an important opportunity to fill research gaps. Through gaining a more thorough understanding on their perceptions of implants and IUDs, barriers can be addressed and better methods of training can be created.

The Diffusion of Innovations (DOI) and Social Cognitive Theory (SCT) are two theories that can help guide our thinking when developing interventions to increase access to care. DOI, conceptualized by Everett M. Rogers (2003), is a theory used to describe and explain the process by which an innovation spreads through communication channels and becomes accepted among individuals over time. An important note is that the innovation - which can be an idea, technology, or practice, is considered new by those in the social system (Rogers, 2003). In this case, LARC methods are the innovation that the nurses are attempting to diffuse.

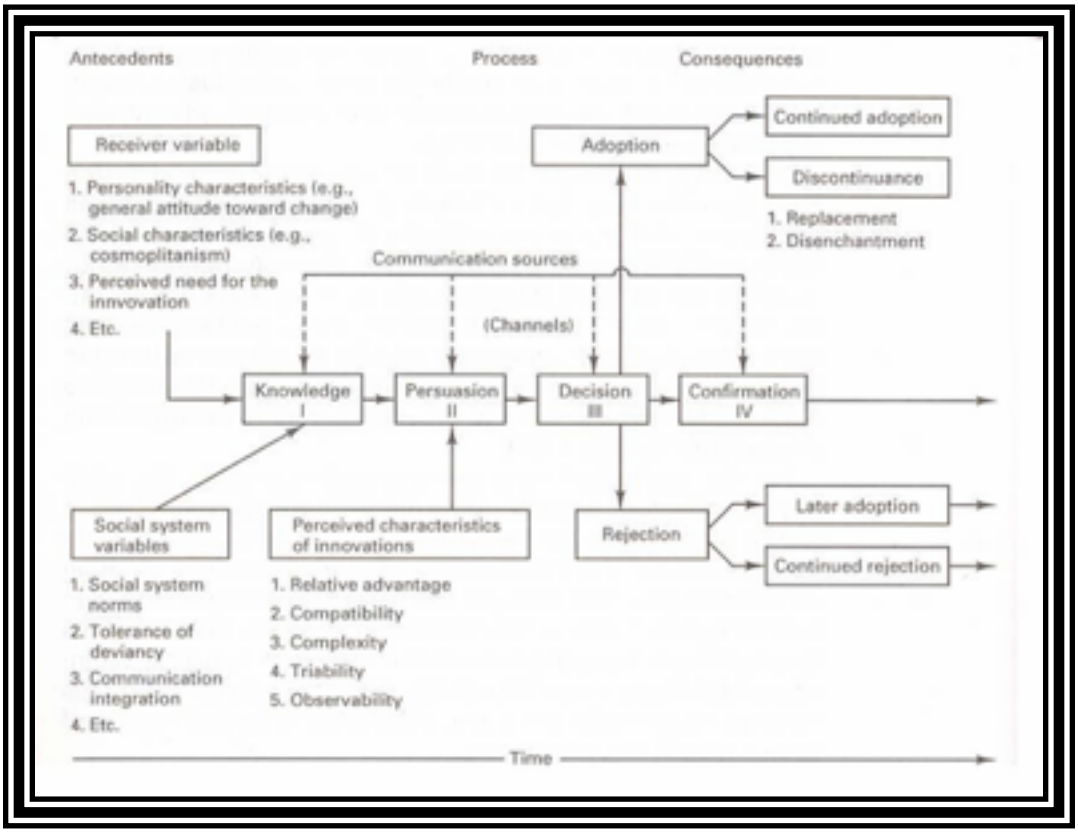

Figure 1. Innovation-Decision Making Process (Rogers, 2003).

DOI also explains the innovation-decision process (see Figure 1), which focuses on the way an individual passes through five stages (knowledge, persuasion, decision, implementation and confirmation), which influence whether or not they adopt and use the new idea. The stages of knowledge and persuasion are influenced by characteristics of the decision-making unit and perceived characteristics of the innovation, respectively. In this case the decision-making units are health care providers characterized by their knowledge, self-efficacy, and hope for client and self-improvement, which impacts whether or not they have sufficient awareness of the innovation. These characteristics also influence their perception of the innovation including felt need, relative advantage, compatibility and complexity - all of which impact health care providers' communication behavior. According to DOI, investment in the innovation early on is necessary for its dissemination, thus understanding whether health care providers

are invested in the training and delivery of LARC methods is critical. Additionally, as delivery and uptake can be impacted by knowledge, it is important to understand providers' views of the innovation.

Social Cognitive Theory (SCT) was developed in the 1960s and established in 1977 by Albert Bandura. It models reciprocal determinism - how individual, social, and environmental factors interact with one another and influence behavior and behavior change (see Figure 2; Bandura, 1977). The SCT posits that in order for an individual to have a behavior they must first have behavioral capacity, knowledge of the behavior and the capacity or skill to perform it. Additionally they must have self-efficacy, the perception that they have the capability and skill to perform the behavior, which can impact choices and effort put forth. Through different modes of learning including, actual performance, observation and social persuasion a person can become more self-efficacious, which is important because according to Bandura "among the mechanisms of agency, none is more central or pervasive than self-efficacy" (Bandura, 1995). In this case, health care providers participating in the LARC trainings are experiencing the different modes of learning which has the potential to increase their self-efficacy and thus their ability to deliver care. Yet, they are also experiencing environmental and social factors which could be facilitators or barriers to their behavior.

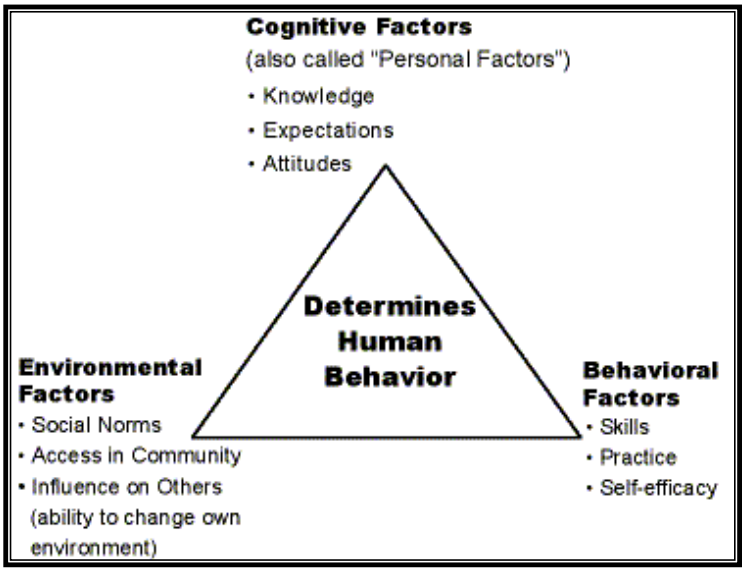

Figure 2. Reciprocal Determinism (Bandura, 1977; http://recapp.etr.org/recapp/index.cfm?fuseaction=pages.TheoriesDetail&PageID=38).

SCT also conceptualizes the influence of outcomes and self-regulation on behavior. These concepts assume that individuals learn of the potential results of a behavior and then associate a value or an emotion to the outcome. Furthermore, individuals go through a goal-setting process during which they evaluate internal and external feedback to determine whether they should adjust their behavior. As the goal of the training is to increase skilled health care providers with the hopes that they will recommend and deliver LARC methods, it is important to determine whether the providers value the skill and if their goals align with those of the training.

Research Hypotheses

Through multiple methods, this study examines how health care providers perceive LARC methods and how impactful LARC training is on their knowledge, self-efficacy, and general sense of hope. The research questions and hypotheses that will inform the study include:

Quantitative: Is there an increase in knowledge, self-efficacy and hope pre and post LARC training?

- Hypothesis 1: Post LARC training knowledge scores will be significantly higher compared to pre training knowledge scores.
- Hypothesis 2: Post LARC training self-efficacy scores will be significantly higher compared to pre training self-efficacy scores.
- Hypothesis 3: Post LARC training hope scores will be significantly higher compared to pre training hope scores.

Qualitative:

1. What are the attitudes and perceived benefits of LARC methods among health providers?
2. What are the attitudes and perceived benefits of LARC insertion and removal training among health providers?

CHAPTER II: LITERATURE REVIEW

While Plato defined knowledge as "justified true belief", there is no one agreed-upon definition (Fine, 2003). What is clear, is that the cliché of "knowledge is power" holds some truth as the research which uses knowledge as a variable is endless. Thus, finding the seminal work on knowledge is close to impossible. For the purposes of this literature review, knowledge will be conceptualized using the diffusion of innovations' (DOI) definition as both the awareness of an innovation and an understanding of its purpose. Additionally, knowledge will be viewed in the context of its influence on the perception and use of an innovation.

Impact and Prevalence of Lack of Knowledge

With the call by the World Health Organization (WHO, 2013) to increase access and use of long-term contraceptive methods it has been surprising that uptake among women remains low in many countries. Several important studies assessed possible reasons.

Black, Lotke, Lira, Peers, and Zite's (2013) global survey was the first study to gain comparable international data on health care provider knowledge and views regarding intrauterine contraceptive methods (IUCs) in nulliparous women. They surveyed 1862 health care providers in 15 countries (UK, France, Australia, USA, Mexico, Russia, Turkey, Canada, Germany, Netherlands, Sweden, Brazil, Ireland, Colombia and Argentina) on their knowledge of the World Health Organization Medical Eligibility Criteria (WHO MEC) for contraceptive use, attitudes towards intrauterine contraceptive methods (IUCs), and perceived barriers to IUC use particularly for nulliparous women. Analysis of responses included grouping the countries into four regions to better describe international variations. Across all four regions participants identified two major perceived barriers to IUC use in nulliparous women: difficulty of insertion and pelvic inflammatory disease (PID). Additionally less than half of the participants were knowledgeable of the correct WHO MEC for IUC use in nulliparous women.

This recent study identified lack of provider knowledge that can lead to misperceptions as a potential barrier to LARC dissemination (Black, Lotke, Lira, Peers, and Zite, 2013). In this study, as

many as two thirds of providers incorrectly believed that IUCs were difficult to insert and led to infection and infertility, particularly for nulliparous women. Consequently, researchers suggested that there was a need for a global effort to increase evidence and guidance-based knowledge among clinicians so that IUC use among nulliparous women can increase.

Other studies have also found a lack of knowledge and misperceptions surrounding LARC methods among providers. Some demonstrated clear consequences of low clinician knowledge. One such study was conducted by Van Zijl, Morroni, and M Van Der Spuy (2010) using a population of 216 clients and 30 providers (doctors, nurses and health advisors) at eight family planning clinics in Cape Town, South Africa. Using a cross-sectional survey, researchers examined the knowledge, acceptability and provision of intrauterine devices (IUDs) with the goal of identifying barriers to use. Knowledge about the IUD was low among both clients and providers. More than half of the clients were unaware of this contraceptive method, only 4% had ever used an IUD, and adherence was extremely low with only three women still using the method. Additionally, many clients indicated that lack of knowledge about the IUD was a barrier to use. Provider knowledge was also limited and in many cases was not consistent with current recommendations. In addition to the lack of knowledge, many providers held misperceptions about the IUD including its effectiveness and side-effects. Responses also demonstrated that the majority of providers had low referral rates for IUD insertion (less than 10 clients in the previous year) and were not regularly recommending or discussing the method with clients. Finally when asked about barriers to IUD use, the majority of providers pointed to lack of skilled providers to insert the IUD, lack of method promotion by providers and low knowledge among clients.

This insight into providers' and clients' knowledge and perceptions regarding IUDs suggests an important relationship between knowledge and use. The providers were limited by their knowledge and misconceptions and were thus unable to provide accurate counseling on IUDs to clients. Other studies have demonstrated that low clinician knowledge and/or lack of insertion training on IUDs and implants is associated with low provision of the methods and that unintended pregnancy can be a direct effect of

miscommunication between provider and client, particularly when providers give misinformation about contraceptive methods (Harper et al., 2013; Stanwood, Garrett, Konrad, 2002; Isaacs & & Creinin, 2003).

These studies highlight important outcomes which should be considered within the context of DOI. Notably, provider knowledge of the innovation is limited. Many providers had misconceptions about the methods, which influenced their communication style with clients. Additionally, providers perceived the innovation of LARC methods, particularly IUD insertion, as complex, which influenced their use of it. In terms of perceived characteristics, these studies suggest that LARC methods were not seen as compatible for certain populations (young and nulliparous women) which decreased clinician willingness to recommend and provide the innovation to these groups. Finally, the methods were not perceived as compatible with their current skill and knowledge level.

It is clear that low provider knowledge about LARC methods can have many negative and potentially dangerous implications. Thus increasing provider knowledge is critical. Many studies have found that trainings are effective ways to increase provider knowledge.

Training To Increase Knowledge

A study of particular note was performed by RamaRao and Mohanam (2003) to examine the quality and efficacy of family planning interventions in developing countries. Through performing a review of research articles found through three databases and general internet queries, the researchers were able to identify specific useful efforts and program implications that can be used to inform future interventions and policy. One program type of interest was the targeted intervention, specifically the training of providers. RamaRao and Mohanam evaluated several provider trainings in a variety of locations including Nigeria, Ghana, India, the Philippines and Brazil. All of the trainings focused on increasing clinician knowledge through a variety of strategies included increasing technical competence and improving counseling and communication. For example, in Nigeria family planning nurses were trained on additional counseling skills including interpersonal communication skills. They found that nurses who received the added counseling were able to communicate more effectively, providing better care and producing higher follow-up client compliance rates than those without the training. These effects

lasted a year following training (Kim et al. 1992). In India, private medical practitioners were trained on the promotion of family planning methods. Data on the program's efficacy were collected through a variety of sources including pre and post-surveys, data from monthly office service reports, and use of mystery clients. Analyses revealed that training increased provider knowledge, provider communication and advisement to clients on contraceptive methods, and improved quality of service. The latter was assessed by client satisfaction, number of doctors providing information on utilization of contraceptive methods, and accuracy of information provided by doctors (Barge et al. 1995). Positive outcomes of training providers were also found in Ghana, Brazil and the Philippines, with an increase in the dissemination of accurate information to clients, higher technical competence, increased in quality of care, improved provider attitudes towards the contraceptive methods, and higher client satisfaction (Huntington et al. 1990; JHPIEGO, 1999; Costello et al. 2001).

RamaRao and Mohanam's amalgamation of provider trainings in developing countries demonstrates the benefits and efficacy of training health care providers, specifically for the provision of family planning methods. While these studies demonstrated numerous advantages to training providers, the authors noted that each training occurred only once, which possibly increased the chance that information learned would be forgotten over time. Luckily, other studies have identified methods to maintain knowledge.

Agha, Fareed, and Keating (2011) published the first study of the impact provider attitudes and practices have on IUD provision in Pakistan. A total of 566 providers in 54 districts were interviewed on a variety topics including knowledge, attitudes and self-confidence. Findings suggest that experience inserting IUDs was the strongest determinant of accurate knowledge of the IUD, improved confidence in ability to insert an IUD, and decreased conservative attitudes towards its provision to younger clients. Interestingly, the authors noted that training was not consistently effective in decreasing providers' attitudinal barriers, like client age, to inserting IUDs. This study fills an important research gap and provides strong evidence for ways to improve training. Specifically, the authors recommend including didactic, guided, observational insertions and practical experience.

Not only is training effective at increasing provider knowledge, it is also desired. Multiple studies have found that a wide range of health care providers in a variety of countries and resource settings (both high and low) are interested in learning insertion and removal techniques of LARC methods (Harper et al. 2003; Morse et al. 2013). This is important because as training increases the number of knowledgeable and skilled providers, there is the potential for increased client uptake to ensue.

Increasing Acceptability, Access and Use Among Providers and Clients

A specific benefit of increasing the number of skilled health care providers is the increase in the provision of implants and IUDs. For example, Lewis, Darney, and Thiel de Bocanegra (2013) recently found that a skill-based IUD training significantly increased both provider knowledge and provision of the IUD to clients, with training sites increasing provision by 25% compared to 7% at the site that did not receive training. Other studies have found similar results, suggesting that as the number skilled health care providers increases, so does access and often client uptake (Hamid and Stephenson, 2006). What is important to ensure is that access leads to actual client use.

There are many barriers preventing clients from using and adhering to LARC methods including fear of side effects, low quality of care or lack of access to skilled providers, cultural norms, and lack of access to clinics with the methods due to resource limitations (Campbell, Sahin-Hodoglugil, and Potts, 2006). Many of these barriers are influenced by knowledge, with researchers finding client knowledge directly impacting use in both directions (Campbell, Sahin-Hodoglugil, and Potts, 2006). As found by Van Zijl, Morroni, and M Van Der Spuy (2010) almost two thirds of the clients viewed IUDs positively but they wanted to know more before using one. As more clinicians become increasingly knowledgeable and trained on insertion and removal of LARC methods they are able to increase client knowledge which can lead to improved attitudes, uptake and adherence. Yet, it is important to note that increasing knowledge alone does not increase use, clients must also have access to the LARC methods (R. King, J. Estey, S. Allen et al. 1995; Hamid and Stephenson, 2006; Grabbe et al., 2009).

An effective way to increase client knowledge, access and LARC uptake is through family planning counseling provided by a skilled health care provider.

Khu and colleagues' (2013) recent work was one of the first studies to evaluate the relationship between fertility goals and LARC uptake among HIV discordant couples in Rwanda and Zambia. A total of 409 Rwandan participants (283 couples, 126 individuals) were interviewed to determine fertility intentions. Of these, 365 were eligible to receive LARC counseling, which included reinforcement of dual-method use (condom use and modern contraceptive method). If interested, the woman could receive an IUD or implant immediately. Of those counseled, 36% decided to receive either an IUD or an implant. Results were similar in Zambia, where 34% adopted either an IUD or an implant. Finally, in both countries those who adopted a LARC method reported fewer cases of unprotected sex than those only using condoms.

This study provides compelling evidence that combining family planning counseling to increase client knowledge on effective contraceptive methods with improved access to LARC methods through instant availability by a skilled clinician is an effective way to increase uptake. Additionally, the study population is of particular importance as little research has been done on family planning for HIV discordant couples.

Landolt et al's (2012) prospective study on a different population showed similar results, with the added perspective of assessing adherence to the contraceptive. A cohort of 66 HIV-positive Thai women of reproductive age were assessed on their uptake and continuation of the copper IUD. Participants were recruited through two clinics: the HIV – Netherlands, Australia, Thailand (HIV-NAT) Research Collaboration Clinic and The Thai Red Cross Anonymous Clinic. Eligible participants received educational counseling on the benefits and risks of the IUD. A total of 44% of the participants consented to receive an IUD, with 93% continuing use through the 6-month follow-up. The researchers noted that providing education by a knowledgeable and motivated health care provider in combination with free and easy access in a setting already providing HIV care was a useful method in promoting dual-method use. Additionally, providing continued counseling during follow-ups appeared to be helpful in adherence to the method.

This study furthers the evidence on effective family planning methods. Many other researchers' work validates Khu et al.'s (2013) and Landolt et al.'s (2012) findings. Several studies have found that when providers counsel patients in a manner that increases client knowledge and expectations of contraceptive methods, clients are more likely to use, adhere and be satisfied with the method (Backman et al., 2002; Canto De Cetina, Canto, & Luna, 2001; Danli, Qingxiang, & Guowei, 2000; Hubacher, Goco, Gonzalez, & Taylor, 1999; Lei et al., 1996; Freeman, 2004). Finally, increased use and adherence to LARC methods specifically is critical. A study in Zambia found that improving access to contraceptives increased their use, but also found high discontinuation, user failure and no change in incident pregnancy (Mark et al., 2007). Thus increasing access to user-friendly methods like IUDs and implants is necessary.

Knowledge and Self-Efficacy: Improving Attitudes

Finally, as it is clear that providers play an important role in increasing access and use of LARC methods, it is important that they have positive attitudes. Interestingly, there have been mixed results linking training, knowledge and attitudes. Several studies have found a gap between provider knowledge and their attitudes around counseling and provision of an implant or IUD (Agha, Fareed, and Keating, 2011; Kohn, Hacker, Rousselle, and Gold, 2012; Rubin, 2013). On the other hand, others found that increasing knowledge was directly linked to provision of a contraceptive method (Lewis, Darney, and Thiel de Bocanegra, 2013; Huntington et al. 1990). A study that might help bridge this gap is Olley's (2003) investigation on the attitudes of health care workers towards HIV patients in Nigeria. His findings indicated that self-efficacy, rather than knowledge, worked as a mediating factor in improving attitudes and willingness to provide care. Further, it has been found that increasing knowledge can directly increase self-efficacy (Lehman, 2009).

These studies highlight important outcomes that should be considered within the contexts of DOI and SCT. There is a felt-need both among providers and clients for LARC methods, yet many clinicians lack the behavioral capacity (knowledge and skill) to insert implants or IUDs. Lack of behavioral capacity can negatively impact communication behavior, which is critical to the dissemination of LARC

methods. Luckily, communication behavior can be improved through different modes of learning (actual performance, observation and social persuasion), which can lead to client uptake and adherence of LARC methods. Finally, there is a clear relative advantage of LARC methods over other contraceptive methods, as user error is significantly decreased.

Knowledge is clearly important in increasing availability, accessibility, provision, use and adherence to LARC methods. It has also been shown to increase self-efficacy. Knowledge and self-efficacy thus may serve as facilitators to LARC methods. For the purposes of this literature review, self-efficacy will be conceptualized using the Social Cognitive Theory (SCT) definition of self-efficacy: an individual's perception that they have the capability and skill to perform the behavior, which can impact choices and effort put forth.

Relationship Of Knowledge/Training and Self-Efficacy

While training is an effective way to increase knowledge, it has also been shown to increase self-efficacy. MacLeod and colleagues' (2011) recent work in increasing the number of skilled health workers in Zambia and Kenya demonstrated important and interesting results. A total of 75 health care providers were trained in a short-course on acute trauma care and fundamental critical care support. Both knowledge and self-efficacy were evaluated before and after the training occurred. All of the participants' knowledge and self-efficacy improved after attending the training, with the most significant increase in self-efficacy shown in ability to perform surgical procedures.

This study was able to demonstrate increases in knowledge and self-efficacy across all students, particularly those in the lowest pre-test quartile. Additionally, these results support previous researchers' recommendations to enhance and emphasize hands-on training, as this can increase self-efficacy. Finally, this work demonstrates that trainings in low resource settings can be effective in increasing the number of skilled health care workers.

One of the only studies to evaluate the efficacy of an HIV prevention intervention for hospital workers in Malawi demonstrated similar results (Kaponda et al., 2009). A total of 850 participants, both clinical and nonclinical (37% clinicians/technicians, 39% clinical support staff, 24% nonclinical staff),

completed 10 peer-led sessions. During each session an HIV-related topic was discussed, such as prevention, testing, partner negotiation, or stigma. After each session, participants were expected to complete an assignment which focused on practicing a certain skill. The efficacy of the training was evaluated through pre and post surveys on a sample of participants. Post-intervention, workers demonstrated increased knowledge, more positive attitudes, more hope and less stigmatization of those with HIV as well as greater self-efficacy for practicing safe sex and for community prevention. Additionally, post-intervention behavioral changes were noted including more participants getting tested for HIV, higher rates of safe sex discussions with partners, and increased participation in community-based HIV prevention activities. This work furthers and strengthens the association of training, knowledge, self-efficacy and attitude.

Self-Efficacy to Improve Care and Client Outcomes

As previously noted self-efficacy is considered a determinant of potential behavior change. It is important to know whether increased health care worker self-efficacy is leading to better care.

Nicholson, Mellins, Dolezal, Brackis-Cott, and Abrams (2006) were the first to study the impact of caregivers' HIV treatment-related knowledge and self-efficacy on the health outcomes of HIV-infected children. A total of 75 primary caregivers' (either birth parent, relative, or adoptive caregiver) interviews were analyzed for this study. While knowledge was found to be high (mean score of 74%), deficits were noted in that many caregivers had misconceptions about the virus. Additionally, there was high medication adherence self-efficacy among the caregivers with 97% responding that they could "stick to [their] child's treatment plan throughout the course of his/her treatment" all or most of the time. These high levels of knowledge and self-efficacy were associated with better health outcomes in their children, in that high caregiver knowledge was significantly associated with having an undetectable viral load and high self-efficacy was significantly associated with higher a CD4 count. This study was the first of its kind and its results highlight the importance of provider knowledge and self-efficacy on client health outcomes.

These results are corroborated by research that has found provider self-efficacy and care directly impacting patients' adherence to medication and improving health outcomes. For example, Johnson and colleagues (2006) surveyed 2765 HIV-positive adults on ARV therapy to better understand the relationship of positive provider interactions, medication adherence, and adherence self-efficacy. Findings suggested that positive provider interactions can promote greater adherence self-efficacy in the patient, which is associated with increased medication adherence. A similar relationship is also seen for other health behaviors. Ingram, Johnson and Condon (2011) found that breastfeeding training was successful in improving nurses' attitudes, knowledge, and self-efficacy, which led to clients increasing both their breastfeeding behavior and self-efficacy.

Considering the above research in the context of SCT is important as self-efficacy is considered a determinant of potential behavior change (Bandura, 1977). These and previous results demonstrate that clinicians participating in trainings to increase skills are experiencing the different modes of learning which can lead to increases in their self-efficacy and thus improve their ability to deliver high quality care. Yet, they are also impacted by social and environmental factors, like socially based misconceptions or low resource settings, which can act as barriers to their health providing behaviors. Luckily, positive attitudes, like hope can decrease the impact of these barriers. As mentioned, research has found self-efficacy to be a determinant of improved health delivery and outcomes, and interestingly it can also lead to hope.

For the purposes of this literature review hope will be conceptualized as a positive psychological construct using Herth's (1991) multi-dimensional definition that includes both intrapersonal domains (individual perceptions of positivity related to future outcomes and one's influence of those) and interpersonal domains (acknowledgment of connection with and dependence on others).

Hope

As discussed, health care providers play an integral role in the access, use and adherence to LARC methods. It has also been demonstrated that providers' attitudes are influential in the provision of

care. Self-efficacy can improve attitudes, specifically hope. A body of research has focused on the impact of hope – a positive psychological construct, possibly due to its ubiquity among cultures.

In 2009 Duggleby, Cooper, and Penz studied the relationship of hope, self-efficacy and job satisfaction through a mixed methods triangulation of data collected from 64 Continuing Care Assistants (CCA). Through a qualitative 4 question Hope Survey and a questionnaire which included the Herth Hope Index (HHI), Spiritual Well-Being Scale, General Self-Efficacy Scale, and Global Job Satisfaction Questionnaire the researchers found a variety of interesting results. Specifically, the respondents noted that hope influenced their perceptions in a positive way, particularly in the realms of job satisfaction, engagement and performance with work and pride in work. Additionally, a positive correlation of self-efficacy and hope was found, suggesting that as self-efficacy increases so does hope.

Westburg's and Guindon's 2004 study sought to fill a gap in the research: the role of provider hope in the delivery of HIV-related health services. Through an assessment which included a questionnaire, the Hope scale, and demographic information, the researchers evaluated several indicators including hope, opinions on interventions and adherence, and attitudes and emotions towards patients. A total of 94 health care providers, the majority nurses, who worked with HIV positive patients in New Jersey completed the assessment. Results indicated that the role of hope was important in both the delivery of services and the adherence to treatment. Respondents perceived the communication of hope during counseling as the most valuable treatment intervention and that the patients' own hope was integral to treatment adherence. This study furthers the research of hope and provides insight into how health care workers can improve care.

In 2004 and 2005 Stein, Lewin and Fairall performed three focus groups, interviews and observations of health care providers, primarily nurses, in the Free State Province of South Africa during the first stage of a free antiretroviral treatment (ART) roll-out. Their focus on nurses, the health care workers providing most of the patient care, allowed them to gain important insight into the impact of improving access to an effective HIV/AIDS treatment in the Free State - a rural province with relatively few resources particularly low access to health care providers. Through focus groups conducted prior to

roll-out, they found that nurses were excited about the implementation and identified ART as a source of hope and motivation, driven largely by past inabilities to help dying patients. Once roll-out commenced, interviews established a continuation of positivity and commitment, motivated by an attachment to patients and the community. Patient treatment adherence was viewed to be facilitated by the nurses' ability to establish emotionally supportive relationships. In addition to sharing positive experiences, nurses noted the difficulties and strain associated with working in low resource settings which impacted the clinics' abilities to serve their clients, the impact of poverty on the health of patients, and the stigma associated with HIV and thus ART.

The above research demonstrates that innovations can be a source of hope and that hope can lead to improved job satisfaction, patient care and medication adherence. It also relates to SCT and DOI. It is clear that innovation can have an associated value and related emotion. Additionally, healthcare providers can have goals and behaviors related to an innovation.

This literature review presented research on the influence knowledge, self-efficacy, and hope has on the perceptions and dissemination of innovations through the lens of DOI and SCT. The research demonstrated the importance of investigating these constructs among clinicians providing family planning methods. Specifically, the results indicated that provider characteristics and perceptions can impact client uptake and adherence to an advised treatment, but it is important to note that the majority of research focused on clients' perspectives. Further, research was sparse on how all of these constructs: knowledge, self-efficacy, and hope, influenced health care providers' perceptions of LARC methods. The purpose of this study is to examine how health care providers perceive LARC methods and how impactful LARC training is on their knowledge, self-efficacy, and general sense of hope.

CHAPTER III: METHODS

This paper draws on qualitative and quantitative data collected in the Summer of 2013, during several stages of the ZEHRP LARC roll-out in government run clinics. The data include information collected during the preliminary and first stages of the roll-out. These stages incorporated the didactic and practicum training of providers in the Southern Province and in the Copperbelt region. Data were also collected in Lusaka, which was in the implementation stage of providing LARC methods to clients. Permission for the study was granted by the Emory Institutional Review Board (IRB) and the Zambia OHRP-registered IRB to RZHRG. Informed consent was obtained in writing from all interview participants and orally from all assessment participants. Information that might allow individuals to be identified has been deleted to protect their anonymity.

Research Design

For this concurrent mixed-methods design using a repeated measures pre and post study, primary data were collected via two methods: (a) face-to-face qualitative interviews with health care providers (N=14) and (b) quantitative pre- and post-test assessments (N=29).

Participants

A total 14 nurses counselors, midwives and clinical officers were identified, recruited and interviewed, with the first interview not included in analysis as it was conducted to ensure cultural competency and clarity. All health care workers recruited were eligible if they were (1) over the age of 18, (2) were a nurse, midwife, or clinical officer employed by a government-run clinic that was a ZEHRP research site or were employed by ZEHRP, and (3) were either going to be trained in LARC insertion methods or had already completed the training. All but one was CVCT trained and all had experience discussing family planning with clients. A total of 29 nurse counselors, midwives and clinical officers participating in the LARC insertion and removal training completed pre- and post-test LARC training assessments. All of them also met the same eligibility criteria used for the interviews.

Purposive sampling was used to ensure that participants were either going to participate in the upcoming LARC insertion training or had already been trained and certified. Participants were also

drawn from diverse geographic regions to gain a variety of perspectives but also with the intent to gain in-depth perspectives. Interviews that were completed prior to training took included providers (nurse counselors, midwives, clinical officers, sisters-in-charge) from five clinics. Interviews that were completed with those who had already been trained included three nurse counselors, two of whom were LARC insertion and removal trainers.

Assessment participants included all 8 interviewees from the Copperbelt region and the 21 trainee participants in Southern Province.

Measures

Demographics: Participants were asked to indicate their age, professional role, and how long they had been practicing their profession.

Quantitative: The pre and post LARC training assessment tests were created to determine the efficacy of the didactic portion of LARC training by assessing knowledge gained. The pre and post tests consist of the same 20 items matched with right and wrong response options. The items focus on the efficacy, mechanism and insertion process of implants and IUDs, as well as, the family planning counseling process. Sample questions include "As a provider, what should you do if a concordant HIV-positive couple decides to have a child?", "What is the mechanism of action of implants?", and "How many years does the copper IUD last?". Two knowledge scores were calculated summing the responses to all 20 items for both the pre and post test. Scores could range from 0 to 20, with higher scored indicating higher knowledge and competency. The assessment has been in use since March 2013.

The LARC insertion and removal trainings took place over three days. Before training began the pre-test assessment was delivered. The first two days of training consisted of the didactic training, taught via powerpoint and with handouts by two certified LARC trainers. In addition to learning about implants and IUDs, participants studied family planning counseling techniques, ways to address prevailing misconceptions about the methods and the importance of sterilizing equipment. Day three focused on the clinicians gaining hands-on experience with inserting and removing the methods. A gynecologist demonstrated the insertion and removal of both methods several times on physically-accurate models.

The providers then spent the rest of the day practicing inserting and removing both implants and IUDs on the models, ending the day with the post-test assessment.

Herth Hope Index: Hope was quantified using the Herth Hope Index (HHI), a 12-item scale with answer options ranging from (1) Strongly Disagree to (4) Strongly Agree. Sample items include "I can see possibilities in the midst of difficulties", "I believe that each day has potential", and "I feel all alone". The scale was pretested with a ZEHRP employee to ensure clarity and cultural relevancy. Two items were reverse coded prior to calculating a total score by summing the 12 responses. Scores could range from 12 to 48, with higher scores indicating higher levels of hope (Herth, 1992). The scale has been successfully adapted for a variety of cultures and over 20 languages. Cronbach alpha's reliability for this scale was .738 suggesting moderate internal consistency of scale items.

General Self-Efficacy Scale: Perceived self-efficacy was measured using the General Self-Efficacy Scale (GSES), a 10-item scale with answer options ranging from (1) Not At All True to (4) Exactly True. Sample items include "I can usually handle whatever comes my way", "I am confident that I could deal efficiently with unexpected events", and "It is easy for me to stick to my aims and accomplish my goals". A total score was calculated by summing the 10 responses. Scores could range from 10 to 40, with higher scores indicating higher self-efficacy (Jerusalem, 1995). The scale has been successfully adapted for a variety of cultures and languages. After removing the item "If someone does not agree with me, I can find the means and ways to get what I want", Cronbach alpha's reliability for this scale was .716 suggesting moderate internal consistency of scale items.

For the purpose of this study the HHI and GSES were added to the quantitative pre and post LARC training assessment. The combination of these scales allowed several constructs to be evaluated and thus the following research questions to be assessed: Is there an increase in knowledge, self-efficacy and hope pre and post LARC training?

Qualitative: A 25-item Key Informant Interview (KII) guide was created and updated as more information was garnered throughout the interview process. Questions were adapted from the Herth Hope Index (HHI) and the General Self-Efficacy Scale (GSES) to be made appropriate and information

inducing in an interview setting. Questions were also guided by the Social Cognitive Theory (SCT) and Diffusion of Innovations (DOI). The guide addressed work related tasks, struggles, hopes and goals; perceptions related to LARC methods including need, usability and how they compared to other methods; and their role in providing these methods including communication style, motivation and potential barriers. Questions included "Can you tell me about a difficult time you have had as a nurse counselor/midwife/clinical officer? How did you deal with the experience?"; "How are long-term methods not as good as the family planning methods you currently provide to clients?"; and "Pretend I am a client. How would you speak with me about long-term methods?".

The creation of the KII guide was an iterative process (for the key informant interview guide see Appendix 1). It was first reviewed by two ZEHRP interns (one American and one Canadian) who had been working in the Ndola office for over a year and had an intimate understanding of the appropriate and clear way to phrase and ask questions. A practice interview was then conducted with a ZEHRP nurse who was also a LARC trainer to ensure cultural appropriateness and clarity. Finally Dr. Allen, the primary investigator (PI), gave guidance, feedback, and approval for field use. After each review, the guide was updated to reflect comments and recommendations. Additionally, each interview informed a series of changes to the guide which included adding questions, changing the ordering of questions and the manner in which they were asked. The combination of the iterative process, which occurred prior to and during the interview process, with continuous interaction and discussion of results with colleagues allowed for an enhanced reliability and validity of the scale and thus the data. Through thematic analysis, interviews were analyzed using detailed case summaries, memos, and inductive and deductive codes.

The use of the Key Informant interview guide allowed several constructs and domains to be evaluated which led to successful evaluation of two research questions. Constructs that were incorporated in the questions and analysis included: hope, self-efficacy, felt need, relative advantage, compatibility, complexity, and communication behavior. The domain of knowledge was also measured. Finally, the information garnered during analysis of the interviews allowed for a more meaningful and rich interpretation of the quantitative data.

Procedure

Quantitative Data Collection: Two LARC insertion didactic trainings were assessed, one in Ndola and one in Southern Province. Health care providers attending the trainings were all from government-run clinics but from diverse geographic areas. Each training took place over three days. Before training began the pre-test assessment was delivered. Participants were notified of the addition of the two scales (HHI and GSES), and were informed that their responses would not impact job decisions, would remain confidential and that they did not have to be filled out. Oral consent was given. The same process took place for the post-test with the exception that the post-test was completed on day three of the Ndola training and day two of the Southern Province training. The assessments and scales were administered in English.

Qualitative Data Collection: Health care providers were recruited from ZEHRP affiliated government-run clinics using a list that contained all students enlisted to attend the upcoming LARC training. Calls were placed to the clinic directors to schedule interviews with each provider on the list. Once an interview was scheduled it would take place at the health care provider's clinic, typically in the private office of the sister-in-charge. Prior to conducting official interviews, a preliminary interview with a ZEHRP clinical officer took place to assess and ensure cultural appropriateness. Before beginning the interview, the consent form would be reviewed by explaining the study, informing the participant that they could stop the interview at anytime, that the information would not inform decisions regarding employment and that their privacy was a priority. Once written consent was given, the interview would begin. All interviews were conducted in English, the official language of Zambia, and recorded after permission was granted. Interviews took 30 to 60 minutes to complete and were always ended by thanking the participant for their time. Each interviewee was reimbursed 20 Kwacha, which was equivalent to about $5. Field notes were taken during and after each interview to help give context to the setting and perceived emotional state of both the participant and researcher. After each interview, the notes were reviewed and interview questions were updated and/or reordered based on theme.

Data Analysis

As this was a concurrent mixed-methods study, both types of data were collected, analyzed and integrated within one phase to augment and substantiate each other (Teddlie and Tashakkori 2009). As recommended by Tashakkori and Teddlie (1998), the quantitative and qualitative data were first analyzed separately to ensure a fundamental understanding of each source followed by integrative analysis using a Matrix.

Quantitative Data Analysis: The data were analyzed using the PASW Statistical Package for Social Science (SPSS), Version 21. First, frequencies, means, proportions and standard deviations were calculated to describe the sample's basic demographics. Second, three paired sample t-tests were run to assess whether participants' knowledge, hope, and self-efficacy changed significantly from baseline to post-training.

Qualitative Data Analysis: Analysis was conducted using Thematic Analysis with influences from grounded theory. Thematic analysis is a method that emphasizes the identification and analysis of patterns and themes in the data, including contradictory evidence (Braun & Clark, 2006). Grounded theory is a process that has been shown to be useful and "well suited to understanding human behavior, and identifying social processes and cultural norms" (Hennink, Hutter, and Bailey, 2010). Principles of grounded theory include: an interdependent relationship between data collection and analysis, analytic and reflexive memo writing, and deductive and inductive concept identification (Hennink, Hutter, and Bailey, 2010). Both processes are iterative and were deemed the most appropriate for the mixed method design, type of data collected and the goals of the research.

During the interview process, field and interview notes were reviewed to identify initial themes and areas which deserved deeper investigation. Based on these initial analyses, interview questions were updated, added, and reordered. Once all interviews were completed, the digital recordings were transcribed verbatim and uploaded into MAXQDA, version 10, for complete analysis. First, three rich and distinct were transcripts were identified, read, and summarized in detail to gain a fundamental understanding of the range and depth of topics and themes. Next, three different transcripts were

reviewed and enumerated with reflexive and analytic memos, influenced by field notes, the detailed summaries of the first three interviews, theory constructs, and interesting concepts that arose. Following the two cycles of reading and memoing, a codebook was developed based on the research questions, theory constructs, and reoccurring themes and concepts. The codebook was then applied to three interviews to establish the appropriateness of definitions and its' general utility. It was then revised and applied to all 13 interviews. Three transcripts were coded twice and compared to ensure intracoder reliability (for detailed codebook see Appendix 2).

After all transcripts were coded, each code was systematically reviewed and given a detailed description of its meaning, context and range of agreement and disagreement. Intersections of codes that were identified to be important, relevant and interesting were also systematically reviewed and memoed. The codes and intersections were compared, examined and evaluated between individuals and among role groups.

Several steps were taken to prevent bias and provide an impartial analysis of the data. As concepts and themes were detailed and defined, each transcript was reviewed to establish consistency and comprehensiveness. Additionally, findings were reviewed to establish whether they were due to the provider's personal biases or were reflective of general trends. Further, the addition and review of personal and reflexive field notes to analysis allowed for the consideration of personal biases and history. For example, as an American woman researching family planning, my results may contain more flavors of feminism and gender power dynamics than a different researcher.

CHAPTER IV: RESULTS

Quantitative Results

Demographic characteristics of the sample are summarized in table 1. A total of 29 health care providers participated in the quantitative side of this study with a mean age of 47.39 (sd=7.86) and a mean number of years providing care of 23.54 (sd=8.99).

Table 1. Demographic Results

Demographics Variables (n=29)	
Gender (n, %)	
Female	29 (100%)
Age (mean, sd)	47.39 (7.86)
Years Provider (mean, sd)	23.54 (8.99)
One Role (n, %)	22 (75.86%)
Multiple Roles*	7 (24.14%)
*Example: Nurse Counselor and Midwife	

Knowledge: A Paired Sample T-test was performed to assess whether participants' knowledge about LARC methods changed significantly from baseline to post-didactic training. Participant's average LARC method knowledge score increased significantly at the post-didactic training timepoint (mean=15.72, sd=1.99) as compared to baseline scores (mean=11.28, sd=2.90) ($t=-9.07$, $df=28$, $p< .001$).

Self-Efficacy: A Paired Sample T-test was performed to assess whether participants' self-efficacy changed significantly from baseline to post-didactic training. No significant difference was observed between pre and post-training self-efficacy scores ($t=.49$, $df=24$, $p = .632$)

Hope: A Paired Sample T-test was performed to assess whether participants' general sense of hope changed significantly from baseline to post-didactic training. Participants' average hope score increased significantly at the post-didactic training timepoint (mean=41.79, sd=4.14) as compared to baseline scores (mean=40.21, sd=3.85) ($t=-2.17$, $df=28$, $p = .039$).

Table 2. Quantitative Construct Results

Variable	Mean	SD	T	DF	P-Value
Knowledge			-9.07	28	p < .001
Pre-Test	11.28	2.90			
Post-Test	15.72	1.99			
Self-Efficacy			0.49	24	p = .632
Pre-Test	30.76	3.32			
Post-Test	30.44	3.72			
Hope			-2.17	28	p = .039
Pre-Test	40.21	3.85			
Post-Test	41.79	4.14			

Qualitative Results

Analysis of the 13 interviews revealed a wide-range of interesting, important and rich information. While a variety of questions could be answered using the interviews, the purpose of this study was to fill in a gap in the research: how knowledge, self-efficacy, and hope interact and influence health care provider perception and delivery of LARC methods in developing countries. The results presented in this section focus on this purpose, while integrating the theories of Diffusion of Innovation (DOI) and Social Cognitive Theory (SCT).

4.1 Attitudes towards and perceived benefits of LARC methods

Analysis of the interviews provided both providers' and their perception of their client's attitudes towards LARC methods. All of the providers had a positive perception of LARC methods. The positive attitudes seemed to be driven by the perceived superiority to other methods and the benefits of the methods, with benefits for both clients and providers.

4.1.1 Perceived Superiority to other methods

Each participant was asked how long-term methods were better than the methods they currently provided to patients. Although they acknowledged that there were some drawbacks of the long-term methods, mainly side-effects, they were rated to be better than other contraceptives methods like oral contraceptives, injectables, bilateral tubal ligation, and permanent sterilization. They were described as superior because of all the benefits to the client such as: not having to remember to take anything, not having to visit the clinic (which is potentially very far away) every three months, and ability to change their mind about having child. Two providers shared an interesting reason why long-term methods were preferred over short-term, the ability for subtlety and privacy.

"…Because there will be no evidence. They're, unlike the other methods, like the pill, where the husband will search for that. I've heard stories of women coming here to say, 'oh my husband found the pill and he just took them and threw them', things like that." - TW1

There were other client-centered benefits of the long-term methods that were discussed outside of the comparison to other methods.

4.1.2 Client benefits

One story pervaded all of the interviews and exemplified the perceived benefit clients would receive from having access to a provider that can provide LARC methods.

"Its very important that the method is given to this woman on demand. Referring them, resulting in unwanted pregnancies because a man cannot wait to ask for sex from his wife because the nurse said come on Friday. Between now when she is talking to me and the day I'm referring them, definitely they are going to have sexual union and conception might take place. Meanwhile this woman didn't want, or this couple didn't want to have a child at that time. So if I am able to do it, let me provide it on requesting, same time so the unwanted pregnancy will be prevented." -LS2

"The woman comes, they want family planning and usually the most methods that we're doing, the injectables and the orals. So you find that the woman wants maybe to, maybe not to conceive in 2,3

years 5 years and you find maybe within a year she has conceived. Because of, she misses the date you gave her to come for the injection because maybe she was away, she traveled, she's coming back, its a bit too late. She has already conceived." -KW1

These anecdotes demonstrate the empowerment that clients would receive from having access to LARC methods, as perceived by the providers. Having the ability to choose the best option of all that are available and receive it at the time of decision allows the woman to have control over her body. This would lead to other benefits that providers specified, including the client's ability to enjoy sex and finish school.

"…sometimes you find there are girls who go to school but because they didnt know of these methods, then they get pregnant. And then they dont finish schools. But IF, you teach others, even you, you do the same job, these girls will be able to finish their schools…" LS1

This pervasive anecdote demonstrates an interesting and important cycle surrounding knowledge, LARC methods and client and provider benefits.

4.1.3 Provider Benefits

When asked about personal benefits that may arise from learning how to insert LARC methods, all providers focused on their ability to help clients and the ways in which clients would benefit. The provider-client relationship was revealed to be a driving motivator for a lot of actions, and many emotions and feelings of success were based on it. For example, there were several cases when the providers went out of their way to contact, check-up, or follow-up on patients to ensure good health outcomes. Additionally, when asked what makes a good provider, all of the answers included aspects of the client-provider relationship. Finally, providers interact with patients in the community, so even when they are off the clock they are still in a role in which people look to them for help and advice, expecting a certain level of skill and trust.

"The lay people, when they look at a nurse…they think all these skills are taught in coursework training" - LS2

"These patients that come, they have trust in us, they believe in us…" -DH2

"I: Do you think it is important to learn how to insert long-term methods?

P: Yes, as a nurse I have to learn. I should know [why?] because I am a nurse! (Laughter) I am here to help people, to help patients, clients, yes. And sometimes the clients can even ask me a question and if you have no idea what you will tell them, so at least I should have an idea, yes." WK2

Through increasing their knowledge and thus skills of LARC insertion and removal, clinicians perceive that they will be able to fulfill the clients' expectations and increase their feelings of adequacy and confidence. A nurse that was already certified in LARC methods explained these emotions.

"I: How often do you experience unexpected events at work?

P: I must say, I think everyday.

I: Do you feel confident when dealing with them?

P: Yes, yes I do.

I: Why?

P: I think with the trainings, I had problems with long-term acting contraceptives because I had to learn it and I didn't know how to do it. But now, now I have the confidence." - MT1

Other benefits to the provider included the hope for more future opportunities, a lighter work load, and feelings of pride, uniqueness, satisfaction, and confidence. A provider who was already trained on insertion and removal of LARC methods expressed great pride in her ability to deliver these methods, particularly because not many other nurses in the country had the same skill. Additionally, the client and provider relationship seemed to be important to feelings of fulfillment in her ability to completely serve the client and not have to depend on another provider contributed to her sense of pride.

"I: What feelings do you have about being able to deliver long-term contraceptive methods?

P: I feel so happy, very proud of myself that even if in my country many nurses like me even old and young are not able to provide this service. But I'm one of those who is able to provide this service on demand. I will not have to refer to somebody." - LS2

A nurse midwife and clinical officer both explained having more time:

"*Yes, its important so that we can be helping the people and then my job will be easy, because I wont be attending to every, the same patients every after three months."* - DH2

"We usually, like in a week, we see more than a hundred women for family planning. And those hundred, I'm talking about like women who are coming for Depo, which is the longest term we are giving now, for three months. So every week you can imagine you are seeing more than a hundred of them. And meaning others came three months ago, but that is weekly. So thats, thats quite a large number. I'm sure with the long term method, that number would be cut down." - KW1

Another clinician discussed the future job opportunities:

"I: Do you think learning this new skill will allow you to be a better nurse?

P: It will. It is a skill that will be added to the skill I already have and its going to help me even to give better service to my clients and I can also use it to work in other places if I decide to leave or after my retirement." - NK1

Expectations of feelings of satisfaction:

"I think it will just will be satisfying if you had a woman who came asking for service and you are able to offer it" - KW1

4.2.1 Barriers to the provision of LARC methods

While there were many benefits identified to learning the skill of inserting and removing IUDs and implants and thus being able to provide the methods, several barriers were identified including: lack of knowledge, scarcity of resources, and cultural barriers.

4.2.2 Knowledge

First, the lack of knowledge was established as the most influential perceived barrier to providing the method. All of the interviewees, including those who had already received training, discussed the ways in which lacking knowledge impacted their ability to provide LARC methods. This lack of knowledge functioned in two ways: practical and emotional. They explained how the lack of knowledge led to them not being able to speak with clients about long-term methods, not being able to provide the method, and not being able to effectively counsel interested clients, all of which impacted their self-esteem and relationship with client - an integral and motivational relationship. As one nurse counselor and now LARC trainer described:

"because you don't know how to do it, you simply shy away from the discussion. Or you look down with a sad face because you have to tell this person…unfortunately I can't give you this method…this is the reason…these two methods are less promoted by the providers…" - LS2

This quote reveals how lack of knowledge impacted both ability to provide the method and communicate effectively about the method. While this and most of the other clinicians promoted LARC methods on a daily basis, two did not discuss them with clients unless the patient specifically inquired. While not having expertise in the area prevented them from feeling confident or even inhibited the discussion, this seems to be motivated by the importance of the client-provider relationship. As previously discussed, relationship is founded on the expectation that the clinician has a certain level of education and is directly associated with feelings of success and confidence. While there were some challenges discussing the methods with clients, there was a general consensus that it would work within their current workflow as they all already discussed other family planning methods with clients.

"*I: How well would promoting long-term methods fit into your current midwife style?*

P: Well it will, because as a midwife I have to make sure that both the mothers and the babies are healthy and that can only be obtained if there is a mother or a couple that is planning for their family. That they will be able to look after." -NK1

"*I: How well would promoting long-term methods fit into your current clinical officer style?*

P: Veru well. Like I said, these women that we see almost on a daily basis your seeing someone who wants a service of family planning. Yea, so it would fit in very well." -KW1

Although 10 of the providers had not received training, they recognized how knowledge allowed them to have more self-efficacy which led to confidence and joy. All of the providers had experienced accomplishments and successes in a wide range of tasks which required an abundance of knowledge, from deliveries and immunizations to family planning, CVCT, and making diagnoses. Thus, they were confident in their ability to overcome the barrier of knowledge and were hopeful to assist patients in both educating them and providing the method and experience the associated feelings of success.

"After learning this…method, I'm hopeful that I will also be able to teach others"-WK2

"I feel I will be more equipped to deal with these women who seek such methods because we actually have a gap in that area. Not so many are trained." - TW1

"…The benefits for myself are, it gives me experience. The other thing, you know if I went somewhere where noone is trained, I'll be able to do it!" - TW2

4.2.3 Resources

Each participant was asked what would might make it hard or challenging for them to provide the the LARC methods at their clinic. In addition to the lack of knowledge, lack of resources was identified by 12 of the 13 participants as a potential barrier to care. This was not a surprising response as Zambia is a resource-limited country and several of the difficult anecdotes providers shared touched on the scarcity of means. For the purpose of analysis, clinicians who could provide LARC methods were considered a resource, in addition to funding, time, and materials. The lack of resources created many challenges that threatened the integrity of the client-provider relationship including: clients being turned away, having to wait a long time, or not receiving the standard of care.

One nurse counselor and LARC trainer described how NGOs are a resource for long-term methods, but they are not always around and when they are "*the workload is too much for them, because each clinic always has one person to do it from morning to evening*" - LS2

A sister-in-charge, nurse midwife described the situation in more detail:

"I: What might make it hard or complicated for you to provide long-term methods where you work?

P: I think that, the staffing. Shortage of staff because when you are providing long-term methods I think, I think it's good that you counsel the woman thoroughly, not like you are rushing or things like that. She needs to reach, to have all the information before she finally decides. And then also the equipment, we don't have enough equipment. Like right now we don't have a proper sterilizer to sterilize the equipment, we just boil" -TW1

Finally the lack of resources is challenging the already precarious supply and demand chain, as describe by one nurse followed by one nurse midwife:

"…if I had the knowledge of doing it - I could have helped them. Like this morning, someone came, she wanted a long-term method so I asked her to come on Wednesday… So she has gone back, I've lost a client." - DH1

"…For those who are on long methods, there are few people who are trained. So usually when they come with problems, they are not handled according to the way they are supposed to be handled. Most of them, they are always afraid. "No go there, don't go there". So its a bit tricky for such kind of patient, its unfair." - TW2

4.2.4 Culture

Finally, culture was a somewhat influential perceived barrier to the provision of LARC methods. While it was only specifically mentioned by 4 clinicians, I thought it was important to explore based on my experiences at clinics. I was surprised that it was not discussed more as I had observed and heard first

hand how culture both overtly and subtly influenced the language used, provider perception of and client choice regarding LARC methods.

As in any other setting, culture plays a large and important role in client health and the dissemination of long-term methods. Zambia's partriachal society and expectation for large family conflicts with women's health, desires and opportunities. Many women stay home and are expected to have several children. This expectation for large families can drive disagreements between husbands and wives during family planning counseling, which can lead some women to be secretive, despite the recommendation that family planning decisions be made as a couple.

" Like if her husband doesn't want her to do the family planning, if she does it on her own, at least. There are some husbands that are so difficult, they won't sit down and agree. Of course family planning is supposed to be between the two people that are making that baby, but we've come across situations where husbands just won't listen to that."

"For those mothers, especially those who have had maybe, especially here in Zambia, particularly in our community, where we are in. We found that a mother maybe have got 5, 6, 7 children. They don't want to go for permanent method, so I feel to encourage them that its better they go for long-term than for them to be coming for 3 months depo. " - TW2

As, stories of girls being forced to marry and/or stop going to school due to pregnancy was not uncommon the providers thought it was especially important that younger women have access to LARC methods. Unfortunately myths were pervasive among all groups and were based in culture, such as the importance of fertility.

As one midwife, sister-in-charge described:

"I: Do you find talking about Long-term methods challenging with clients?

P: Yes, especially in the young ones…they have these misconceptions from the community that when you start with the long-term, your fertility will go for good. " -WK1

Another culturally driven misconception was that these methods encouraged promiscuity. One of the LARC trainers observed this when she said:

"Traditionally they will say, but this one is not married, why are you involving her in such? You are just simply telling her that you can anything with men, yea." - LS1

Finally, one nurse counselor trained on the methods discussed men's perspectives.

"*P: Most of the time women come alone to seek family planning services. And the men, there are very few men who would agree to that.*

I: Why?

P: I think because they have a lot of misconceptions about using family planning methods.

I: What is one of the more popular myths about either the IUD or the Jadelle?

P: The Jadelle, there's a belief that they can move. They can go through the bloodstream and reach the heart and then someone will die. The IUD, they say that sometimes someone can conceive and then the baby, the IUD may kill the baby." - MT1

While the providers discussed cultural barriers they also provided solutions. For example, a few providers spoke of how knowledge about the methods was spreading in the community, resulting in demand.

"…I think they are very helpful, though very few people used them in the past, like now thats when people are realizing that these methods are also available and they are ok. They can be used. So talking to people, you realize that they actually need, the demand is there…" - MT1

Additionally, the training has allowed one provider to dispel myths. I also observed this in the field among other trained clinicians.

"*I: Do you find talking about Long-term methods challenging with clients?*

P: No

I: Why?

P: They do have questions, but because now I have the knowledge, its easy to answer those questions. And the myths, its easy to dispel them because I know better now" -MT1

4.3 Self-Efficacy and Knowledge:

"Why I'm proud? Midwivery is challenging. Yes, we handle a lot of complicated cases especially at rural health center where there is no doctor. But at the end of the day we manage those complications. ... " - KW2

Part of the goal of the study was to gain a better understanding on the role of self-efficacy, as conceptualized by the Social Cognitive Theory. Aspects of the theoretical approach involved the investigation of perceived values associated with both past work experiences and the prospect of LARC training, in addition to the identification provider goals. The interviews illustrated that past experiences had given the providers a strong sense of self-efficacy, that they placed a high value on the skills provided through the LARC insertion and removal training, and that most of their goals aligned with the trainings.

Each participant was asked to share two stories related to work, one of a happy time and one of a difficult situation. Both types of stories revealed challenges that the providers had faced, with all clinicians but three overcoming the problem they faced.

"I: Can you tell me about a difficult time you had as a nurse counselor?

P: Yes, there was one weekend. I was on duty, a couple came - were counseled, it was a discordant couple. And the husband was 100% to say that his wife couldn't be positive.

I: Hm, how did you deal with that situation?

P: I managed to counsel them until the husband came down to earth, he accepted the results…for the wife. Pause But it was not easy, but we kept on counseling until we came to a goal." - DH1

"I: Can you recall a happy or joyful time related to being a nurse?

P: Pauses Uh, one day as I was walking out of the clinic it was exactly 16 hours, a lady came who was pregnant. She called me, I went there - she was in the car. Then she said, 'sister, I think my baby is about to come'. I opened the clinic brought her here, within a few minutes she delivered a live baby. So, I think I was the happiest person because I was not ready.

I: Quick laugh/exclamation Ok

P: And the client was very happy" - DH1

These and other stories provide insight into some of the issues the clinicians face with clients and how even with a difficult, high stress and high stakes moment they are able to make progress and find a solution. They also demonstrate a clear relationship between self-efficacy, skills, pride, joy and satisfaction. The three who were not able to successfully help their client described feelings of sadness, disappointment and guilt, not surprising with the importance of the client-provider relationship. Despite these negative feelings, all of the participants, except one, indicated that they felt confident when dealing with difficult situations and they all believed that each day at work brought opportunities for success. Further, despite difficulties providers spoke of hope:

"When I am dealing with a difficult situation at times if I don't succeed I feel a bit disappointed, but I don't lose hope" - DH1

"People are not dying, you are able to correct their, to treat them - their conditions. That is actually success and its very good that it happens everyday. You are able to see everyday that you are doing something for someone" - KW1

Having the ability to convince a client to listen, trust, change, and accept your help depends on a certain level of skill, which is often based on knowledge garnered through training and experience.

"Over the years of counseling I have learned to remain calm and sometimes allow the client to speak more" - MT1

"I: How often do you experience unexpected events at work?

P: Quite often I can say. Because sometimes you can come for work and you have planned, I will sit down and open this, see my patients…Then you have an emergency, just when you want to sit and continue the queue."

I: Do you feel confident dealing with these unexpected events?

P: Yes…Possibly because I am trained. I know my job well,.. I think thats why." - KW1

"I: So do you believe being a nurse counselor allows you to solve problems where you work?

P: Yes very much.

I: And is that because of your experience?

P: Because of my experience and also because of my counseling skills..." - TW2

These quotes demonstrate that experience allowed them to gain valuable knowledge which impacted their behavior and ability to better perform tasks. Thus, the precedent is in place that knowledge gained can lead to skills which leads to client and provider benefits, which the providers associate with success and pride. Further, when discussing the LARC training all participants agreed that the new skill was either going to allow them to be a better practitioner or enhance their current skills. They placed value on the trainings and discussed the relationship between knowledge, skills, self-efficacy and pride.

"Because most of us are not trained to put IUD, so it would be valuable if we were trained."- NK2

"The time when…I was requested to go for training. This was one of the exciting moments in my life because as nurse, I could provide the family planning methods, like the short-term ones…But when this course was introduced it was made to say, as I would go for family planning, I was going to learn how to insert the IUCD and the implant. And how to remove them. I felt very, very proud. And those are some of the moments, that when I look at my counseling experience, they bring joy to me." - LS2

"I: Do you think learning this new skill of being able to implant an IUD or a Jadelle will allow you to be a better nurse?

P: Absolutely

I: Why?

P: Cause I'm going to gain more knowledge about this. Because I don't know it very well, so after I've been trained I'm sure I am going to have new knowledge and I am going to impart it to my clients." - DH1

These providers indicate that they have confidence in their ability to learn the skill of inserting and removing LARC methods and move forward with disseminating the method - both in providing the methods and educating others. All of the providers except one discussed LARC methods with clients on a daily or weekly basis, suggesting that their communication style would be enhanced after the training. Finally, all of the clinicians indicated that they were motivated to learn the skill, for several reasons including improving their self-efficacy.

4.4 Hope and Knowledge:

A facet of hope is the belief that each day has potential, or opportunities for success. Every provider believed that this was true, with 10 of the participants citing increased opportunities for gaining or sharing knowledge and client successes.

"I: Do you believe that each day at work has possibilities for success?

P: Yes, yes I do.

I: Why do you believe that?

P: Like I said, its not like everyday we have the same things happening. You have so many different things happening everyday because every patient, or every client that comes through has something different about them. Yea, so you learn so many things everyday." - TW2

"Everyday you meet different people…with different challenges and sometimes you'd be surprised at the little things that you know can go a long way in helping someone in the way, their outlook on life" - MT1.

It appears that the providers take joy in their ability to provide patients with hope through their own knowledge, and believe increasing knowledge for clients and themselves is a part of success. The LARC training was viewed as a source of knowledge, and thus contributed to a sense of hope for future opportunities. All of the clinicians agreed that the training would lead to opportunities to further assist their patients and a few mentioned increased job opportunities.

"After learning, after learning about this type of method, then I'm hopeful that I will also be able to teach others" - WK2

Another facet of hope is having short or long-term goals. While they all had goals, this seemed to be a tricky question in the manner in which it was interpreted. Some had personal goals (obtain more degrees and positions in other organizations), some had work-related goals (accomplishing everything on their daily list, helping clients), and one had goals required by the government.

Finally, having a sense of direction or purpose is an important aspect of hope. While all of the providers discussed a sense of pride and fulfillment, four went more in-depth as to how their position was what they were meant to do.

"I enjoy seeing people come back after they've been through the counseling process. Then they come back and tell me their lives have improved from the time they underwent counseling. That gives me fulfillment, and that makes me proud. I think maybe people are unhappy these days, if you can put a smile on someone's face its worth doing!"- MT1

"I: Are you proud of your work? If so, why?

P: Yes. I think maybe its what I'm meant to do. I enjoy working with my patients. And I enjoy to see them get better. When someone is sick, they come, they get better, they are able to go back to their lives, work and whatever else they could be doing - that's satisfying." -KW1

"I: Do you believe that each day at work has possibilities for success?

P: Yes I do…For example, I will give an example, whereby maybe your about to knock off. And then this client comes. Of course you didn't want to sit (laughs), but because you want something to be successful you'd sit and then get whatever that client wants and then be able to help. I mean thats a success isn't it?! Because you didn't turn away that client.

I: Has that happened to you before?

P: It has, so many times.

I: Do you think thats a happy time for your?

P: According to my nature of work, because I'm there to help clients". - LS1

As has been discussed, the role of the client-provider relationship is powerful and influential. It appears that it is also a source of hope, and of course joy.

Comparison Matrix

A comparison matrix was created to evaluate qualitative and quantitative results together, with the goal to enrich understanding of the data. The three quantitative constructs provided the framework for the table. Within each construct qualitative themes were identified to highlight similarities and differences between quantitative and qualitative results (Plano Clark, Garrett & Leslie-Pelecky, 2009). See Table 3 for the comparison matrix.

Table 3. Comparison Matrix

Construct	Quantitative T-tests for improvement	Prominent Qualitative Themes	Sample Quotes
Knowledge	(t=-9.07, df=28, p<.001)	Lack of knowledge: barrier to care	*"because you don't know how to do it, you simply shy away from the discussion. Or you look down with a sad face because you have to tell this person, to say, unfortunately I can't give you this method"*
		Desire to gain knowledge	*"The time when…I was requested to go for training. This was one of the exciting moments in my life …"*
		Client-Provider relationship	*"After I've been trained I'm sure I am going to have new knowledge and I am going to impart it to my clients."*
Self-Efficacy	(t=.49, df=24, p<.632)	Ability to overcome past difficult problems	*"Why I'm proud? Midwivery is challenging. Yes, we handle a lot of complicated cases especially at rural health center where there is no doctor. But at the end of the day we manage those complications. … "*
		Pride	*"I feel so happy, very proud of myself that even if in my country many nurses like me even old and young are not able to provide this service. But I'm one of those who is able"*
		Confidence	*"…The benefits for myself are, it gives me experience. The other thing, you know if I went somewhere where noone is trained, I'll be able to do it!"*
Hope	(t=-2.17, df=28, p<.039	Client Success	*"After learning this type of method, I'm hopeful that I will also be able to teach others"*
		Future Opportunities	*"…and its going to help me even to give better service to my clients and I can also use it to work in other places"*
		'Meant to do'	*"I think maybe its what I'm meant to do. I enjoy working with my patients. And I enjoy to see them get better."*

CHAPTER V: DISCUSSION

This study examined how health care providers perceived LARC methods and how impactful LARC training was on their knowledge, self-efficacy, and hope. The results provide evidence to support the positive association between LARC training and the constructs of knowledge and hope, as indicated by the significant increases in pre and post-training scores. Additionally the quantitative results were supported and explained by qualitative results. For example, while there was not a significant increase in self-efficacy from pre to post-test, qualitative data shed light on a possible explanation. All of the providers reported that they regularly experienced difficult situations at work, from counseling HIV discordant couples to delivering a baby without electrical power. They were able to use their skills, knowledge, and calm demeanor to successfully and confidently overcome the challenges, often in resource-restricted clinics. This suggests that the clinicians already had high levels of self-efficacy when they started the training. Further, they were senior providers with an average of almost 24 years of experience.

The qualitative analysis revealed a group of women providers who were overall self-efficacious due to past experiences during which they had overcome challenges. These experiences may have contributed to their skills, knowledge and feelings of pride and hope for future successes. One of the future successes providers discussed was attending training workshops to learn insertion and removal techniques of LARC methods. They were hopeful that they would be able to pass this knowledge and skill onto other providers and clients. Many of the clinicians' actions and feelings (both positive and negative) seemed to be motivated by the client-provider relationship, which was also dependent on the providers having a certain level of knowledge and skill, or at least the maintenance of this image. This relationship was identified as a source of hope and a strong motivation to learn about LARC methods.

Consistent with previous studies, lack of provider knowledge, client misconceptions, and lack of resources - specifically lacking access to trained providers, were all major barriers to the provision of LARC methods, including accurate counseling (Black, Lotke, Lira, Peers, & Zite, 2013; Stein, Lewin &

Fairall, 2005). However, similar to other research, this study found that providers desired to increase their level of knowledge and that trainings can be an effective way to accomplish this goal (RamaRao & Mohanam, 2003). Additionally, hope was associated with job satisfaction, pride in work, and an important communication tool with clients (Duggleby, Cooper, & Penz, 2009; Westbursg & Guindon's 2004). The literature has shown that providers have the ability to pass knowledge and hope to clients, which can increase client uptake, use and adherence of a health behavior, like family planning methods (Johnson et al., 2006; Stein, Lewin and Fairall, 2004).

Several results were not consistent with past studies. For example, post-training self-efficacy did not significantly improve as MacLeod et al. (2011) found. Yet, reviewing Agha, Fareed, and Keating's 2011 study gives some insight into this difference, as they found that experience inserting IUDs was the strongest determinant of improved confidence in ability. This suggests that the providers in this sample did not have sufficient opportunity to experience inserting IUDs and implants, which may explain the lack of a significant increase in self-efficacy. Further, as the sample size was small (n=29) and consisted of providers that already had high levels of self-efficacy, there probably was not enough variability to detect differences based on training alone. Results from this study were also inconsistent with those found by Black, Lotke, Lira, Peers, and Zite's 2013 global survey. Unlike the clinicians filling out the global survey, the Zambian providers viewed LARC methods as a solution for all types of women including nulliparous. This was indicated by answers on the training pre-test, with only one of the 29 providers indicating that a nulliparous woman was not eligible for an IUD. Further, they differed in that they did not view the LARC methods as complex or incompatible with their current working style (Black, Lotke, Lira, Peers, & Zite, 2013).

This study highlights important outcomes that should be considered within the context of the two theories that provided a framework for this study: the Diffusion of Innovations and Social Cognitive Theory. Within DOI, while all providers were aware of the innovation, their knowledge of the innovation was limited. This limited knowledge influenced their communication style with clients, leading some to avoid recommending the methods. The provider characteristics include self-efficacious, knowledgeable,

and hopeful women with the desire to learn the method techniques and diffuse both the methods and their associated knowledge. Additionally, providers perceived the innovation of LARC methods as necessary to their success as a provider, beneficial to and appropriate for clients, better than the methods they currently provide and compatible with their current style of healthcare provision. Further, the providers had seen the LARC methods implemented before in their clinics by non-profits, which may have made the methods more acceptable and compatible in their work environment. All of this suggests that the providers will be a positive force in the diffusion of the innovation of LARC methods.

Within SCT, all of the providers indicated an investment in their participation in the training and delivery of LARC methods. The providers also placed a high value on the skill of being able to insert and remove the methods and they all had positive emotions, such as hope and joy, related to the outcome of the trainings. Further, some of their goals aligned with those of the trainings. The trainings encompassed all three modes of learning (actual performance, observation and social persuasion), but did not prove enough to significantly enhance self-efficacy. Further, the role of culture proved to be an important and significant environmental and social factor, which served as both a barrier and facilitator to acceptance of the LARC methods among clients. For example, providers described how the expectation for a large family inhibited men from accepting the method for their spouse, limiting the efficacy of couples' family planning. On the other hand, clients, especially female, were portrayed as looking to the provider as a source of knowledge and hope; a sense of trust was described, which led to acceptance of provider recommendations for health behaviors, like using a contraceptive method. As the SCT posits, in order for an individual to have a behavior they must first have behavioral capacity, knowledge of the behavior and the capacity or skill to perform it. Results of this study suggest that that the providers will be able to successfully promote, insert and remove LARC methods.

Limitations

There were several limitations of this study. First, the post-tests assessing knowledge, self-efficacy, and hope were given at two different points during the two trainings - one after day three and one after day two. As previously described, the first two days of training are didactic, followed by a third

day of practice. Thus, differences between pre and post-training scores could have been more significant, particularly for self-efficacy, as the skills, practice and knowledge gained during day three was not fully assessed. Additionally, senior providers who already had extensive experience and training, like CVCT were chosen for the training opportunity. These providers already had high levels of self-efficacy. Second, the assessments and interviews relied on self-report, which could have been influenced by social desirability. Yet, the consistency of responses and themes suggested that this was not a critical issue. Third, this sampling technique utilized purposive sampling that is prone to researcher bias and is not representative of the female provider population in Zambia. Fourth, there was no control, so causality between the trainings and changes in knowledge and hope cannot be established, only associations.

Despite these limitations, the study adds a unique and enhanced perspective to the literature. First, this study furthers the research surrounding the importance of provider knowledge, self-efficacy and hope in the diffusion of an innovation. Second, it is one of the first studies, to the knowledge of the author, to use mixed methods to try to gain an understanding of providers' perspectives regarding LARC methods in addition to its impact on knowledge, self-efficacy, and hope in a resource-poor setting. Third, the selection and use of mixed-methods data allowed for an analysis that provided a more holistic and complete perspective, using the strengths of the different types of data. Fourth, the setting provided an important context in that English was the national language, which allowed the researcher to perform all data collection and interviews.

Recommendations/Implications for Future Research:

Based on the results, particularly in the context of the two theories, several recommendations can be made to further enhance the strengths of the LARC insertion and removal training. First, the biggest barriers to dissemination of the methods (knowledge, resources, and cultural misconceptions) should be addressed. Increasing the number of providers attending training and emphasizing the importance of effectively communicating in ways that decrease culturally based misconceptions would potentially be helpful in decreasing these barriers to care. Second, there should be a strong focus on provider skill enhancement, as this seems to be a way to strengthen self-efficacy. Third, the role of the client should be

enhanced in the community. If a community gatekeeper could be identified who would dispel myths regarding the methods, acceptance surrounding the methods may increase. Fourth, more effort should be made to include men. Men were a strong source of cultural barriers and myths surrounding the method, perhaps if they could be convinced of the advantages there would be greater acceptance of the methods.

As this was an exploratory study, more research into the understudied area of the relationship between the dissemination of LARC methods in low-resources settings and the role of knowledge, self-efficacy, and hope should be done. The results begin to reveal other areas of significance that deserve future investigation, such as the impact of culture on acceptance among clients and ways to further improve provider self-efficacy. Additionally, further research should investigate better ways to assess the construct of self-efficacy in a way more specific to LARC skills. Further, the role of the client-provider relationship merits further investigation. It is important to understand the importance and power of this relationship, particularly in the context of DOI. The results suggest that the methods should diffuse to clients via the client-provider relationship and that they could be perceived well by clients, but the question remains as to the exact role of the relationship, whether clients will actually use the method, and whether other barriers are too great for the relationship to overcome. Finally, other provider characteristics, such as the role of gender and its' associated power dynamics and beliefs, may prove to be powerful and influential in shaping perceptions regarding LARC methods.

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APPENDIX I

Interviewer reads

Hi, my name is _____ and I am working with a research team from the Zambia Emory HIV Research Project (ZEHRP), also known as Ubumi Bwesu. We are doing research on what providers think about family planning in order to provide better services. We will be discussing the Long-Term Methods of copper IUDs (known as the loop) and Jadelle implants. Your participation is completely voluntary. Everything you say will be kept private and will only be seen by the research team. Your name is not being recorded, and there will be no way to link what you say to the record of the interview. This will not be used as a job evaluation and will not inform decisions regarding employment. Are you interested in participating? The interview will take approximately one hour.

Eligibility criteria:

- How old are you?
- Are you a Nurse counselor, midwife or Clinical officer working at a ZEHRP research site?
- Are you CVCT trained?
- Are you going to be trained in how to insert copper IUDs or Jadelle implants? When?

Now, we will go over the consent form. [Proceed once consent form is signed].

Please let me know there are any questions you would like to skip, or if you do not feel comfortable answering or if you would like to stop the interview at any point. If you would like any questions explained, or don't understand what I'm asking please feel free to ask. There are no right or wrong answers, please just tell me what you think. I would like to record our conversation as I am not able to write as fast as we speak and I do not want to miss any information. As a reminder, everything you say will be kept private and will only be seen by the research team. Is it okay with you if I record the interview?

[Interviewer record start time]

General/Intro:

1. What is your job title? Please give me a brief description of your position [daily/weekly tasks].
2. How long have you worked with ZEHRP? Where is your main workplace?
3. What qualities should a good nurse counselor/clinical officer/midwife have?
4. Are you proud of your work? If so, why?

Adapted Herth Hope Index:

1. Do you believe that each day at work has possibilities for success? If so, why?
2. Can you recall a happy or joyful time related to being a nurse counselor/midwife/clinical officer? If so, please describe.
3. Do you have goals for your work as a nurse counselor/midwife/clinical officer? If so, what are they?
4. What feelings do you have about being able to deliver long-term contraceptive methods? Why? [If interviewee is struggling with question, can ask: "Do you think you will have more future opportunities with your new skill of IUD and implant insertion?"]

Adapted General Self-Efficacy Scale (Social Cognitive Theory):

1. How would you describe your reaction (attitude, mood) when you deal with a difficult situation (problem)?
2. How often do you experience unexpected events at work? Do you feel confident when dealing with them?
3. Do you believe being a nurse counselor/midwife/clinical officer allows you to solve problems where you work? If so why?
4. Can you tell me about a difficult time you have had as a nurse counselor/midwife/clinical officer? How did you deal with the experience?

Before moving forward, I want to remind you that when I say long-term methods, I mean Jadelle implants and copper IUDs (known as the loop).

Diffusion of Innovations:

Felt Need:

1. Is there a need for long-term methods where you work? Why or why not?
2. Do you think it is important to learn how to insert long-term methods? Why or why not?
3. Do you think there are benefits to you learning the skill of inserting long-term methods? If so, what are they?

Relative Advantage:

1. How are long-term methods better than the family planning methods you currently provide to clients (OCPs and injectables)?
2. How are long-term methods not as good as the family planning methods you currently provide to clients?
3. Considering what you have said about all family planning methods, which one do you think a client in the following situation should be advised/counseled to consider?
    a. A 23 year old woman who has 1 child and wants another pregnancy in 2 years' time
    b. A 35 year old woman who has 4 children and does not want anymore children, though she might change her mind at some point
    c. A 29 year old woman who has 3 school-age children and does not want to become pregnant again until she finishes her accounting degree
    d. A newly married couple who want to have a total of 3 children and would like to space them each 5 years apart.
    e. An HIV+ woman who has an HIV- husband: they both agree they do not want any more children, though they are unwilling to have permanent sterilization (BTL or vasectomy) in case one of their children dies and they change their minds about having a baby

4. Do you think learning this new skill will allow you to be a better nurse/clinical officer?

Compatibility:

1.How well would promoting long-term methods fit into your current nursing/clinical officer/midwife style?

Complexity:

2.What might make it hard or complicated for you to provide long-term methods where you work?

a. [If struggling can reword with: What challenges or barriers might you face when providing LARC methods where you work?]

3. Do you find talking about Long-term methods challenging with clients?
4. If trained: Do you prefer inserting one method more than the other? Why?

OR: Do you find one method easier to insert than the other? Why?

Communication Behavior:

1. Do you speak with clients about Long-term methods? How often do you speak with clients about Long-term methods?
2. Pretend I am a client. How would you speak with me about long-term methods? (give an example through role playing)?

Closing

Now that you know the key issues that we are exploring, can you think of anything that we have missed, or anything that we should have more information on in this interview?
Thank you so much for your time.

APPENDIX II

#	Name Of Code	Code Definition
1	Patient/Client Provider Relationship	Discussions of interactions with clients (not just referring to patients). Descriptions of client perspectives. Demonstrations of power dynamics - differences in skill and knowledge, client trust of providers.
2	Knowledge	Having skills, ability to perform tasks. Gaining of knowledge through experience or training. References to knowledge. Benefits of learning Motivations for knowledge. Referrals - provider skill, knowledge and skills of other practitioners. How knowledge contributes to provider dynamics and relationships
3	Gender/Cultural Dynamics	Influence of gender and Influences of culture in any situation.
4	Pride	Taking joy and finding meaning from ability to perform task, learn, and accomplish tasks. Sources of pride: self, work, clients, personal success.
5	LARC methods	Positive or negative provider perceptions regarding LARC methods. Client demand of LARC methods - reasons for wanting or not wanting. Barriers and opportunities for providing or receiving method.
6	HIV/AIDS	All discussion of HIV/AIDS including diagnosing, having, or avoiding. Stigma related to it. PMTCT
7	Faith/Religion	The role of faith or religion in both work and community. Any references to religion.
8	Resources	Lack of resources. Access to resources. Resources include equipment, tools needed for insertion, LARC methods, staff/providers, time.
9	Empowerment	Ability and Not having the ability to choose family planning methods. Explicitly related to methods. Having or not having control of body/future. Receiving information regarding options and methods available (able to make an informed decision).
10	Self-Efficacy	Perception of having the capability and skill to perform behavior. Ability to solve problems. Confidence to deal with difficult/unexpected events. Can remain calm when facing difficulties. Ability to see multiple solutions
11	Hope	The word "hope". Expressing positive feelings regarding the potential outcomes of future events. Positive outlook towards life. Short/Long term goals. Ability to see possibilities in difficult situations. Ability to recall happy times. Sense of direction. Belief that each day has potential, that life has value and worth.