CLINICAL SERVICES PROVIDERS' BEHAVIORAL INTENTION TO PROVIDE THE INTRAUTERINE DEVICE (IUD) MEASURED BY THE THEORY OF REASONED ACTION

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A Dissertation
Submitted in Partial Fulfillment of the Requirements for the
Doctor of Philosophy Degree in Education

Health Education
in the Graduate School
Southern Illinois University Carbondale
June, 2010

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CHAPTER ONE

INTRODUCTION

Background

Intrauterine devices (IUDs) are one of the oldest forms of birth control in the world. Currently, the two types on the market, the copper IUD (ParaGard, T380A) and the hormonal IUD (Mirena, LNG-IUS), are small, t-shaped devices, inserted into a uterus of a woman, with a tiny filament string that descends externally to ensure proper placement. Today, IUDs are used by over 100 million women worldwide, making it the most popular reversible method of birth control (Hatcher, et al, 2007). . Approximately 2% of American women, however, choose to use this method of birth control (Nidus Information Systems Incorporated, 2008). Due to one IUD, the Dalkon Shield, that was removed from the market in 1974, the entire device, which has changed and improved since the Dalkon Shield litigation, has become controversial to many doctors and women. A study conducted by Stanwood, et al. (2002) as well as a review by Cheng (2000) suggests many misconceptions regarding the IUD exist today. At the same time, multiple studies have proved this device to be safe and effective for the majority of women (Hatcher, et al, 2007).

Knowledge and beliefs of women and healthcare providers don't seem to parallel current information that states most women are candidates for the IUD (Hubacher, 2004; Johnson, 2005; WHO, 2004) For example, the Mirena intrauterine system (IUS) currently has a media campaign. On television commercials, it states candidates for the method should "have at least one child." An article in *American Family Physician* stated "ideal" candidates for the IUD are "parous women in stable monogamous relationships" (Johnson, 2005, p. 95). Further, a study by Espey and Ogburn (2002) implied the root of IUD misconceptions held by healthcare professionals may lie in textbooks. Common medical texts used in the US and UK were examined for accuracy of

IUD related information. Findings concluded advantages of IUD use were overshadowed by exaggerated disadvantages of the device. In addition, risks of conditions, such as pelvic inflammatory disease (PID), ectopic pregnancy, and infertility were mentioned to be associated with IUD use, despite the fact that scientific evidence stated the contrary. According to the researchers, "Texts commonly used by medical students on women's health rotations may not be evidence-based in the information presented about the intrauterine device" (Espey and Ogburn, 2002, p. 389).

Despite many sources of inaccurate information, some literature does exist that includes seemingly nonbiased and up-to-date facts about the IUD. Scholarly research and leading governmental and health organizations have shown women who had never been pregnant could be candidates. An article in the scholarly, peer-reviewed journal *Contraception* quoted a 2005 statement by the U.S. Food and Drug Administration (FDA). This statement was in regards to the label change made on the copper IUD, also known as the ParaGard . In 1988, this FDA approved label stated that the device was "recommended for women who have had at least one child…" (Hubacher, 2007, p. S8). In 2005, this recommendation was removed. The FDA now approves use of the copper IUD for all women.

In addition to the FDA's new label, Family Health International (FHI) released an editor's statement on February 6, 2008, stating the following:

> Recent evidence indicates that IUDs are extremely safe and effective for both parous and nulliparous women. The IUD itself does not increase the risk of pelvic inflammatory disease, which can lead to infertility; rather, pre-existing STIs increase the risk of infection. Nulliparous women are slightly more likely (up to 10 percent) to expel the

> IUD. This causes no harm, but if expulsion occurs, the woman will no longer be protected against pregnancy (FHI, 2008, p.1).

Based on existing literature, it appears attitudes and beliefs may be influential to IUD provision and use. A model that takes into account these factors is needed to further explore the issue of IUD usage.

Theory of Reasoned Action (TRA) was developed by Icek Ajzen and Martin Fishbein in 1980 to propose that the most important predictor of behavior is behavioral intention (Montano & Kasprzyk, 2002). Further, a person's intent to perform a behavior is influenced by his or her attitudes and perceptions of subjective and social norms associated with the respective behavior (Sable et al, 2006). Therefore, healthcare practitioners' (HCP) intent to insert an IUD in most women is influenced by their attitudes about the device as well as their perceptions of how individuals important to them view insertion of the IUD in most women. Based on this theory, if a HCP personally has negative attitudes towards the IUD, or perceives that his/her colleagues believe inserting an IUD in a nulliparous woman is negative, he or she may not insert the device in nulliparous women. According to Sable et al (2006), "TRA has been used to describe a variety of clinical practices among physicians and health care workers" (p. 21). Health care practitioners are plentiful in the United States. They can practice in a variety of settings, including private practice, hospitals, and federally funded clinics. Therefore, for the purposes of this research, a specific population of health care practitioners was selected to ensure a valid and reliable study.

A nurse practitioner (NP) "is a registered nurse (RN) with additional specialized education. The nurse practitioner provides some care previously offered only by physicians" (Nurse Practitioners in Women's Health [NPWH], http://www.npwh.org/i4a/pages/index.cfm?pageid=3339). "According to the American Nurses

Association, approximately 60 to 80 percent of primary and preventive care can be performed by nurse practitioners" (Mayo Clinic, 2009, http://www.mayo.edu/mshs/np-career.html). NPs are considered midlevel practitioners along with physician assistants (PA) and certified nurse midwives (CNM) (Fowler et al, 2008). More generally, the term "clinical services provider" (CSP), used by the United States Government under the Department of Health and Human Services (DHHS), includes physicians and all mid-level practitioners (NPs, PAs, and CNMs) (Fowler et al, 2008).

Currently, there are 125,000 practicing nurse practitioners in the United States, and an additional estimated 6,000 nurse practitioners trained each year throughout 325 programs across the country (American Academy of Nurse Practitioners, 2009). In 2008, NPs and other midlevel clinicians were responsible for 54% of all family planning encounters at government-funded family planning clinics across the country. Physicians were responsible for 12% (Fowler et al, 2008). NPs offer a wide range of services, including many services specializing in the health of women. Women can see an NP for physical exams and pap smears, patient education, contraception, pregnancy and STD testing, and menopause-related concerns (www.npwh.org). CSPs in general and NPs more specifically are able to insert, remove, and educate patients on the IUD.

Statement of Problem

IUDs are used by over 100 million women worldwide, making it the most common reversible method of birth control in the world. Fewer than 1% of American women, however, choose this method (Cheng, 2000). At the same time, multiple studies have shown this device is safe and effective for most women, including nulliparous women (Hubacher, 2007). Yet, few doctors insert IUDs on a regular basis (Stanwood, et al, 2002). Doctors may not feel comfortable inserting IUDs in nulliparous women due to various misconceptions that resulted from an

unsuccessful, and even dangerous, brand of IUD that was available in the early 1970's, the Dalkon Shield. Although this brand has been off the market since 1974, perceptions of IUDs being unsafe still exist among many healthcare practitioners. As a result of lack of support by the medical community, many women may not be well educated about this safe and effective method of birth control.

A possible reason IUDs are not common in the United States may be due to the absence of their mention in medical establishments. If women are unaware of the facts regarding this birth control option, they will not choose it. This omission may lead to a seemingly low demand for the device. Training of medical residents on the insertion procedure could become even less frequent than it is today (Cheng, 2000).

Less frequent IUD use would be a disadvantage in many ways. The 2005 Annual Report of Contraception stated that IUDs are among the safest, most effective, and cost-effective methods of contraception. The Report added that such low usage rates are likely due to "unwarranted fears" of serious infection, while increasing its use would most likely reduce both the number of abortions and sterilizations in the US, without producing unwanted infertility (Nidus Information Systems, Inc., 2008, p. 5).

IUDs are described in human sexuality textbooks, such as Greenberg et al (2007) and LeVay and Valente (2006), and educational brochures as forms of contraception. Further, ParaGard ® refers to their product, the copper IUD, as an intrauterine contraceptive (http://www.paraguard.com/custom/touch-paragard). Contraceptives are methods of birth control that prevent the union of sperm and egg, not the implantation or development of an already fertilized egg. Despite this evidence, some individuals view the IUD as an abortifacient, which is any device with the ability to induce an abortion. The element copper is extremely toxic to

sperm. Therefore, sperm are most commonly killed before ever reaching the female ovum (aka, egg) (Family Health International [FHI], 2000). "Copper-bearing IUDs release copper ions into the fluids of the uterus and the fallopian tubes, enhancing the debilitating effect on sperm" (FHI, 2000, www.fhi.org/en/RH/Pubs/Network/v20_1/NWvol20-1IUDsperm.htm).

IUDs are prescription contraceptives. Their use is dependent upon HCP administration, prescription, or insertion. Therefore, practitioner compliance to offer these methods is necessary for patient utilization. As a result, anything that could affect HCP compliance, such as attitudes or subjective norms, could prevent them from offering the device to patients. Wilson (2008) stated one of the reasons IUD use is so low in the United States (compared to other industrialized countries) is due to healthcare practitioners' "negative beliefs about the safety of its use" (p. 24). IUD provision in government grant-funded family planning clinics also is low. According to Sonfield (2007), "IUD use is rare in the United States. This holds true even among clients of publicly funded family planning clinics, which have a long tradition of offering a broad choice of contraceptive methods. Only 58% of Title X–supported family planning clinics in 2003 provided the copper IUD and 34%, the hormonal IUD, compared with 97% or more for the male condom, the injectable and the pill" (Guttmacher Policy Review, http://www.guttmacher.org/pubs/gpr/10/4/gpr100419.html).

Need for the Study

Multiple studies, such as Sneed and Morisky (1998) and Baker et al (1996), used the Theory of Reasoned Action (TRA) to measure behavioral intentions of various populations to use condoms as a means to reduce risk of STI transmission. Further, a study by Sable et al (2006) used TRA to measure physician intention to prescribe emergency contraception (EC). No studies have been conducted using TRA to explicitly measure the link between attitudes, norms, and behavioral intention of healthcare practitioners to provide the IUD.

Scholarly research about the IUD seems staggered over time. There seems to be an ebbing and flowing of articles on the topic. Journals such as *Contraception* and *Obstetrics & Gynecological Survey*, have published entire issues of research articles on the IUD (78[2] & 65[6] and 51[2] respectively) in 2008, 2002, and 1996, respectively. Publication of IUD-related research articles in between these waves is sparse. For example, searching keywords "intrauterine device" in the *American Journal of Public Health*, resulted in only 16 articles of 223 (approximately 7%) published on the topic within the past 5 years that even mentioned "intrauterine device" within the article. Some of the most current scholarly publications dedicated to IUD research were published 3 to 7 years ago. Now is a critical time to revisit this topic.

Importance to Health Education

Health educators have a responsibility to refer the public to credible sources of information. As a result of the Competencies Update Project (CUP) in 2004, the sixth and seventh Areas of Responsibility for a Certified Health Education Specialist (CHES), are VI: Serve as a health education resource person, and VII: Communicate and advocate for health and health education (Gilmore et al, 2005). Therefore, health educators have the responsibility to create awareness about devices, services, and programs that may potentially increase quality of healthy lives for all individuals.

If clinical services providers (CSP) are not current with their IUD knowledge and/or hold attitudes about the IUD based on outdated misconceptions, they may not provide IUD services for most women. Therefore, women will not have access to all birth control options available. Selecting the best birth control method possible will lead to increased quality of life for all individuals wanting to prevent unwanted pregnancies. Research has shown consultations with

CSPs are influential on women's decision-making process regarding their birth control method of choice. "All individuals have the right of access to the widest possible choice of safe, effective and acceptable methods of control of fertility as protection against unplanned pregnancy…All individuals have the right to information related to their sexual and reproductive health" (Haselgrave, 2006, p. 437). Withholding mere information about IUDs from women of childbearing age is depriving reproductive rights (Haselgrave, 2006; World Health Organization, 2004). Further, Hatcher et al (2007), state it is an important responsibility of health care professionals and the media to provide accurate and current information about IUDs to consumers and professionals. According to Hatcher et al (2007), doing so would increase use of the IUD, which they describe as "an excellent method" of contraception (p. 117).

Purpose of the Study

The purpose of this study was to use the Theory of Reasoned Action to measure behavioral intention of clinical services providers (CSP) to provide the intrauterine device (IUD).

Research Questions

For the purposes of this study, the following three research questions were posed:

1). What level of knowledge do clinical services providers have about the intrauterine device (IUD)?

2). What is the relationship among clinical services providers' knowledge, attitudes, subjective norms, and behavioral intention in regards to providing the intrauterine device (IUD)?

3). How much variation in clinical services providers' behavioral intention to provide the intrauterine device (IUD) can be accounted for by knowledge, attitudes, and social norms?

Research Design

Descriptive and correlational research was used for this study. According to Isaac and Michael (1995), the purpose of correlational research is to "investigate the extent to which variations in one factor correspond with variations in one or more other factors based on correlation coefficients" (p. 53). Further, descriptive research functions to "describe systematically the facts and characteristics of a given population or area of interest, factually and accurately" (p. 50). Correlation research is appropriate for this study as it measured the relationship among behavioral intention, attitudes, subjective norms, and knowledge of clinical services providers.

Data Collection

The population of this study included a census of the National Association of Nurse Practitioners in Women's Health (NPWH) membership. Members of this association are clinical services providers (CSP) including, but not limited to, nurse practitioners (NP), certified nurse midwives (CNM), physician assistants (PA), registered nurses (RN), and physicians. This sample was chosen because NPWH members include CSPs capable of inserting and providing the intrauterine device (IUD). In addition, since this association is focused on women's health issues, members are likely to have interests in reproduction and family planning.

Sable, et al (2006) developed a survey instrument and conducted a study using the theory of reasoned action (TRA) to measure behavioral intention of physicians to educate about and provide emergency contraception (EC). Permission was granted by Sable (2006) to revise and use the instrument for this study. A revised instrument was developed to use TRA to measure behavioral intention of clinical services providers to provide the IUD, and were employed for this study. The revised instrument consists of 51 items, including 39 that measure constructs of

TRA, 6 knowledge items, 5 demographic items, and one open-ended response item. The 39 items measuring TRA constructs are on 4-point, forced choice, Likert-type scales. Knowledge items consist of categorical, nominal items. Demographic items address professional information and gender, and are placed at the end of the instrument. Data collection occurred via online survey administration. Members of the NPWH were sent cover letters and a link to take the survey on SurveyMonkey.com.

Data Analysis

Data analysis included descriptive statistics, such as percentages, frequencies, and measures of central tendency and dispersion. Descriptive statistics were calculated for each item, including demographic variables. Research questions were explored with general linear models with behavioral intention to provide the IUD as the outcome variable (Sable, et al, 2006). Relationships and variance among behavioral intention, knowledge, attitudes, and subjective norms were measured through Pearson Product-moment correlation coefficient and multiple regression models.

Limitations

According to Neutens and Rubinson (2002), "limitations are the boundaries of the problem established by factors or people other than the researcher" (p. 20). The following were limitations of this study:

1) Lack of cooperation to participate may have occurred by clinical services providers who are asked to take the survey.

2) Clinical services providers who specialize in women's health may not have held the same beliefs about the IUD in comparison to clinical services providers in general.

3) Survey completion may have been rushed due to time constraints of participants.

4) Due to the sensitive and possibly controversial nature of the topic, it may have been difficult to engage participants. Participants may not have wanted to answer questions they perceive as too personal or controversial.

5) Instrumentation could have affected reliability and validity of responses, as some participants may not have correctly understood how to answer double negative statements.

Delimitations

According to Neutens and Rubinson (2002), "delimitations deal with the boundaries…set by the researcher" (p. 20). The following were delimitations of this study:

1) Clinical services providers will be surveyed online only.

2) Only members of Nurse Practitioners in Women's Health (NPWH) will be surveyed.

3) TRA only predicts behavioral intention and not actual behavior.

4) The Study only measured TRA constructs and knowledge as potential predictors of behavioral intention.

Assumptions

According to Neutens and Robinson (2002), an assumption is "a condition that is taken for granted and without which the research effort would be impossible" (p. 20). The following were assumptions that accompany this study:

1) Participants answered the survey items accurately and honestly.

2) Nurse practitioners' behavioral intention to provide the IUD was accurately measured using a valid and reliable instrument and proper statistical analyses.

3) Participants voluntarily participated in the study.

4) All participants' identity was held confidential throughout the study.

5) The researcher followed ethical research protocol.

Definitions

The following section provides definitions of terms discussed throughout this study and their operational uses.

- Abortifacient - "A medical method that causes an embryo or fetus to die" (Greenberg et al, 2007, p. 865). "An agent which causes abortion" (Dorland's Illustrated Medical Dictionary, 1994, p. 4).
- Attitudes (direct measure) - "Overall evaluation of the behavior." A construct of the theory of reasoned action (Glanz et al, 2002, p. 69).
- Behavioral beliefs – The value of the consequences (positive or negative). A construct of the theory of reasoned action, and an indirect measure of attitudes. (Glanz et al, 2002)
- Behavioral intention – Perceived likelihood of performing the behavior. A construct of the theory of measured action, and the dependent variable when performing data analyses (Glanz et al, 2002).
- Cervical Cap - "Shallow rubber cap, smaller than a diaphragm, that covers the cervix to prevent sperm from entering the uterus" (Greenberg et al, 2007, p. 866).
- Cervix - "The mouth of the uterus, through which the vagina extends" (Greenberg et al, 2007, p. 866).
- Clinical Services Provider (CSP) - "Includes physicians (family and general practitioners, specialists), physician assistants, nurse practitioners, certified nurse midwives, and other licensed health providers (e.g., registered nurses) who are trained and permitted by state-specific regulations to perform *all aspects* of the user (male and female) physical assessment, as described in Section 8.3 of the *Program Guidelines*. Clinical services providers are able to offer client education, counseling, referral, follow-up, and/or clinical

services (physical assessment, treatment, and management) relating to a client's proposed or adopted method of contraception, general reproductive health, or infertility treatment" (Fowler et al, 2008, p. 46).

- Conception – A term with varying definitions depending on the source. Medical physiology sources, such as Guyton and Hall, (2000) define it as synonymous to fertilization. According to the American College of Obstetricians and Gynecologists and the FDA, conception is defined as "the event when a fertilized ovum implants in the uterine wall" (White, 1999, p. 1714).
- Condom (female) - "…a 'female condom'…lines the vagina, which is worn by the woman during sex for similar protection (to male condoms for protection against sexually transmitted diseases). Condoms are highly effective at preventing STDs and pregnancy if used consistently and correctly" (American Social Health Association, 2009. http://www.ashastd.org/learn/learn_glossary_A_D.cfm)
- Condom (male) – "A cover for the penis, worn during sex to prevent STDs and pregnancy. "…is recommended for protection against disease." Materials used for male condoms include animal skin (example, lambskin), latex, or polyurethane. The latter two materials help protect against unwanted pregnancy and sexually transmitted diseases, including HIV (American Social Health Association, 2009, http://www.ashastd.org/learn/learn_glossary_A_D.cfm).
- Contraception - "Means of preventing pregnancy in spite of sexual intercourse" (Greenberg et al, 2007, p. 866).

- Contraindication - “any condition, especially any condition of disease, which renders some particular line of treatment improper or undesirable” (Dorland’s Illustrated Medical Dictionary, 1994, p. 373).
- Depo-Provera - “An injectable progestin-only contraceptive” (Greenberg et al, 2007, p. 866).
- Diaphragm - “Shallow rubber cap that covers the cervix and prevents sperm from entering the uterus” (Greenberg et al, 2007, p. 867).
- Ectopic Pregnancy - “The attachment and development of the zygote in a location other than in the uterus” (Greenberg et al, 2007, p. 866).
- Endometrium - “The innermost layer of the uterus, to which the fertilized egg attaches and by which it is nourished as it develops before birth, which is partly discharged (if pregnancy does not occur) with the menstrual flow” (Greenberg et al, 2007, p. 867).
- Estrogen - “A hormone produced by the ovaries whose level in the blood helps control the menstrual cycle” (Greenberg et al, 2007, p. 867).
- Evaluation of outcomes – “Value attached to a behavioral outcome or attribute.” A construct of the theory of reasoned action, and an indirect measure of attitudes (Glanz et al, 2002, p. 69).
- Fallopian Tubes (oviducts or uterine tubes) - “The routes through which eggs leave the ovaries on their way to the uterus, in which fertilization normally occurs” (Greenberg et al, 2007, p. 867).
- Fecundability – The likelihood of a woman of becoming pregnant as dependent on factors such as body mass index, age, and medical history (Hatcher et al, 2007).

- Fertilization – The union of male sperm and female ovum. Fertilization occurs in the "ampullary region of the fallopian tube" (Hatcher et al, 2007, p. 15).
- Gestation - "the period of development of the young in viviparous animals, from the time of fertilization of the ovum until birth" (Dorland's Illustrated Medical Dictionary, 1994, p. 689).
- Gonads - "The male testes and the female ovaries, which produce (steroid) hormones responsible for the development of secondary sexual characteristics" (Greenberg et al, 2007, p. 868).
- Implantation – The attachment of a fertilized egg to the uterine wall, and begins "approximately 6 to 7 days after fertilization" (Hatcher et al, 2007, p. 15). "Attachment of the blastocyst to the epithelial lining of the uterus, its penetration through the epithelium, and, in humans, its embedding in the compact layer of the endometrium, beginning six or seven days after fertilization of the ovum" (Dorland's Illustrated Medical Dictionary, 1994, p. 827).
- Intrauterine contraception (IUC) – The more recently adopted term encompassing IUD and IUS. Both the ParaGard® IUD and Mirena® IUS are collectively considered IUCs (Association of Reproductive Health Professionals, 2010; Hatcher et al, 2007).
- Intrauterine device (IUD) – The term used in reference to the copper IUD (brand name ParaGard®). ParaGard® does not release hormones (Hatcher et al, 2007). Some resources, however, use the term IUD to refer to both types of contraceptives.
- Intrauterine system (IUS) – Also called the levonorgestrel-releasing intrauterine system (brand name Mirena®). Only this hormone-releasing intrauterine device is referred to as an IUS (*Physicians' Desk Reference*, 2007).

- Motivation to comply – Motivation to do what each referent thinks. A construct of the theory of reasoned action, and an indirect measure of subjective norms (Glanz et al, 2002).
- Normative beliefs – Belief about whether each referent approves or disapproves of the behavior. A construct of the theory of reasoned action, and an indirect measure of subjective norms (Glanz et al, 2002).
- Nulligravid – "'nullus': none. 'gravid': pregnant" (Dorland's Illustrated Medical Dictionary, 1994, p. 718).
- Nulliparous - "Having never given birth to a viable infant" (Dorland's Illustrated Medical Dictionary, 1994, p. 1162).
- Nurse practitioner – "a registered nurse (R.N.) with additional specialized education. The nurse practitioner provides some care previously offered only by physicians" (Nurse Practitioners in Women's Health [NPWH], http://www.npwh.org/i4a/pages/index.cfm?pageid=3339).
- Nuva Ring® - "…a flexible ring about 2" in diameter that you insert vaginally once a month. Once inside, NuvaRing® releases a continuous low dose of hormones to prevent pregnancy (http://www.nuvaring.com/Consumer/aboutNuvaRing/index.asp).
- Occlusion - "the act of closure or state of being closed; an obstruction or a closing off" (Dorland's Illustrated Medical Dictionary, 1994, p. 1167).
- Oral Contraceptive ("The Pill") - "A daily pill taken to prevent ovulation" (Greenberg et al, 2007, p. 870).
- OrthoEvra Patch® - "The Patch is worn on the body, preventing pregnancy by delivering continuous levels of hormones (progestin and estrogen, respectively) into the

bloodstream through the skin" (http://www.orthoevra.com/what-is-patch-how-patch-work.html).

- Ovulation -"The part of the menstrual cycle when the ovum is discharged from the ovary" (Greenberg et al, 2007, p. 870). "The discharge of a secondary oocyte from a vesicular follicle of the ovary" (Dorland's Illustrated Medical Dictionary, 1994, p. 1207).
- Ovum/Ova - "An egg; the female reproductive cell which, after fertilization, becomes a zygot that develops into a new member of the same species" (Dorland's Illustrated Medical Dictionary, 1994, p. 1207).
- Parous - "Having borne one or more viable offspring" (Dorland's Illustrated Medical Dictionary, 1994, p. 1235).
- Progesterone - "A hormone secreted by the corpus luteum signaling the endometrium to develop in preparation for a zygote" (Greenberg et al, 2007, p. 871).
- Sperm - "A sperm is the male "gamete" or sex cell" (MedicineNet, Inc., 2009, http://www.medterms.com/script/main/art.asp?articlekey=5524). "The semen or testicular secretion; spermatozoon" (Dorland's Illustrated Medical Dictionary, 1994, p. 1552).
- Spermicide - "Chemical detergent compound that immobilizes or kills sperm on contact…prevents sperm from entering the uterus through the cervical os" (Greenberg et al, 2007, p. 872).
- Subjective norms (direct measure) – "Belief about whether or not people approve or disapprove of the behavior." A construct of the theory of reasoned action.
- Tubal – referring to fallopian tubes (Dorland's Illustrated Medical Dictionary, 1994).
- Uterus - "A pear-shaped hollow structure of the female genitalia in which the embryo and fetus develop before birth" (Greenberg et al, 2007, p. 873).

- Withdrawl - “Removing the penis from the vagina before ejaculation” (Greenberg et al, 2007, p. 873).

Summary

The IUD is an uncommonly used method of birth control in the United States. Factors such as attitudes and beliefs about the device held by women and healthcare practitioners seem to influence its popularity. The need exists for further exploration on this topic using an appropriate and supportive theory. The next chapter provides a detailed review of literature surrounding the many factors related to IUD use and nonuse such as the history and challenges that have surrounded birth control in the United States, highlighting revolutionaries in reproductive rights such as Margaret Sanger; the history of the IUD; and specific perceptions about the IUD currently held by women and healthcare practitioners.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Overview

IUD's are used by over 100 million women worldwide, making it the most common reversible method of birth control worldwide. Approximately 2% of American women, however, choose to use this method of birth control (Nidus Information Systems Incorporated, 2008). At the same time, multiple studies have proven this device is safe and effective for most all women, including nulliparous women (Hubacher, 2007). Few doctors, however, insert IUDs on a regular basis (Stanwood, et al, 2002). Doctors may not feel comfortable inserting IUD's in some women, including nulliparous women, due to various misconceptions that are a result of an unsuccessful, even dangerous, brand of IUD that came out in the early 1970's, the Dalkon Shield. Although this brand has been off the market since 1974, the perceptions of IUDs being unsafe still exist among many healthcare practitioners. As a result of lack of support by the medical community, many women may not be well educated about this safe and effective method of birth control. A possible reason IUDs are not common in the United States may be due to the absence of their mention in medical establishments. If women are unaware of the facts regarding this birth control option, they will not choose it. This may lead to a seemingly low demand for the device, and training of medical residents on the insertion procedure will become even less frequent than it is today (Cheng, 2000).

Purpose of the Study

The purpose of this study was to use the Theory of Reasoned Action to measure behavioral intention of clinical services providers (CSPs) to provide the IUD.

History of the IUD

The IUD is one of the world's oldest forms of birth control. Ancient practices have alluded to insertion of intrauterine-type devices to induce abortion. In addition, "Hippocrates mentioned a lead tube which could be used to instill medications into the uterine cavity" (Davis, 1971, p. 4). One of the most notable ancient practices was insertion of stones into the uterine cavities of camels to prevent pregnancies during lengthy journeys across Arabian deserts (Davis, 1971; Perry & Dawson, 1985).

In the 1971 book entitled, *Intrauterine Devices for Contraception: The IUD*, author Dr. Hugh J. Davis of Johns Hopkins Medical School in Baltimore, Maryland, discusses one of the first IUDs of the twentieth century. This device was designed in 1909 by Dr. Richard Richter, a Polish medical practitioner. This IUD was a ring-shaped device, made from silkworm gut, and allowed women the choice of an almost forgettable method of fertility control. "Once in place, this revolutionary device could stay in place for months or years as an effective means of birth control" (Davis, 1971, p. 1).

According to Davis (1971), "Richter's ring made it possible, for the first time in human history, a permanent, yet completely reversible, separation of sexual expression from involuntary reproduction. Intrauterine contraception requires only initial motivation and a few minutes of medical time to provide months or years of highly effective birth control," (p. 1). Although Dr. Richter did not keep records on pregnancy rates, expulsion rates, or the percentage of insertions, his method of contraception was believed to be accurate and effective in comparison to comparable existing forms during this era (Davis, 1971).

Controversy over fertility control was widespread during the early twentieth century. In particular, the intrauterine device was introduced almost simultaneously with skepticism. Despite

this retrospective optimistic perspective, Davis (1971) provides in his book over half a decade later, support for Richter's device was lacking at the commencement of its utilization. Professor Ludwig Fraenkel, chairman of the Department of Obstetrics and Gynocology at Breslau, stated, "All intrauterine devices have to be condemned because all of them are dangerous. The design and experimental application of newer devices is useless. Even if they could be made completely harmless, they would never achieve general acceptance because of the necessity of insertion and removal by specialists," (Davis, 1971, p. 3). In addition, Dr. John G. Madry, Jr. brought up the ancient Arabian practice before a congressional subcommittee in 1973: "I have often stated to my patients that the only difference between the stone placed in the womb of the camel and the intrauterine device of today is the material, and there is no evidence that one is safer than the other" (Perry & Dawson, 1985, p. 7).

Another pioneer of IUDs was Dr. Ernst Gräfenberg. This Swiss physician developed a series of ring-shaped IUDs in the late 1920's. According to Davis (1971) in his historical survey of the IUD, Dr. Gräfenberg's series of devices proved quite effective, with its coiled silver wire design. "Among 600 women fitted with the silver ring, Gräfenberg reported only 1.6% pregnancies at the 1930 (Zurich Birth Control) conference" (Davis, 1971, p. 10). In addition, other doctors had similarly effective results. "…Dr. Manes of Hamburg, who had used the silver ring in over 100 women during the previous 2 years with only 2 failures, Manes reported expulsions in only 5% of patients" (Davis, 1971, p. 10-11). The Zurich Birth Control Conference aimed to establish a legitimacy of the intrauterine device developed by Dr. Gräfenberg. This revolutionary device became adopted by physicians throughout the world, including Japan.

The era in which Gräfenberg prospered was also during Hitler's domination in and around the home regions of Gräfenberg and many of his colleagues. As a result, they immigrated to the United States. This geographical transition allowed IUDs to finally be introduced to America. Once in the United States, these European doctors faced a juxtaposition of intrigue and caution. Dr. Robert Dickenson, the gynecological authority at the time, was interested in IUDs. He advised against use of IUDs by Gräfenberg and colleagues due to perceived risks. "The gynecological prejudice against IUDs was so ingrained that they risked censure by the medical community, despite their own long and favorable experience with the device" (Davis, 1971, p. 12). Essentially, although Dr. Gräfenberg and his colleagues were experts in IUD insertion and practice, their services were condemned in the United States due to many unfavorable beliefs among obstetricians and gynecologists at the time.

Since Dr. Richter's IUD composed of silkworm gut was developed in 1909, many different materials were used in IUD design. Dr. Gräfenberg's IUD series was silver coils. A revived interest in the otherwise highly controversial device developed in the late 1950's. An Israeli doctor by the name of Oppenheimer produced successful results from a silkworm gut ring - much like Dr. Richter's 1909 version. "(Dr. Oppenheimer) had fitted silkworm gut rings in several hundred private patients since 1930 without major complications and with good efficacy" (Davis, 1971, p. 13). During the same era, Japanese doctor, Ishihama, reported successful results in over 20,000 women (Davis, 1971).

Later physicians, such as Dr. Lazar Margulies in 1960, developed the first plastic device made of polyethylene containing barium sulfate. In addition, Dr. Jack Lippes developed another plastic IUD in 1962. Expulsion rates of approximately 24%, however, deemed it ineffective.

Despite the many hits and misses throughout this time of IUD engineering growth, IUD acceptance was increasing in the United States as a result of earlier effective forms.

According to Davis (1971), most of the credit for increased research, exploration, and evaluation of IUD's is the result of the Population Council, funded by financial sources, such as the Rockefeller Foundation, the Scaife Family, and the Ford Foundation. As with many other disciplines, research is commonly dependent on funding. Monetary subsidies supported the Cooperative Statistical Program, "which collected and analyzed data on the effectiveness and side-effects (of IUDs) (Davis, 1971, p. 15). "By 1968 the data compiled by Christopher Tietze covered 27,600 women with more than 477,000 women-months of experience. Evidence attesting to the safety and efficacy of intrauterine devices became incontrovertible" (Davis, 1971, p. 15-16).

As a result of the statistical analysis, many Planned Parenthood Clinics throughout the United States began inserting IUDs in the 1960's. In addition, in 1968, the U.S. Food and Drug Administration (FDA) played an integral role in legitimization of the IUD, which helped the devise gain further acceptance. Davis (1971) concluded the following:

> …the US Food and Drug Administration issued a comprehensive report on IUD's. The 14 committee members (of the Advisory Committee on Obstetrics and Gynecology), included representatives from 9 academic institutions, the Population Council, and the National Institutes of Health. The available scientific data with regard to efficacy, side-effects, and complications was considered, as well as the results of a special survey of the 8,500 fellows of the American College of Obstetricians and Gynecologists who might have knowledge of the adverse effects. After reviewing a veritable mountain of data on

> the subject, the FDA report concluded: "The committee finds adequate scientific data attesting to the effectiveness and utility of intrauterine devices" (p. 16).

The Dalkon Shield

By 1970, approximately 12,000,000 women had been fitted for an IUD; one quarter of these women lived in the United States (Davis, 1971). The tides were about to turn, however, as a result of one IUD designed in the early 1970's. This device has been responsible for many misconceptions and biases which still exist in the United States today concerning IUDs. This single device, the Dalkon Shield, was responsible for backward decline of the device after it finally began to gain professional and personal acceptance.

Dr. Hugh Davis, who has been cited throughout this literature review, was a key figure in the past, present, and even future of the IUD. Dr. Davis was the engineer, developer, and marketer of the Dalkon Shield, the IUD that caused controversy and decreased support for an otherwise documented accurate and safe method of birth control. Interestingly, Dr. Davis wrote and published his book around the same time he was attempting to promote his new invention. This book was copyrighted the same year the Dalkon Shield was placed on the market (Cheng, 2000). According to Cheng (2000):

> The design of the Dalkon Shield was unsuccessful due to the multifilament string. This string made the IUD difficult to remove. As a result, reports of septic abortion and other infections were linked to the new IUD. The Food and Drug Administration (FDA) advised the manufacturer of the Dalkon Shield, A.H. Robbins, to withdraw it from the market in 1974. In 1983, the FDA advised all women currently using the Dalkon Shield to have the device removed. Litigation against A.H. Robins increased sharply. In 1985, A.H. Robins declared bankruptcy. The multifilament tail string, unique to the Dalkon

Shield, most likely facilitated ascent of bacteria into the uterus, causing pelvic infections, (p. 859).

To prevent lawsuits similar to the A.H. Robins case, other big pharmaceutical companies took their IUDs off the market from 1985-1986. In 1987, there was a $2,475,000 judgment against A.H. Robins. Interestingly, Robins did not destroy superfluous shields. The corporation "dumped 35,000 internationally" to Third World Countries. According to Gordon (1994), "many women still have Shields inside their bodies" (p. 430).

The Dalkon Shield prompted studies to be conducted to explore IUDs. Darling et al (1985) and Cramer et al (1985) conducted independent but similar case-controlled studies of women who sought medical attention due to infertility issues. Results of both studies showed the highest risk of infertility was linked to the Dalkon Shield, while less was known of an association between infertility and other IUDs (Darling et al, 1985; Cramer et al, 1985). The Darling et al (1985) and Cramer et al (1985) studies formed the basis for litigation against the makers of the Dalkon Shield and other IUD brands.

Hubacher et al (2001) conducted a study similar to those of Darling et al (1985) and Cramer et al (1985), and published it in the same journal (*New England Journal of Medicine*) 16 years later. Hubacher et al (2001) also administered a case-controlled study with nearly 2000 women to further investigate a link between IUDs and infertility. But unlike the 1985 studies, Hubacher et al (2001) tested women for the antibody of the bacterium *Chlamydia trachomatis*, believed to be "the most important contributor to infertility" (Darney, 2001, p. 608). The Hubacher study concluded no link between the IUD and infertility, but a direct link between infertility and *C. trachomatis* (Hubacher et al, 2001). The study by Hubacher et al (2001) is still viewed as a "landmark" study regarding the association between IUDs, PID, and infertility

(Deans & Grimes, 2009). Findings parallel the CDC's warning that untreated bacterial STIs may lead to infertility (CDC, 2007). Questions still exist regarding the general safety of IUDs.

A consensus exists among obstetricians and gynecologists that the Dalkon Shield was an unsuccessful attempt to design a perfect IUD. For the many IUDs developed since the first contemporary IUD was engineered by Dr. Richter in 1909, many different materials were tried to increase efficacy and safety, while attempting to reduce side effects of the device. Different shapes such as rings, loops, and triangles were tested. In addition, materials from silkworm gut to polyethelyne to plastic were used. Size also was an issue. Increased risk of uterine perforation accompanies a larger IUD. Thus, the goal was to design as small of an IUD as possible while maintaining efficacy. At approximately the same time as the Dalkon Shield controversy and litigation, a very effective IUD was created.

According to Zimmer (1996), "hysteria" over the Dalkon Shield caused litigation against other IUD brands and even physicians who were inserting the device. Although production of the Copper-7 IUD was halted as a result of the overwhelming lawsuits against other IUD manufacturers, the FDA continued to approve this new IUD. Moreover, The World Health Organization (WHO), Planned Parenthood, the American College of Obstetrics & Gynecology, and the Population Council continued to endorse the Copper-7 (Zimmer, 1996). Many women outside of the U.S. used the Copper-7. The entire time it was endorsed in the United States, however, the devise only profited 80 million dollars, over 50 million dollars less than approximated total litigation costs that were over 130 million dollars (Zimmer, 1996; Toran, 1995).

According to Cheng (2000), a discovery was made that addition of copper to IUDs made the device more effective and safe, due to the fact that copper made the IUD effective enough to

decrease the size of the device. As a result of the smaller size, fewer side effects occurred. As a result of the Dalkon Shield controversy, however, it was not until 1988 that GynoPharma, accepted the challenge to release the T380A (aka ParaGard). According to David Hubacher in his 2007 article in *Contraception*:

> When the CuT380A intrauterine device (IUD) was first marketed in the US in 1988, the product label contained a section titled 'Recommended patient profile.' Within this section was the following phrase: 'T380A is recommended for women who have had at least one child…' This feature of the product label and restrictive practices by clinicians limited use of the IUD among nulliparous women in the United States and elsewhere. In September, 2005, however, the U.S. Food and Drug Administration approved a new product label for the CuT380A; it is now void of any language to discourage use by nulliparous women (p. S8).

Adoption of the T380A was slow in the medical community. According to an article by Goldich (1996), the Kaiser Permanente Medical Care Program (KPMCP) excluded use of this device by its physicians due to heightened anxiety over lawsuits. In 1996, KPMCP was the largest health maintenance organization (HMO) in the United States. Therefore, they were afraid of being added to the group of lawsuits in the "deep pocket" position (p. 54). KPMCP eventually lifted their exclusion of the T380A 7 years after it was FDA approved (Zimmer, 1996).

Despite fear of litigation association with the IUD, some hopeful feelings about this device occurred, which had the longest lifespan of any IUD up to that point. After a study conducted by WHO, the T380A was approved to stay in place for up to 6 years, as opposed to prior brands that were only approved for 4 years. A GRMA News document in 1991 welcomed the longer life of this new IUD, stating the less frequently a woman has to get a new IUD

inserted, the less risk of side effects associated with IUD insertion and less cost, making this new IUD a more attractive choice (www.popline.org/docs/1183/121072). Popularity of the device did not increase, however. According to Goldich (1996): "In 1988, fewer than 2 percent of female contraceptors used an IUD, and since then this percentage has remained relatively stable" (p. 55).

This discussion of the Dalkon Shield could be concluded by a "lesson learned" statement from Zimmer (1996):

> For physicians and pharmaceutical manufacturers alike, there is a lesson to be learned from all of this. The Dalkon Shield litigation is a clear example of how a large pharmaceutical class action can virtually destroy an entire product line and discourage companies from conducting research in important areas of medicine. Indeed, according to the Center for Women's Policy Studies, liability concerns are a major barrier to the development of new reproductive medicines. A National Academy of Science panel concluded that the net effect of the surge in litigation has been to discourage innovation in the pharmaceutical industry, particularly with respect to contraceptives. Such studies indicate the need for all parties involved to work in harmony to avoid future IUD litigation (p. 58S; Viscusi et al, 1990).

Types of Birth Control

Various methods of birth control are currently available. Continuous abstinence, natural family planning/rhythm method, barrier methods, hormonal methods, implantable devices (including the IUD), permanent birth control methods (i.e. sterilization), and emergency contraception (EC) fall under the umbrella term birth control (Department of Health and Human Services, Office of Women's Health, 2009). The term birth control includes any method that prevents the *birth* of a baby. The term contraception includes the barrier and hormonal methods.

Contraceptives prevent the union of the sperm and egg, and thus prevent conception from occurring (Hatcher, et al, 2007). According to the American College of Obstetricians and Gynecologists and the FDA, conception is defined as "the event when a fertilized ovum implants in the uterine wall" (White, 1999, p. 1714). Many religious groups, however, do not concur with this definition. The conflict of birth control and religion will be further discussed in a following section.

Different types of contraception are used throughout the world. Greenberg et al (2007) break down contraceptives into prescription and nonprescription methods. Prescription methods must be administered, prescribed, or inserted by a licensed healthcare practitioner. Contraception includes barrier and hormonal methods to prevent union of the sperm and egg, and, thus, prevent fertilization. Barrier methods of contraception, prevent fertilization by means of a physical or chemical obstruction (Hatcher et al, 2007). Common types of barrier contraceptives include male and female condoms, diaphragm, cervical cap, and spermicidal lubricant. Hormonal methods of contraception, according to Donatelle, (2007), "introduce synthetic hormones into the woman's system that prevent ovulation, thicken cervical mucus, or prevent a fertilized egg from implanting" (p. 148).Common types of hormonal methods include oral contraceptive pills (aka, "The Pill"), the NuvaRing, Depo-Provera injection, Ortho Evra Patch, Implanon (the successor of Norplant), and Mirena (the hormonal IUD) (Hatcher et al, 2007).

Developing hormonal methods of birth control is a sensitive process. According to *Textbook of Medical Physiology* authors Guyton and Hall (2000), "the problem in devising methods for hormonal suppression of ovulation has been in developing appropriate combinations of estrogens and progestins that will suppress ovulation but not cause other, unwanted effects of

these two hormones. For instance, too much of either of the hormones can cause abnormal menstrual bleeding patterns" (p. 942).

Regardless of the various side effects any form of contraception may cause (with the possible exception of comprehensive abstinence), the goal of all of these methods is to prevent unwanted pregnancy (and in some cases transmission of STIs). Despite any rare side effects connected to the IUD, it is one of the most effective reversible methods of birth control. When comparing typical use rates of IUDs to other forms of contraception, there are advantages when choosing the IUD (Hatcher et al, 2007).

Contraceptive Effectiveness

Multiple factors influence a contraceptive's effectiveness. Authors of *Contraceptive Technology*, Hatcher, et al (2007), discuss a formula to determine contraceptive effectiveness. Included in this formula are the efficacy of the particular method to prevent pregnancy, the user's compliance to use the method properly, continuation of the method, factors pertaining to a woman's fecundability (such as age and body mass index), and frequency of coitus. Figure 1 illustrates this formula as described by Hatcher et al (2007).

Figure 1. Determinants of Contraceptive Effectiveness.

$$\text{Contraceptive Effectiveness} = \frac{\text{Efficacy x compliance x continuation}}{\text{Fecundability x coital frequency}}$$

Therefore, when discussing effectiveness of contraceptives, the factors listed in Figure 1 should be noted.

Table 1 provides evidence on the high efficacy of both the ParaGard and Mirena IUDs. Hatcher et al (2007) According to plannedparenthood.org, "less than 1 out of 100 women will get pregnant each year if they use the Mirena or ParaGard IUD" (Planned Parenthood, 2009 http://www.plannedparenthood.org/health-topics/birth-control/iud-4245.htm). In typical use

rates, ParaGard has a pregnancy rate of 0.8%, whereas Mirena has a 0.1% pregnancy rate, compared to the 8% pregnancy rate of hormonal methods, such as oral contraceptive pills, Ortho Evra Patch, and NuvaRing.

Barrier methods such as the diaphragm, male condom, and spermicide have higher failure rates than hormonal methods. Typical use rates for these methods vary in comparison to their perfect use rates due to a larger margin of human error. For barrier methods to be efficient, they must be applied quite meticulously. For example, if a woman does not insert the diaphragm precisely over the cervix, there is an increased chance for sperm to pass through this barrier. In addition, if a microscopic tear exists on a condom (usually without awareness of the persons involved), sperm may escape past this barrier, possibly causing unwanted pregnancy 15% of the time (Greenberg et al, 2007; Donatelle, 2007; LeVay &Valente, 2006). A comparison of effectiveness rates of the IUD versus other common types of birth control is shown in Table 1.

Table 1

Effectiveness Rates of Types of Birth Control: Typical Use and Perfect Use per 100 Women during First Year of Use

Method	Typical Use	Perfect Use
No Method	85.00	85.00
Withdrawal	27.00	4.00
Spermicide	26.00	6.00
Diaphragm	20.00	6.00
Male Condom	15.00	2.00
Oral Contraceptives (The Pill)	8.00	0.30
Ortho Evra (The Patch)	8.00	0.30
NuvaRing	8.00	0.30
IUD		
ParaGard (copper T380A)	0.80	0.60
Mirena (hormonal IUD)	0.10	0.10
Depo-Provera Injection	0.30	0.30
Sterilization		
Men	0.15	0.10
Women	0.50	0.50

Table adapted from Donatelle (2007)

Statistics from The World Health Organization (WHO) support data in Table 1. In WHO's 2004 medical eligibility report (further discussed in a later section of this chapter), effectiveness rates of all common methods of birth control are compared. Just like the data in Table 1, WHO states perfect use rates for the ParaGard and Mirena are 0.8 % and 0.1 % respectively. Typical use rates for ParaGard and Mirena are 0.6 % and 0.1 % respectively. Additionally, WHO reports that 78 % of women continue the use of ParaGard, and 81 % continue the use of Mirena after one year, making the IUD one of the methods with the highest continued usage rates. The IUD ranks third, following male and female sterilization (100%) and hormonal implant (84%) (World Health Organization [WHO], 2004).

Hormonal methods may cause severe side effects in some women. Oral contraceptive pills, which are among the most commonly used forms of contraception, may cause many problems in certain women (Greenberg et al, 2007). According to a recent article in the *Journal of the American Medical Association* (*JAMA*), women who use the Ortho Evra patch are at higher risk of developing venous thromboembolism than women taking oral contraceptive pills due to the patch's higher dose of estrogen (Kuhen, 2008). Common side effects of any form of hormonal contraceptive include weight gain, bloating, headaches, mood swings, nausea, and changes in menstruation. More severe side effects are blood clots, which can lead to hypertension, heart disease, and stroke. Women who smoke and are over the age of 35 are not advised to take hormonal contraceptives (Greenberg et al, 2007). Possible serious health consequences of oral contraceptive pills are outlined with an acronym, ACHES: Abdominal pain, Chest pain, Headaches, Eye problems, and Severe leg pain (Donatelle, 2007). According to Donatelle, (2007), other health-related issues are of concern regarding oral contraceptives are:

> Because of the chemicals in oral contraceptives change the way the body metabolizes certain nutrients, all women using the pill should check with their practitioners to see if dietary supplements are advisable…Oral contraceptives can interact negatively with other drugs. For example, some antibiotics diminish the pill's effectiveness and may require an adjustment in the antibiotic dosage. Women in doubt should check with their prescribing practitioners or their pharmacists (p. 153).

The WHO has several conditions that affect eligibility of patients to use hormonal methods but not eligibility of the ParaGard, such as deep venous thrombosis/pulmonary embolism, systemic lupus, acute viral hepatitis, severe cirrhosis, liver tumors, women on certain types of antimicrobial therapy, women on certain types of anticonvulsant therapy, and women on certain types of antiretroviral therapy (World Health Organization [WHO], 2008).

Female Reproductive Anatomy and Physiology

The internal anatomy of the female reproductive system is comprised of the cervix, which is the "window" to the womb. It is the barrier between the vagina and the uterus. Sperm must get through the cervix for fertilization to be feasible. The female body's physiological reactions work to promote fertilization. For example, during the majority of a woman's menstrual cycle, the cervix is covered with thick mucus; making it difficult for sperm to pass through. During ovulation (see Chapter 1 definition), this cervical mucus sloughs off to allow less of a challenge for approaching sperm. Just internal to the cervix is the uterus (aka, the "womb"). This muscular organ is where a fertilized ovum implants, and where a fetus grows and develops during the nine month gestation period. In a non-pregnant woman, the inner lining of the uterus, the endometrium, is shed every month during menstruation. Arising on each side of the uterus are the fallopian tubes. These structures allow the passing of an ovum each month in an ovulating

female (i.e. a female of childbearing age not taking hormonal contraceptives). The fallopian tubes are the site of fertilization. At the end of each fallopian tube is an ovary. Ovaries are the gonads of the female reproductive system, responsible for releasing the female hormones estrogen and progesterone. In addition, ovaries release an ovum each month in an ovulating female (Boston Women's Health Book Collective, 1992; Greenberg, 2007).

IUD Mechanism of Action

The mechanism of action for the IUD varies between the copper (ParaGard®) and the hormonal (Mirena®) devices. The copper IUD disrupts sperm movement, and prevents sperm from reaching the fallopian tubes. According to Greenberg (2007) and Hubacher (2007), the copper IUD acts like a spermicide, immobilizing sperm from reaching the fallopian tube. The hormonal device, which is also known as the intrauterine system (IUS), releases levonorgestrel, a synthetic version of the natural female hormone progesterone, which prevents sperm from uniting with the egg during ovulation by thickening cervical mucus (Greenberg et al, 2007; Hubacher, 2007). Further, like other types of hormonal contraceptive methods, ovulation can be halted in women using the IUS, especially during the first years of use (Greenberg, 2007; Hubacher, 2007).

Physicians' Desk Reference (PDR) and the United States Food and Drug Administration (FDA) refer to IUDs such as ParaGard® and Mirena® as "intrauterine contraceptives" (*PDR*, 2007, p. 1052; FDA, 2005, p. 1). Despite this title as a contraceptive, however, *PDR* does not exclude the possibility of preventing implantation. In regards to ParaGard®, *PDR* states "possible mechanism(s) by which copper enhances contraception efficacy include interference with sperm transport or fertilization, and prevention of implantation" (p. 1052). Similarly, the FDA labeling for ParaGard® indicates "possible mechanism(s) by which copper enhances contraceptive

efficacy include interference with sperm transport or fertilization, and prevention of implantation" (FDA, 2005, p. 1). In regards to the clinical pharmacology of Mirena®, *PDR* and FDA labeling state:

> The local mechanism by which continuously released levonorgestrel enhances contraceptive effectiveness of the [intrauterine system] IUS has not been conclusively demonstrated. Studies of Mirena® protypes have suggested several mechanisms that prevent pregnancy: thickening of cervical mucus preventing passage of sperm into the uterus, inhibition of sperm capacitation or survival, and alteration of the endometrium (*PDR*, p. 765; FDA, 2009).

While most empirical research suggests the IUD works as a contraceptive by preventing fertilization, other sources imply the IUD may interfere with implantation of an already fertilized egg. An article by Sivin (1989) gives commentary to address the controversy over IUD mechanism of action by providing a concise overview of how this method may prevent pregnancy:

> The weight of scientific evidence indicates that IUDs act as contraceptives. They prevent fertilization, diminishing the number of sperm that reach the oviduct and incapacitating them. They prevent the fertilization, diminishing the number of sperm that reach the oviduct, and incapacitating them. IUDs, particularly copper devices, decrease the likelihood that ova can be found in the Fallopian tube shortly after ovulation. All IUDs, inert or medicated, profoundly alter the composition of uterine fluid and the morphology of the human endometrium (p. 355).

The latter part of this statement is in reference to an original thought that IUDs may interfere with implantation of a fertilized egg. This concept, according to Sivin (1989), implies "an ability

to find frequent traces of fertilization in IUD users" (p. 355). An "unequivocal, well characterized marker" to detect such traces, however, was not available when this article was written in 1989.

In recent years, factors such as the detection of embryo-specific substances, recovery of eggs and developing zygotes from the genital tract, condition of tubal eggs, and recovery of spermatozoa from the site of fertilization have been used in clinical trials to explore and explain discuss the mechanism of action of IUDs. A 2007 article published by Ortiz and Croxatto further investigates the biological basis of IUDs' method(s) of action by comparing their own clinical trials with existing empirical evidence. The conclusions of Oritiz and Croxatto (2007) support Sivin (1989):

> IUDs induce a local inflammatory reaction of the endometrium...Active substances released from the IUD or IUS, together with products derived from the inflammatory reaction present in the luminal fluids of the genital tract are toxic to spermatozoa and oocytes, preventing the encounter of healthy gametes and the formation of viable embryos (p. S28).

Ortiz and Croxatto (2007) also concluded that "current data do not indicate that embryos are formed in IUD users at a rate comparable to that of non-IUD users" (p. S28). Therefore, like Sivin (1989), Ortiz and Crozatto (2007) imply the main method of action for IUDs is to prevent fertilization. Interestingly, however, during Ortiz and Crozatto's clinical trials of ova recovery in the fallopian tubes between -79 to +11 hours after the LH peak, two users of the copper IUD presented with "uncertain" embryos; meaning in these cases, the ova were invaded with macrophages, and "scarce remains of cytoplasm were insufficient either to confirm or exclude the occurrence of fertilization" (p. S27). In addition, one LNG-IUS presented with a fertilized

ovum. This ovum, however, underwent abnormal development compared to the normal embryo development of fertilized ova of non-IUD users. Therefore, although most evidence points to the IUD mechanism of action being that of preventing fertilization, some studies have suggested the IUD can work in ways to prevent implantation of a fertilized egg.

IUDs as Abortifacients

Possibly one of the most controversial factors surrounding IUDs is the belief they act as abortifacients. According to Dorland's Illustrated Medical Dictionary (1994), an abortifacient is "an agent which causes abortion" (p. 4). Pharmaceuticals are FDA approved to cause an abortion in women who wish to terminate her pregnancy. For example, Mifeprex® (mifepristone) is FDA approved to terminate pregnancy by interfering with progesterone absorption, and is approved for use up to 49 days after a woman's last menstrual period (United States Food and Drug Administration, 2010).

The thought of IUDs as abortifacients is addressed in the literature. For example, Pasquale (1996), in his review of clinical experiences with current IUDs, discusses data published in earlier articles in *Contraception* and *Fertility and Sterility* that suggest IUDs are not abortifacients. Hatcher et al (2007), authors of *Contraceptive Technology*, believe the statement "IUDs are abortifacients" is a myth (p. 130).

Agents with indications to terminate pregnancy differ from forms of emergency contraception. The mechanism of action of Plan B®, the FDA approved brand of emergency contraception (EC), prevents fertilization or ovulation. According to the *Physicians' Desk Reference (PDR)* 2008, "emergency contraceptives are not effective if the woman is already pregnant" (p. 1056). Therefore, Plan B®, and any other form of emergency contraception, is not approved for use in a medical abortion.

Although, the FDA does not indicate use of IUDs to induce abortion, some sources suggest the efficacy of ParaGard® as a form of emergency contraception. According to the *Merck Manual for Health Professionals* (2007), and Hatcher et al (2007), a copper IUD may be used as a form of emergency contraception if inserted up to 10 days after coitus. Although use of IUD as emergency contraception is more expensive than oral administration of the emergency contraceptive pill (Plan B®), the *Merck Manual for Health Professionals* (2007) and Hatcher et al (2007) claim it is the more effective method of pregnancy prevention after intercourse (compared to the hormonal pill). This use of ParaGard® further suggests potential mechanism(s) of action apart from preventing fertilization.

Due to the uncertainty surrounding the exact mechanism(s) of action, and as a result of the possibility of interrupted implantation, IUDs have ethical and moral implications for many individuals, based on the belief of when life begins. These implications may guide attitudes and beliefs about the IUD, in turn, affecting its frequency of use.

Potential Risks Associated with IUD Use

As with any other form of birth control, IUDs have risks. A contraceptive, however, "should pose fewer risks to a woman's health than pregnancy" (Nelson, 2007, p. S76). Historical and current contraceptive literature addresses a few perceived complications with the IUD: Pelvic inflammatory disease (PID), ectopic pregnancy, uterine perforation, and expulsion. The possible association and disassociation between each of these potential concerns and IUD use are discussed below.

Pelvic inflammatory disease (PID)

One major risk factor of IUD use is an increased risk for pelvic inflammatory disease (PID). Some sources state the IUD may create a more harboring environment for bacterial

growth than if the device was not present (*PDR*, 2008). Some clinical guidelines, however, do not indicate the need for prophylactic antibiotics, because the risk of upper-genital-tract infection is insignificant (Hatcher et al, 2007).

PID is usually caused by a bacterial sexually transmitted infection (STI). IUDs, therefore, are not advised for any woman with risk behaviors for contracting a bacterial STI such as Chlamydia or gonorrhea. Thus, if a woman is not in a mutually monogamous relationship, another birth control option, such as latex condoms, may be more suitable to help prevent the spread of STIs. Johns Hopkins Bloomberg School of Public Health conducted the INFO Project, including updated information about the IUD. In the section of the report which discusses potential side effects of the IUD. Researchers for this report found data consistent with other current scientific literature on the relationship between the IUD and PID. Women are most at risk of PID within a few weeks after IUD insertion. Figure 2 illustrates the association between the IUD and PID (Salem, 2006).

Figure 2. PID Rates by Time since IUD Insertion in 13 WHO Clinical Trials

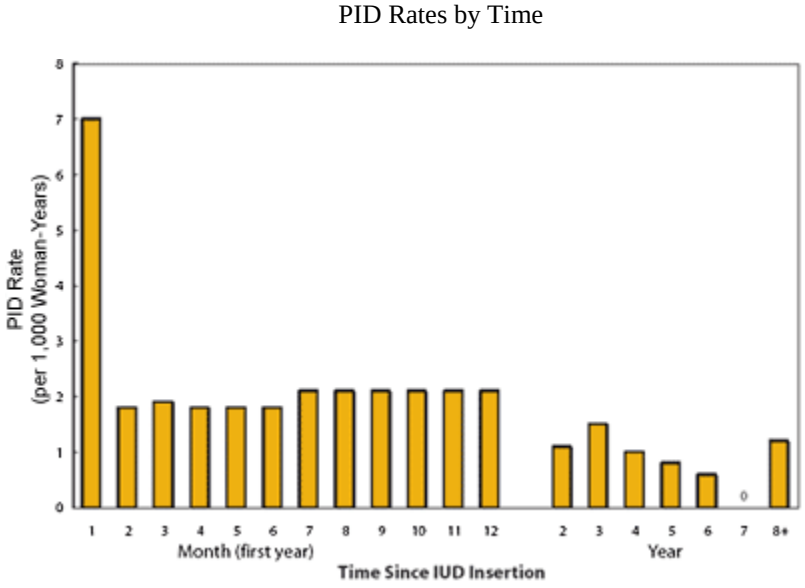

Table adapted from Salem (2006)

A World Health Organization (WHO) study indicated the risk of PID to be primarily confined to the first 20 days after insertion" (WHO, 1997; Cheng, 2000). In addition, Farley, et. al. (1992) found "…that out of almost 23,000 insertions, the rate of PID was 9.68 per 1,000 women years in the initial 20 days after insertion and 1.39 per 1,000 women years thereafter" (Cheng, 2000, Farley, et. al, 1992, p. 861).

It should be noted PID is not caused by the IUD alone. PID is caused by long-term bacterial growth in a woman's internal reproductive anatomy, including the cervix and uterus, most commonly caused by STIs such as Chlamyida and/or gonorrhea (CDC, 2008). According to Salem (2006), "a woman who does not already have gonorrhea or Chlamydia cannot get PID just from having an IUD inserted" (http://www.infoforhealth.org/pr/b7/chap3.shtml).

According to the CDC, bacterial STIs such as Chlamydia commonly present no signs or symptoms. Seventy five percent of women with Chlamydia show no signs or symptoms (CDC, 2007). For this reason, it is imperative that sexually active women be regularly tested for STIs regardless of her birth control methods for early detection and treatment of infection.

Associated with the PID risk are possible fertility problems. A common misconception of IUDs is their increased risk of causing infertility. Infertility originally was a concern of IUD use due to the association with infection (Nidus Information Systems, Incorporated, 2008). According to Steen & Shapiro (2004), "Chlamydia may be a more important cause of complications such as tubal infertility" (p. 137). According to the CDC (2007), PID increases a women's chance of infertility and/or ectopic pregnancy (which is associated with PID). In addition, the CDC states the following:

Without treatment, PID can cause permanent damage to the female reproductive organs. Infection-causing bacteria can silently invade the fallopian tubes, causing normal tissue to

> turn into scar tissue. This scar tissue blocks or interrupts the normal movement of eggs into the uterus. If the fallopian tubes are totally blocked by scar tissue, sperm cannot fertilize an egg, and the woman becomes infertile…About one in ten women with PID becomes infertile, and if a woman has multiple episodes of PID, her chances of becoming infertile increase (CDC Fact Sheet, 2007).

To support Weström and Eschenbach (1999) concerning the issue of PID, CDC states, "Many different organisms can cause PID, but many cases are associated with gonorrhea and Chlamydia, two very common bacterial STDs" (CDC Fact Sheet, 2007). The Hubacher et al (2001) study mentioned above also supports statements by Weström and Eschenbach (1999) and the CDC. Chlamydia is known to be the primary link between PID and infertility (Hubacher et al, 2001). The World Health Organization (WHO) published practice recommendations for contraceptive use. According to these recommendations, even if a woman gets diagnosed with PID after IUD insertion, the device does not have to be removed if she wishes to continue use. This recommendation is for both the copper and hormonal IUD (WHO, 2005).

In regards of a woman's risk of STIs, including those that may lead to PID, it should be noted that a woman is not protected from transmission unless latex or polyurethane condoms are used. Other forms of contraception, including the IUD, are recommended for protection against unwanted pregnancy, and not for protection against infection. Studies have suggested, however, women who use long-term forms of birth control do not use condoms to protect themselves against STIs and HIV (Cushman, et al, 1998). Consistent, correct condom use is recommended for women (and their partners) at risk for STIs even if another method is used concurrently for birth control (CDC, 2008).

Ectopic pregnancy

An additional factor and potential misconception concerning IUDs is increased risk for ectopic pregnancy. Ectopic pregnancy is a potential long-term complication of PID (CDC, 2007). Greenberg et al (2007) define ectopic pregnancy as "The attachment and development of the zygote in a location other than in the uterus" (Greenberg et al, 2007, p. 866).

Ectopic pregnancy is a concern of some health care providers regarding the IUD (Hubacher, 2007). According to the *Merck Manual for Health Professionals* (2007), a common resource used by health care providers, approximately 95% of pregnancies that occur with an IUD in place are intrauterine, and the approximately remaining 5% are ectopic. An IUD user who becomes pregnant is usually required to get the device removed to prevent future complications (*Merck Manual*, 2007; Hatcher et al, 2007).

Through a meta-analysis of literature, Xiong et al (1995) compared 19 studies on IUD use and ectopic pregnancy conducted between 1977-1994. This meta-analysis found a slightly increased ectopic pregnancy risk when comparing odds ratios of pregnant women controls and IUD cases, but found no increased risk when comparing odds ratios of non-pregnant women controls and IUD cases.

Contradictory to the above findings, Cheng (2000) states, "The IUD protects women against ectopic pregnancy. "Women who use the copper IUD are 90% less likely to have an ectopic pregnancy than users of no contraceptive" (p. 862). In various randomized trials studying 8,000 women, only one ectopic pregnancy was reported with the T380A. Cheng also concluded the following:

> The risk of ectopic pregnancy does not increase with duration of use. Also, previous use of an IUD does not increase a woman's risk of ectopic pregnancy. Because of such a

protective effect against ectopic pregnancy, the TCU380A is an acceptable option for women with a history of ectopic pregnancy (p. 862).

Cheng's conclusions support similar findings from Pasquales. According to Pasquale (1996):

> Epidemiologic studies of ectopic pregnancy also provide strong evidence that IUDs prevent extrauterine implantation of fertilized eggs. If this were not so, ectopic pregnancy rates among IUD users would be comparable to women who use no contraception. This is because ectopic pregnancies develop before the fertilized egg reaches the uterus. Several studies have demonstrated that the copper IUD provides significant protection against ectopic pregnancy, resulting in a risk approximately one-half that of women who use of contraception. These findings of significantly reduced rates of extrauterine pregnancy imply that IUDs act to inhibit fertilization (p. 27S).

Hatcher et al (2007) concur with the above statements. "Not only are contemporary intrauterine devices effective against intrauterine pregnancies, they also prevent extrauterine pregnancies as well" (p. 121). According to a World Health Organization (WHO) trial of TCu380A devices, the 12-year discontinuation rate for ectopic pregnancy was 0.4 per 100 women (World Health Organization, 1997).

Xiong et al (1995) discusses the potential bias surrounding case-control studies in general due to potentially significant fertility, lifestyle, and behavioral differences and preferences between pregnant and non-pregnant women. Thus, "comparing cases (of ectopic pregnancy) with pregnant controls may overestimate the risk" (p. 29). Conversely, comparing IUD cases of ectopic pregnancy with non-pregnant controls may "overestimate the risk" (p. 30). This issue

with case-control studies may explain why some studies suggest an increased risk for ectopic pregnancy with IUD use, while others suggest a lowered risk, depending on the comparisons made.

Uterine Perforation

Another major concern associated with the IUD is the risk for uterine perforation. Uterine perforation commonly occurs following insertion, resulting in the device tearing through layers of the uterus. It is suggested that a chance of uterine perforation only occurs at the time of insertion. "No evidence supports [the] notion that IUDs 'migrate' outside the uterus thereafter [insertion]" (Hatcher, et al, 2007, p. 124).

According to a Swedish study, the incidence of uterine perforation related to IUD insertion is 0-1.3 per 1000 insertions (Anderson et al, 1998). Incidence of uterine perforation, however, is difficult to estimate due to changes in the device (Van Houdenhoven, 2006). For example, one study in New Zealand, through their clinical trial study, estimated complete or incomplete uterine perforation to be approximately 1.6 per 1000 insertions for the Multiload Cu375 (Harrison-Woolrych et al, 2003). This device, however, is not offered in the United States. Therefore, an application of this finding to devices FDA approved in the U.S. would not be accurate.

Expulsion

Expulsion is essentially a "falling out" of the device. When this loss occurs, a woman may experience "unusual vaginal discharge, cramping or pain, intermenstrual spotting, postcoital spotting, dysparenunia (for the man or the woman), absence or lengthening of the IUD string, and the presence of the hard plastic of the IUD at the cervical os or in the vagina" (Hatcher et al,

2007, p. 124). Many women, however, do not detect the expulsion (Hatcher et al, 2007). The main concern from IUD expulsion is the resulting risk for unintended pregnancy. As long as a woman promptly seeks medical treatment following an expulsion, risk of unwanted pregnancy and overall health will not be adversely affected (Hatcher et al, 2007; Hubacher, 2007).

The expulsion rate of current IUDs is slightly higher in nulliparous women. Rates are low, however, with a rate of 2 -10% in the first year of use, with the majority occurring within the first 3 months of use (Hatcher et al, 2007). Skill of the inserter could be an influencing factor on the rate of IUD expulsion (Gruber et al, 1996).

Some studies have been conducted to explore the association between parity and IUD complications. Hubacher's (2007) retrospective study reviewed use of the copper IUD by nulliparous women and resulting side effects. The characteristics highlighted were expulsions or IUD removals due to bleeding, pain, or other complications, and internal comparisons. Hubacher (2007) found the following:

> Information comparing nulliparous women to parous women, in terms of IUD performance, was found for eight different copper devices and a total of 20 different comparisons. In 13 of the 20 comparisons, nulliparous women had higher rates of expulsion compared with parous women; likewise, removal rates for bleeding and pain were higher for nulliparous women in 15 to 20. For specific devices, including those from Europe, the pattern of higher event rates for nulliparous women was generally maintained. For the CuT380A, performance differed only slightly between nulliparous and parous women; this inference is derived from only one study, although it involved the largest number of study participants found in this review (p. S9).

Hubacher (2007) concluded from the retrospective review that nulliparous women who are searching for non-hormonal birth control options, "may benefit from a smaller copper IUD" (p. S9). Research on smaller IUDs (such as the MiniCu7 device) was deemed effective in both characteristics studied by Hubacher. In particular, IUDs were removed as a result of bleeding and pain in less than 4 % of nulliparous women utilizing a smaller device.

Among the 20 research papers reviewed by Hubacher (2007), four papers indicated expulsions of IUDs in nulliparous women, with no reports of removal due to bleeding or pain. Another study by Cheng (2000), reported removal rates for bleeding or pain at "11.9% in the first year and approximately 3.5% in the fourth through tenth years" (p. 860). In addition, "Consistent with other data such as those from Hatcher et al (2007), Cheng (2000) concluded the expulsion rate for the T380A was 5.7% during the first year, with the majority of expulsions occurring within the first month after insertion. "Expulsions after the first year decrease to 2.5% for the second year and less than 2% per year thereafter" (Cheng, 2000, p. 860).

Other side effects

Increased cramping, pain, and menstrual bleeding, as well as breakthrough bleeding have been known side effects of IUDs, and the main reason for IUD removal in nulliparous women (Hubacher, 2007). These side effects are most frequent within the first year after insertion, and commonly subside in later years (Hubacher, 2007).

Cramping and pain during the insertion process can be prevented through oral anti-inflammatory drugs and/or local anesthesia (Hatcher et al, 2007). Heavier menstrual bleeding is more common with the copper IUD. "Excessive bleeding with the copper IUD can be treated with non-steroidal anti-inflammatory drugs" (Hatcher et al, 2007, p. 123). Menstrual bleeding patterns may change with the LNS-releasing IUS, including light bleeding or spotting during the

early months of use (Hatcher et al, 2007). These effects are normal because "endometrial suppression takes several months to achieve" (Hatcher et al, 2007, p. 123). The LNG-IUS, however, has been recently FDA approved to treat heavy menstrual bleeding (FDA, 2009).

Monetary Cost of IUDs

As with any contraceptive, relative financial costs apply to the two different types of IUDs. This section offers a discussion of both the short-term financial challenges and the long-term cost-effectiveness of the Mirena® and ParaGard®.

According to the product's website, the cost of Mirena® is $843.50, and payment plans are available through the manufacturer to women without health insurance. Table 2 provides a summary of the payment plan (Bayer Health Pharmaceuticals, n.d.).

Table 2.

Mirena® Payment Plan Options

PAYMENT PLAN*	PAYMENT	TOTAL COST**
SINGLE PAYMENT	$843.60	$843.60
4 MONTHLY PAYMENTS* **		
1st payment	$337.44	
3 additional payments	$168.72	$843.60
24 MONTHLY PAYMENTS* **	$35.15	$843.60

* Prices subject to change. Valid only for qualified patients with a valid prescription for Mirena. Offer valid only in the United States. Void where prohibited by law.
* Total cost does not reflect procedure costs of insertion and/or removal of the device.
*** By participating in this program you certify that you are not reimbursed, nor will you submit a claim for reimbursement, nor will you seek to have any portion of this prescription counted toward your out-of-pocket costs (e.g., TrOOP) under any federal, state, or private programs for this or other prescriptions for Mirena to which this offer may apply. Bayer HealthCare Pharmaceuticals reserves the right to change or discontinue this program without notice at any time.
Table retrieved from Bayer Health Pharmaceuticals (n.d) (http://www.mirena-us.com/get_mirena/healthcare_plan_coverage.jsp)

The cost for ParaGard® is slightly lower than Mirena®. According to the product's website, the approximate cost for the device is $494 (Duramed Pharmaceuticals, Inc., 2009). The website also offers a monthly estimator of the ParaGard® over a period of the life of the device (10 years). Table 3 summarizes the cost-effectiveness of the device if it is worn for the full duration of its FDA approved lifespan.

Table 3.

Estimated Monthly Cost of ParaGard®

Years of ParaGard® Use	Average Monthly Cost*
1	$41.17
2	$20.58
3	$13.72
4	$10.29
5	$8.23
6	$6.86
7	$5.88
8	$5.14
9	$4.57
10	$4.12

*Cost does not reflect procedural costs for insertion and/or removal.
Table was extracted from Duramed Pharmaceuticals, Inc. (2009), (http://www.paragard.com/hcp/how-to-order/cost-estimator)

Trussell (2008) conducted a study exploring the cost-effectiveness of 17 contraceptives over a 5-year period. The three least expensive methods over this span of time were the copper-T IUD (ParaGard®), vasectomy, and LNG-20 IUS (Mirena®) respectively. Up-front costs of IUDs, however, continue to be a potential barrier to their use by many women, including women of lower socioeconomic status.

Medicaid is federally mandated to cover family planning services to low-income women of child-bearing age. But states vary in their coverage of services. According to a 2009 summary

of state Medicaid coverage of family planning services, IUDs are "always considered a family planning service" for 41 of the 44 states (Kaiser Family Foundation, 2009, p. 11). The exceptions included Kentucky and Texas as states with restrictions on IUD services, and Utah as the only state that never considers the IUD as a family planning service. These states also had the same regulations with other types of prescription contraception (Kaiser Family Foundation, 2009). Therefore, it appears IUDs, for the most part, are covered by Medicaid insurance. Specific family planning clinics, however, may have more individualized regulations and potential restrictions over the services they are able to provide due to funding sources. Medicaid is a principle source of funding for family planning clinics (The Alan Guttmacher Policy Institute, 1997). Other sources of funding come from smaller grants and the larger Title X grant. Title X is a federal grant from the U.S. Department of Health and Human Services to fund family planning services throughout the country. As of the fiscal year, 2006, approximately 4,400 clinics were funded nationwide (U.S. Department of Health and Human Services, n.d.).

Financial costs of the IUD appear to be just one of the many potential challenges of IUD use. Similar to the barrier they place on other aspects of health, financial restrictions continue to potentially influence accessibility of IUD use. It is possible that IUD use is unavailable due to cost for many women who would otherwise be suitable for the device.

Candidates for IUDs

Candidacy for IUD use has changed throughout the years. During the past decade, however, governing health organizations have re-vamped medical eligibility criteria for IUDs as well as other contraceptives. The FDA now approves ParaGard® and Mirena® for most women (FDA, 2005, 2009). The World Health Organization (WHO) has published several documents continuously stating the safety of the IUD. According to WHO:

> Recent evidence indicates that IUDs are extremely safe and effective for both parous and nulliparous women. The IUD itself does not increase the risk of pelvic inflammatory disease, which can lead to infertility; rather, pre-existing STIs increase the risk of infection. Nulliparous women are slightly more likely (up to 10 percent) to expel the IUD. This causes no harm, but if expulsion occurs, the woman will no longer be protected against pregnancy (WHO, 2002, p. 1)

In 2004, WHO published a comprehensive list of eligibility requirements for various contraceptives. In 2008, a short, 12-page update document was published. In both documents, medical eligibility for each method is ranked 1 through 4, where a rank of "1" is defined as "a condition for which there is no restriction for the use of the contraceptive method; "2" is defined as "a condition where the advantages of using the method generally outweigh the theoretical or proven risks; "3" is defined as "a condition where the theoretical or proven risks usually outweigh the advantages of using the method; and "4" is defined as "a condition which represents an unacceptable health risk of the contraceptive method is used" (World Health Organization, 2008, p. 2; 2004, p. 12). Figure 3 is the complete list of IUD contraindications and special conditions that would deem a woman inadvisable or ineligible for IUD insertion (i.e. conditions defined as a "3" or "4" according to the 2004 WHO guidelines). It is noteworthy that most of these circumstances are quite rare. Further, issues such as parity and age are not among these circumstances.

Figure 3. IUD Contraindications and Special Conditions Based on WHO Guidelines

Contraindications:

Current known or suspected untreated endocervical gonorrhea, Chlamydia, mucopurulent cervicitis or pelvic inflammatory disease

Post-abortal or postpartum endometritis in past 3 months

Undiagnosed abnormal vaginal bleeding

Pregnancy or suspicion of pregnancy

Known cervical cancer that has yet to be treated

Known endometrial cancer

Known or suspected breast cancer (LNG-IUD only)

Known pelvic tuberculosis

Acute liver disease or liver tumor—benign or malignant (LNG-IUD only)

Known or suspected allergy to copper or history of Wilson's disease (CuT380a only)

Small uterine cavity with sounding less than 6.0 cm

Suspected or known uterine perforation occurring with placement of a uterine sound during the current insertion procedure

History of symptomatic pelvic actinomycosis confirmed by a culture

Special conditions:
Abnormalities of the uterus resulting in distortion of the uterine cavity

Known or suspected ovarian cancer

Current deep vein thrombosis/pulmonary embolism (LNG-IUD only)

Presence of risk factors for PID or STIs

Client or her partner has other sexual partners

Past gonorrhea, chlamydia, mucopurulent cervicitis or PID

Impaired immunologic response to infections

Unresolved or untreated acute cervicitis or vaginitis

PID within past 12 months or recurrent PID (N1 episode in past 2 years)

Hematocrit b30% (an issue for CuT380a only)

History of impaired fertility in a woman who desires future pregnancy

Impaired blood coagulation response, including use of anticoagulant medications

Shea (2005). Adapted from Goodman et al (2008).

In comparison to hormonal types of birth control, most of the above circumstances are infrequent. Women who have cardiac disease (the current leading cause of death in the United States), epilepsy, migraines, hypertension, or liver disease are not advised to choose hormonal

contraceptives (Cheng, 2000). Therefore, more women may qualify for IUD insertion than hormonal utilization.

Birth Control Challenges in the United States

Discussion of the history of IUDs in the United States should be supplemented with some dialogue regarding perspectives of birth control in general in the country. Birth control battles in the United States were largely due to the Comstock Laws, which were enacted in 1873. The individual responsible for these laws, Anthony Comstock, founder of the New York Society for the Suppression of Vice, persecuted anything he believed to be pornographic or obscene. Mere discussion or education regarding contraception during Comstock's reign was among these perceived "pornographic" matters (Reed, 1984). Comstock and other members of the Society would regularly inspect U.S. postal mail for material deemed obscene; contraception or information about contraception would be removed by the Society if found in the mail.

Despite Anthony Comstock, a few available contraceptive methods were available to married couples of middle to upper class status. Poor families were denied the luxury of contraception, primarily due to perceptions of physicians. The choices for those who qualified included diaphragms, male condoms, coitus interruptus (aka "withdrawal"), spermicidal douches, and periodic abstinence, the precursor to fertility awareness. CDC did not discover the timing of ovulation, however, until 1937 (Reed, 1984; CDC, 2005).

Although women served as pioneers of public health and health education's birth and growth throughout the past two centuries, at the commencement of this movement many distortions and taboos existed. Women such as Sally Lucas Jean, founder of the Child Health Organization to increase awareness of the importance of public health, and leaders of the

Women's Christian Temperance Union were advocating an increase in hygiene and substance abuse education in schools. In contrast, the female body was restricted from being explored. Further, use of contraception bordered on a criminal act in the US during the early 1900's (Means, 1962). Revolutionaries, however, were advocating for women's reproductive justice.

One of the most influential women in public health/health education and beyond was Margaret Sanger. Later becoming recognized by TIME magazine as one the 100 most influential people of the 20th century, Margaret was extremely controversial in her journey for reproductive justice (TIME Inc., 2010). According to her autobiography, she battled Anthony Comstock to help lower-classed women have access to contraceptives. Margaret, a practical nurse, saw many women who attempted life-threatening strategies to prevent carrying children to full term. Too many mouths to feed plus a small pocketbook was an equation not welcoming to additional children in the family (Montano & Kaspryzyk, 2002).

Margaret also saw her mother die at an early age partially due to bearing too many children. Her emotions regarding her mother's death carried over to her profession. She cared for women of lower class who tried to "limit" their families by throwing themselves off tables and drinking dangerous concoctions (Reed, 1984). According to the Centers for Disease Control and Prevention (CDC), in 1900 6 to 9 out of every 1,000 women died in childbirth (CDC, 1999).

Fighting against Comstock, Sanger dared to hold small lectures to educate women on the truth about contraception. In addition, Sanger and her allies for reproductive justice printed and attempted to distribute pamphlets on contraception despite the Comstock Laws. In 1914, Sanger published the highly controversial pamphlet, *Family Limitation.* The pamphlet contained inaccurate methods of birth control, such as recommendations for douching as an effective method. In addition, Sanger recommended ingesting a combination of laxatives and quinine

(today, an anti-malarial drug sometimes used to relieve muscle cramps) four days prior to menstruation to prevent implantation of the fertilized egg to the uterus. The public health field is less critical of Ms. Sanger since the exact mechanism of ovulation (when, where, etc…) was not yet known (Viterbo, 2004). Despite these inaccuracies, the pamphlet was successful in that it got people talking about the topic. As a result of her attempt to educate the public on contraception, Sanger was arrested and exiled to Europe, where she stayed and worked further on her journey for reproductive rights. The sudden death of her young daughter brought her back to the United States (Montano & Kaspryzyk, 2002).

In 1916, Sanger, her sister, and a friend made birth control history when they opened America's first birth control clinic in Brooklyn, NY. The clinic was immediately shut down due to violation of the Comstock Laws. Sanger progressed, however, when she founded *The Birth Control Review* which was the first scientific journal regarding the topic. In 1923, Sanger continued her quest for reproductive rights and justice when she founded the Birth Control Clinical Research Bureau. According to Planned Parenthood, the purpose of the bureau was to "provide contraceptive devices to women and collect accurate statistics to prove their safety and long-term effectiveness" (www.plannedparenthood.org, 2010). One of Sanger's many successes was establishing the American Birth Control League (ABCL) in 1921. ABCL went on to become Planned Parenthood, which is still a successful resource utilized by all types of women (race, ethnicity, age, socioeconomic background). According to Sanger in an original letter from 1957 written to public health pioneer, Clair E. Turner, the International Planned Parenthood Federation (IPPF) (was) the sole organization to which women can go for consistently accurate and reliable birth control education, counseling, and services (Sanger, M. to Turner, C.E., 1957). Women still line up each morning at Planned Parenthoods across the country to obtain a wide

range of affordable services (See section, *The Planned Parenthood Perspective*). Without the work of Margaret Sanger and her allies, access to any type of contraception in this country may not have been possible.

Religious Beliefs and Birth Control

The crusade for women's reproductive rights made by Margaret Sanger and her allies created awareness and suppressed misconceptions surrounding the taboo topic of birth control. The influence of religious beliefs on fertility control perceptions, however, has also been constant in the United States. According to White (1999), "Religious health care facilities and networks form the largest category of nonprofit providers of health care in the United States."

In her 48-page literature review on the impact healthcare practitioners' religious views and practices have had on the types of medical services offered in the United States, White (1999) discusses the many barriers from safe and effective birth control options that have existed in the United States. For example:

> In 1997 Congress expanded the scope of federal conscious clause statutes to cover religious providers who objected to providing or referring patients to family planning services. Thus, when Medicaid patients seek family planning services guaranteed to them by law, they cannot force a religiously sponsored HMO (health maintenance organization) to provide the services or referrals in conflict with religious beliefs (White, 1999, p. 1714).

Religiously sponsored HMOs are numerous in the United States (Uttley, 2005). Catholic-affiliated health care service providers have among the most restrictive views in regards to the types of reproductive serviced offered. The United States Conference of Catholic Bishops (USCCB) has published several editions of the Ethical and Religious Directives for Catholic

Health Care Services, that dictate the types of services allowed at" institutionally based Catholic health care services" (USCCB, 2001, http://www.usccb.org/bishops/directives.shtml#partfour). Several Directives are dedicated to the topic of conception and contraception. According to Directive 36, health care providers are only allowed to offer contraceptives to women who have just been the victims of sexual assault:

> Health care providers should cooperate with law enforcement officials and offer the person psychological and spiritual support as well as accurate medical information. A female who has been raped should be able to defend herself against a potential conception from the sexual assault. If, after appropriate testing, there is no evidence that conception has occurred already, she may be treated with medications that would prevent ovulation, sperm capacitation, or fertilization. It is not permissible, however, to initiate or to recommend treatments that have as their purpose or direct effect the removal, destruction, or interference with the implantation of a fertilized ovum (USCCB, 2001, http://www.usccb.org/bishops/directives.shtml#partfour).

The Directive's focus on immediate diagnosis of pregnancy is quite difficult. "Because of the uncertainty doctors face in determining whether or not a sexual assault has resulted in fertilization, a recent survey found that eighty-two percent of Catholic hospitals do not provide emergency contraception to rape victims" (White, 1999, p. 1714). All other women, including married women, are only allowed to utilize natural family planning methods to prevent pregnancy and limit family size, a common Catholic principle that has been long acknowledged by medical and scientific communities.

Today's Health Guide, published by the American Medical Association (AMA) in 1965, claimed to be "a manual of health information and guidance for the American Family" (AMA,

1965, p. iii). The table of contents included sections entitled “fertility and infertility” and “sex education,” but no discussion on medically safe and accurate forms of fertility control were mentioned beyond natural family planning. Although the Guide included one general statement “medical science has developed many methods that make it possible for parents to plan their families…” that alluded to the fact forms of pregnancy prevention exist, methods such as birth control pills, that were FDA approved 5 years prior to the publication of the book, or the IUD were not explicitly discussed (AMA, 1965, p. 43).

The Guide discussed how research was being conducted, for the first time in history, to “perfect the rhythm method” to allow Roman Catholics a more effective method of family planning (AMA, 1965, p. 43). Catholic and Protestant clergymen were hopeful of new innovations in reproduction, especially if “a method could be developed by which a woman could herself detect the exact moment when her egg is released…” (AMA, 1965, p. 43).

The portrayal of contraceptives in the media also may be influential in their use. Boonstra et al (2000) discuss a “boom and bust phenomenon” with contraceptive attitudes in the U.S, emerging from the “development, introduction, and delivery” of contraceptives such as oral contraceptives, IUDs, and contraceptive implants (p. 9). The initial boom is associated with the intense risk in marketing and sales, followed by a shift in attention to “negative features or limitations” of a particular device (p. 9). These extreme phases may lead to difficulty in understanding realistic advantages and disadvantages of a particular product. In regards to the IUD, specifically, this boom and bust pattern, supplemented by the Dalkon Shield litigation, may have contributed to current perspectives of the device. According to Boonstra et al (2000):

> The IUD’s damaged reputation persists to this day and has frightened many women away from this method. As long as the IUD’s image remains tarnished and access is limited,

> the IUD will continue to be perceived as a nonoption in the array of contraceptive choices available to U.S. women (p. 17).

Women and the IUD

The abovementioned factors such as policy, religion, and media may influence a woman's contraceptive perspectives. Some studies suggest women in the United States are lacking in their knowledge and positive attitudes about many methods of birth control today, especially when it comes to the IUD. The following section discusses the issue of IUD knowledge and perceptions held by women in the United States.

Forrest (1996) conducted a meta-analysis of IUD knowledge and attitudes among women of childbearing age. This research looked most closely at two major studies of the 1990's that shed new light on the topic. One study conducted by Johansen-Hale and Associates held 300 interviews with women in six major cities across the United States. The other study was conducted by the Guttmacher Institute, using telephone interviews with low-income women. Both studies held constant age and fertility, meaning all women interviewed were of childbearing age, and were able to become pregnant, but were not trying to have a child.

These studies of the 1990's found the IUD was not the first birth control women thought of when the topic of contraception was queried. Of over one half of women who had heard of the IUD, 52% stated they got the information from either their doctor or someone else in their doctor's office. In regards to women's knowledge of the IUD, 32% of women stated they had little to no knowledge about the device, 22 % stated they were somewhat knowledgeable, and 13% stated they were extremely knowledgeable (Forrest, 1996).

Forrest also explored information regarding women's perceived level of satisfaction with their current method of contraception. Only 16% of women ages 15-44 had favorable opinions

towards the IUD. While 76% had positive attitudes towards oral contraceptives, 65% had positive attitudes towards condoms. Conversely, Forrest (1996) found that 99% of women who actually used the IUD said they are very or somewhat satisfied with this method, compared to 91% of pill users, 90% of cervical cap users, 85-89% of women who use spermicide, Depo-Provera injection, male condoms, or sterilization. Even fewer women (78-84%) say they are satisfied with their method of diaphragm, female condom, or natural planning. To support these findings, "surveys among women reveal that a minority have a favorable view of IUDs…except those using them" (Hatcher et al, 2007, p. 117).

A qualitative study by Higgins and Hirsch (2008) explored factors that shape contraceptive choices of women and men. One interviewee explained her satisfaction with her choice of the IUD, and the freedom the method gives her and her husband, "Oh my God, this IUD thing is *fantastic.* Why didn't I hear more about it before? Why don't they encourage more women to get these things? The sex is fantastic…The sex has never been this good!" (p. 1808). Despite this evidence, it is important to remember that as a woman's reproductive priorities change throughout her life, so will her method of birth control (Hatcher et al, 2007). Therefore, it is often difficult to make direct links between women's attitudes towards various methods of birth control and their individual preference at any particular time (Forrest, 1996).

Forrest (1996) looked at the relationship between age, ethnicity, and attitudes towards the IUD. Findings showed younger women, Hispanic women, and women born outside of the U.S. held more favorable opinions towards the IUD. This evidence may be reflective of the Dalkon Shield era of the United States. Those who were not born or who were not living in the United States during this time likely may have more positive feelings about the device. At the same

time, they may have perceptions more scientifically accurate if not influenced by emotionally sensitive historical contexts (Forrest, 1996).

A study by Schwarz et al (2008) surveyed 138 women at four walk-in family planning clinics to obtain pregnancy testing, to explore perceived knowledge and attitudes about the IUD. Very few women reported familiarity with the IUD (64% stated they did not know of any women who have used the IUD). Only 22% knew IUDs were more effective at preventing pregnancy than oral contraceptives. Of all surveyed women, 41% reported wanting to learn more about the IUD, while 35% stated they may be interested in getting the device one day. These data once again suggest a need for more available information about IUDs to women seeking the right birth control method.

A related study done by Whitaker et al (2008) involved testing how a three minute educational intervention about the IUD would affect young women's (ages 14-24) attitudes towards the device. Before the intervention, 15 % (21 out of the 143 participants) had a positive attitude about the IUD. This percentage rose to 54 % (77 out of 143 participants) after the intervention. Like other studies about IUDs, this study suggests women's attitudes towards the device may improve when given accurate information.

The IUD continuation rate among young women is an area with limited literature (Fleming et al, in press), possibly due to the infrequent use of the method among unmarried, nulliparous women, including adolescents (Stanwood et al, 2002; Whitaker et al, 2008). On particular study measured LNG-IUS continuation rates among young women ages 14-18 (Godfrey et al, 2010). Continuation rates after 6 months were not statistically significant, but adolescents tend to have "higher birth control rates and lower unintended pregnancy rates with

methods that do not require daily adherence or decisions at the time of intercourse" (Fleming et al, in press).

Preventing transmission of sexually transmitted infections (STIs) is an area of concern, especially among adolescent women who practice risky sexual behaviors (Taylor-Seehafer and Rew, 2000). In regards to STI protection, one study found 82% of adolescent participants stated they would either increase condom use or not change their current condom use practices with an IUD in place (Fleming et al, in press).

Whitaker et al (2008) discussed the need for healthcare practitioners to promote use of IUDs to adolescent women. In December 2007, the American College of Obstetricians and Gynecologists Committee on Adolescent Health released a statement encouraging clinicians to use IUDs as a "first-line contraceptive choice for both parous and nulliparous adolescent patients…intrauterine devices offer the long-term, cost-effective, highly reliable, and effective contraception needed by women, especially adolescents" (p. 216).

According to Deans and Grimes (2009), the topic of IUD use among adolescents is "unsettled" (p. 418). The statement above by the American College of Obstetricians and Gynecologists recommends IUDs as a primary method of birth control for young women. In addition, WHO eligibility criteria states the benefits outweigh the risks of IUD use for women from menarche to age 20 (Blythe and Diaz, 2007). Studies also suggest IUDs could be successful among adolescent females, as this population has higher success rates with longer-term methods of birth control (Deans & Grimes, 2009). There is concern, however, regarding lack of protection by IUDs for STI risk. Since adolescents are likely to have different family planning needs than older women, IUDs may or may not be an appropriate match for some teenagers. There is a lack

of literature addressing adolescents and IUD use. Researchers are calling for more studies on the topic to be conducted (Deans & Grimes, 2009).

According to Asker et al (2006), limited literature has studied non-users of the IUD. Most previous studies looked exclusively at current or past users of the device. As a result, Asker and a research team conducted a qualitative study that explored why women seem to be so hesitant to choose the IUD. Purposive sampling was used to include a total sample size of ten women of childbearing age who would be appropriate candidates for the device (using WHO guidelines outlined in Table 2). Five themes emerged, including perceived lack of objective information about the IUD, issues dealing with perceived side effects of the device including infection, perceived lack of control when using the IUD, and worries related to IUD insertion procedures.

Subjects felt a general lack of information available regarding the IUD. One quote emphasized a "taboo" nature of the device (p. 91). Another participant commented about the absence of its mention in school. Perceived side effects ranged from hearing "horror stories" to general fears of potential side effects, such as heavier bleeding during a woman's period (p. 92). Women perceived the insertion procedure to be "messy" (p. 92). This "messiness" was related to a common misconception among participants that IUDs had to be fitted during menstruation, something this study found to be a significant barrier to a woman's consideration of the IUD (Asker, 2006).

Some organizations recommend inserting IUDs during menses, since the cervix is more dilated during this time, and spotted bleeding common after IUD insertion is less detectable (FHI, 1996). According to Hatcher et al (2007), however, "no scientific reason supports the common practice of inserting the IUD only during menstruation" (p. 131). IUDs may be inserted any time during a woman's menstrual cycle (Hatcher et al, 2007).

Asker et al (2006) recommend increased educational information targeting patients and clinicians alike. Studies such as Asker et al, (2006), Whitaker et al (2008), Hubacher (2007), Schwarz et al (2008), and Cheng (2002) explored many issues pertaining to women's relations with the IUD. Research also has been conducted to explore issues surrounding healthcare practitioners' knowledge, perceptions, and behaviors about the IUD.

Healthcare Practitioners and the IUD

Despite existing research supporting IUD safety and efficacy, many doctors are still apprehensive to fit many women for the device. Yet, according to Stanwood, et al (2002), "Little is known about how obstetrician-gynecologists use the IUD in clinical practice, what their attitudes toward the IUD are, or how they select IUD candidates in their practices" (p. 275).

Stanwood et al (2002), conducted a study to test a hypothesis about the lack of IUD use in the United States by assessing physicians' attitudes and practices. Until the Stanwood, et al study in 2002, no survey of physicians' perceptions and practices regarding the IUD had been completed since the Kooiker and Scutchfield study in 1989 that occurred after release of the T380A (ParaGard) IUD. In this study, Kooiker and Scutchfield asked physicians whether they would recommend or insert this new birth control device. "In their sample, 40% were not recommending this IUD to any patients. Respondents with a low knowledge score about this IUD, limited experience with IUD insertion, and non-obstetrician-gynecologist specialty had a more negative attitude toward this IUD and a lower willingness to recommend it" (Kooiker and Scutchfield, 1990; Stanwood, et al, 2002, p. 275).

Physicians are not the only healthcare providers capable of effectively inserting the IUD. Clinical services providers such as nurse practitioners, physician assistants, and certified nurse

midwives are able to insert the device with proper training. An article by Grossman et al (2006) in the *American Journal of Public Health* suggests:

> Simplifying provision of IUDs by making them available from the most accessible and affordable practitioners, such as midwives and nurses, could greatly increase access to and initiation of this method. When access to physicians is limited by either scarcity or financial barriers, women's contraceptive options narrow. In several settings, studies have shown that nonphysician provision of IUDs is safe, resulting in low complication rates comparable to those associated with physician provision. If there is an emphasis on training and quality assurance, IUD insertion by midlevel practitioners could be more cost-effective than physician provision, thereby increasing user access (p. 796).

Conclusions by Grossman et al (2006) support the need for further exploration of attitudes and beliefs by nonphysician clinical services providers capable of IUD insertion.

In 1997, WHO published guidelines for the administration and provision of IUDs, where considerations regarding attitudes towards IUDs were mentioned:

> …women's attitudes towards IUDs may reflect those of health care providers. In many countries, including the USA, the contraceptive pill or sterilization is the method most likely to be recommended to a woman not wanting to have any more children, assuming that she has no strong preference herself and that there are no medical contraindications (WHO, 1997, p. 9).

Therefore, it is apparent how influential healthcare practitioners are to IUD usage rates. As this WHO publication states, if women do not have a "strong preference" towards a particular type of birth control, the type chosen likely will be based on healthcare practitioner recommendations (WHO, 1997).

The WHO publication also dedicates a section about the influence of social, cultural, and religious factors on the acceptability of family planning programs. WHO suggests consideration of the attitudes of "influential members of the community" that may range from village and religious leaders to health advocacy groups and media, depending on the culture, region, and so forth (WHO, 1997, p. 17). This point supports the constructs of the Theory of Reasoned Action (TRA), which will be discussed in a following section.

IUD Perceptions among Healthcare Practitioners

Cheng (2000) discusses common potential misconceptions "that have led to barriers in the general use of IUDs in the United States" (p. 861). These include pelvic infections, physician liability, mechanism of action, ectopic pregnancy, lack of training, poor public image, slow further progress, and liability concerns.

Insurance and liability still exist as a major factor influencing practices of many physicians. Cheng (2000) stated the following:

> …a 1990 survey of 395 obstetricians, gynecologists, and family practitioners in San Diego County revealed that fear of litigation was the most common barrier to prescribing IUDs. However, most litigation related to IUDs in the past concerned product liability against the manufacturer – not the clinician. The Planned Parenthood Risk Management group reported that only two claims (1 % of total) between 1977 through 1988 were associated with IUD use and settled with unfavorable judgments. Thus, concerns about IUD litigation among most clinicians are exaggerated (p. 862).

Many physicians view IUDs as abortifacients, which could add to their anxiety over litigation. According to a study by Stanwood, et al (2002), 20 % (of physicians surveyed) agreed that the IUD was an abortifacient, while 16 % agreed that it would lead to lawsuits against them.

According to Stanwood et al (2008), the researchers, "found a significant association between fear of litigation and reported number of IUDs inserted in the last year. Sixteen percent of respondents agreed that using the IUD in practice puts them at risk for litigation", (p. 277). Such uncertainty surrounding how IUDs work to control births, in addition to healthcare provider fears associated with litigation seem to be factors in the device's frequency of use.

Physicians' inexperience in IUD insertion appears to be another factor influencing frequency of use. "A 1998 survey of Maryland family practice (FP) and ob/gyn (OB) residents in their final 3 months of training revealed that 50% of FP residents and 20% of OB residents did no IUD insertions during their training. In addition, none of the FP residents and only 20% of OB residents did more than 10 IUD insertions during their training. This finding is similar to national results that indicate 66% of FP residents never inserted an IUD and only 6% managed ≥ 10 cases. Among OB residents, 38% never inserted an IUD while 29% managed ≥10 cases. Providers not trained in IUD insertion will be less likely to recommend IUDs to their patients. Conversely, with fewer women using the IUD, there will be less opportunity for training in IUD insertion for providers (Cheng, 2000, p. 862-863).

A 2008 study by Harper et al surveyed 1,246 health care providers (HCPs) licensed in California to measure their knowledge, perceptions, and practice patterns regarding intrauterine contraception. Harper et al (2008) found IUD knowledge of HCPs "inadequate" (p. 1363). Approximately 20% of HCPs discussed side effects such as breast tenderness, mood swings, headaches, and acne that are exclusive to hormonal contraceptives, when discussing the ParaGard IUD (the non-hormonal device). Further, only 34% stated they would consider inserting the Mirena® IUD (the levonorgestrel-releasing device) in women who smoke. But smoking is not a contraindication of the Mirena®. HCPs continued on this lack of knowledge

pattern regarding the Mirena®: 33% stated they had ever recommended the Mirena® to patients, 39% stated they would only recommend the Mirena® to a patient with dysmenorrhea if she was interested, and 51% stated they would recommend Mirena® to a patient with menorrhagia if she was interested. Dysmenorrhea and menorrhagia are important to discuss in association with the Mirena® because the device may possibly benefit women suffering from these conditions (Harper et al, 2008). This study also found that a quarter of HCPs stated a woman with diabetes should not use an intrauterine contraceptive, although it has been shown to be a safe device for this population (Harper et al, 2008; WHO, 2004).

The Harper et al (2008) study discovered a large majority (94%) of HCPs perceived the IUD as a safe contraceptive. Barriers exist, however, that prevent many clinicians from offering the device to most women. The most common barriers to offering the device in general included STI and PID risk, followed by ectopic pregnancy. Harper et al (2008) also found restrictions HCPs had on who is considered eligible candidates for the device. Less than half of HCPs considered nulliparous women, teenage females, HIV-positive women, postpartum (immediate), or postabortion (immediate) women to be suitable candidates for the IUD, despite that these conditions are not among the WHOs eligibility criteria (Harper et al, 2008; WHO, 2004).

Healthcare Practitioners' IUD Training

IUD use requires insertion and removal by a clinician. Therefore, the healthcare provider (HCP) will continue to be influential in IUD frequency of use. Women must rely on their practitioner's compliance to use and/disuse the device. Standards and protocol exist to ensure litigation does not occur. Some HCPs choose to follow these procedures, while others avoid inserting the IUD in most women altogether (Zimmer, 1996; Harper et al, 2008). According to Harper (2008), although the majority of Obstetrics/Gynecology (OBGYN) physicians stated they

were trained to insert IUDs during residency (only 4 percent stated they had not been trained), only 74% of OBGYNs stated they offer IUDs in their practice. The study also showed a lack of general IUD training, with 32% of general physicians (i.e. non-OBGYN specialized) stating they did not receive training on IUD insertion. Therefore, it may not come as a surprise only 43% of non-OBGYN physicians stated they provide intrauterine contraception at their practices.

Stanwood, et al (2002), found, "younger and more recent graduates inserted more IUDs" (p. 277). On the contrary, doctors who were in practice during the Dalkon Shield controversy and litigation inserted fewer IUDs. "Respondents aged 31-45 inserted a median of 5 IUDs, those aged 46 – 55 inserted a median of 4, and those aged 56-73 inserted a median of 3" (p. 277).

Harper et al (2008) found that HCPs with more IUD training were 1.6 times more likely to counsel patients about the device. But as the number of female patients for a HCP increased, likelihood of counseling decreased. According to Harper et al (2008), this relationship may be due to time constraints on the part of the clinician. Cabiya et al (2008) surveyed future OBGYN physicians regarding their knowledge and attitudes towards IUDs. This study found a vast majority of 87.2% of respondents felt confident in their ability to accurately insert an IUD. The study also found that senior physician residents held relatively positive attitudes towards the IUD (95% held positive attitudes towards providing the IUD). Over 96% of residents stated they intend to offer the IUD in their eventual practice.

Training programs have been designed to target any healthcare practitioner who wants to be capable and competent to correctly provide IUDs. These trainings include education and procedural interventions. Pathfinder International has developed a training manual designed for use "in training physicians, nurses, and midwives. It is designed to actively involve the participants in the learning process. Sessions include simulation skills practice, discussions, case

studies, role plays and clinical practice, using objective knowledge, attitude, and skills checklists" (Solter, 2008, p. 8).

The Planned Parenthood Perspective

The Planned Parenthood Federation of America (PPFA), founded by Margaret Sanger, has been a haven for young, low-income women to obtain safe and reliable family planning services at an affordable cost (See earlier section, Birth Control Challenges in the United States). The reputation of this clinic is often surrounded by assumptions. The name "Planned Parenthood" is thought to equal "abortion clinic." This misconception is simply not true. According to PPFA's annual report, 36% of services provided throughout their nationwide clinics are dedicated to contraception, 31% to STD testing and treatment, and 17% to cancer prevention. Only 3% involves providing abortion services (PPFA, 2009).

In 1996, Michael Burnhill, Medical Director of Planned Parenthood, wrote an article in *Obstetrical & Gynecological Survey* discussing IUD utilization at this nationwide clinic. Planned Parenthood began offering the IUD in 1988. Since then PPFA has reported successful use of the device. According to Burnhill (1996), Planned Parenthood's risk management team has been notified of 125 "events" related to the IUD a year. These incidences included relatively minor and routine problems woman may experience with the device such as difficult insertions, excess bleeding, or expulsion. No hysterectomies as a result of the IUD had been reported. Planned Parenthood's data draw the following conclusion:

> The relatively few adverse reactions related to IUD use is very good news to those interested in promoting safe contraception for women. More, it does not seem that the method poses major health risks for its users, or major expenses to the malpractice insurance company of the provider…It is Planned Parenthood's position that if the patient

> clearly understands what the risks of sexually transmitted diseases are, and how her behavior may exacerbate or ameliorate these risks, and that she then signs an informed consent document that acknowledges the potential problems of infection with an IUD in place, Planned Parenthood has done all that a careful and prudent provider need do (Burnhill, 1996, p. 52-53).

Further, Planned Parenthood states the importance of following their protocol for IUD insertion that has allowed them a 20 year record of safe and successful IUD use. Planned Parenthood believes so many women experienced so much trouble with the IUD in the 1970s partially due to the combination of excessive marketing of the device and lack of proper warnings, STI testing, and proper screening of appropriate candidates (Burnhill, 1996).

Healthcare providers (HCPs) at Planned Parenthoods across the United States abide by a different set of attitudes and practices related to the IUD than private practice physicians, or clinicians affiliated with clinics other than Planned Parenthood Federation of America. Planned Parenthoods are included in the United States Department of Health and Human Services (HHS) Title X family planning program. Despite Planned Parenthoods rather liberal perspective on IUD use by most women, other family planning clinics in the Title X program, including community health centers and country health departments, may not have the same perspective. According to Sonfield (2007), "IUD use is rare in the United States. This holds true even among clients of publicly funded family planning clinics, which have a long tradition of offering a broad choice of contraceptive methods. Only 58% of Title X–supported family planning clinics in 2003 provided the copper IUD and 34% the hormonal IUD, compared with 97% or more for the male condom, the injectable and the pill" (*Guttmacher Policy Review*, http://www.guttmacher.org/pubs/gpr/10/4/gpr100419.html).

Despite advances in contraception, unintended pregnancies continue to be a problem. According to Greenberg et al (2007), many barriers stand in the way of people using a form of pregnancy prevention. Individuals may not believe "it" (i.e. pregnancy) will happen to them, feelings of embarrassment in regards to purchasing/using contraception, religious beliefs, and laziness just to name a few. According to Finer and Henshaw (2006), 49% of pregnancies in 2001 were unintended, most to at risk women ages 18-24, unmarried, and of lower socioeconomic status (SES).

Perceptions and attitudes of patients and providers are influential in contraceptive use and availability, respectively. Attitudes and beliefs can have positive or negative implications on behavioral intention, in general (Azjen, 1980). Specifically, studies have shown an association between increased IUD insertion and positive attitudes about the IUD (Albert et al, 2009; Madden et al, 2010). Therefore, using theoretical constructs to explore the influence of attitudes and beliefs on behavioral intention can address the relationship between perception and practice.

Theoretical Framework

The current study is based on The Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen. TRA includes constructs such as behavioral intention, attitudes, subjective norms, normative beliefs, and motivation to comply. The Theory of Planned Behavior (TPB) adds constructs, such as perceived behavioral control and perceived power. The resulting behavior will depend on how these constructs are conducted. Figure 4 provides a schematic of TRA. Table 4 organizes the constructs, definitions, and applications of TRA.

Figure 4. Theory of Reasoned Action

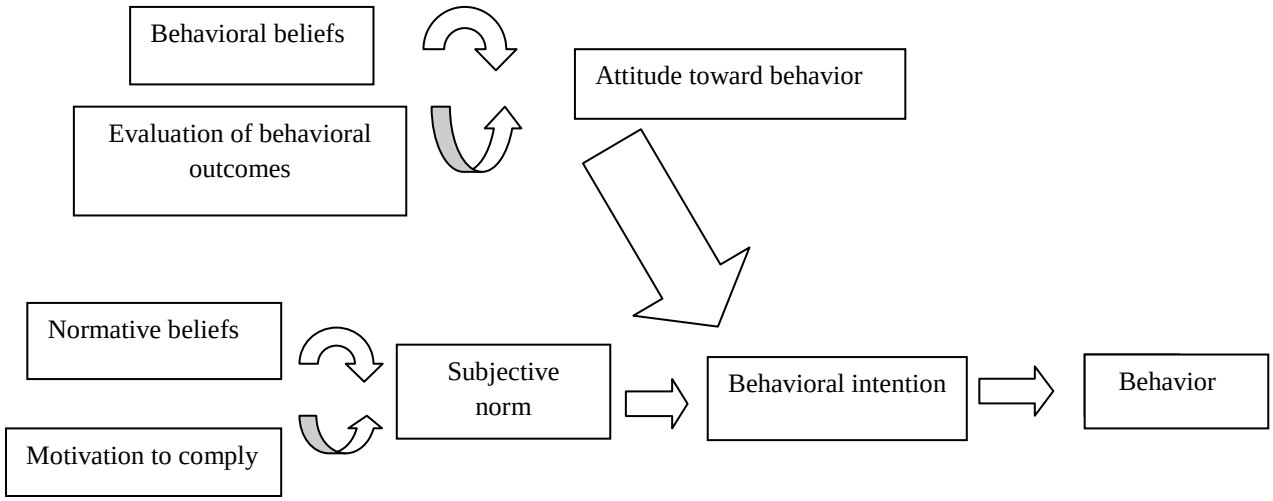

Figure was adapted from (Glanz, K., 2002, p. 68).

Table 4.

Theory of Reasoned Action Constructs, Definitions, and Applications

Construct	Definition	Application
Behavioral intention	Perceived likelihood of performing the behavior	CSP is likely/unlikely to provide the IUD
Attitude (direct measure)	"Overall evaluation of the behavior" (Glanz et al, 2002, p. 69)	CSP overall evaluation of providing the IUD as good/bad/neutral
Behavioral belief (indirect measure of attitude)	The behavior will produce consequence(s) The value of the consequences (positive or negative)	CSP behavior belief that IUDs likely/unlikely enhances a woman's reproductive options (Sable, et al, 2006)
Evaluation (indirect measure of attitude)	"Value attached to a behavioral outcome or attribute" (Glanz et al, 2002, p. 69)	CSP evaluation of the behavioral belief that enhancing a woman's reproductive option is good/bad (Sable et al, 2006)
Subjective Norm (direct measure)	"belief about whether or not people approve or disapprove of the behavior"	CSP belief that in general most people/groups important to him/her think he/she should/should not provide the IUD (Sable et al,

		2006)
Table 4 (*continued*)		
Construct	Definition	Application
Normative belief (indirect measure of subjective norm)	Belief about whether each referent approves or disapproves of the behavior	CSP believes IUDs are not ethical/safe/etc… due to similar beliefs among colleagues
Motivation to comply (indirect measure of subjective norm)	Motivation to do what each referent thinks	CSP wants to provide the IUD similarly to colleagues

Table was adapted from Glanz et al, (2002), p. 69. Applications from Sable et al, (2006)

According to Sable et al (2006), "TRA has been used to describe a variety of clinical practices among physicians and health care workers" (p. 21). TRA is a cognitive model, and thus is a "strong and valid prediction" of many health-related issues (Baker et al, 1996, p. 529). There is a lack of studies using TRA to better understand intention of IUD use. To date, no known published study has been conducted that uses TRA to measure clinicians' behavioral intention to provide IUDs. TRA has been used to measure behavioral intention to use other contraceptives in other populations. Issues most often used in association with TRA include, "decisions about abortion, birth planning intentions, Lamaze childbirth intentions, weight loss, blood donation, infant-feeding decisions, signing up for alcohol treatment, intentions to use drugs, intentions to get flu shots, and numerous studies of contraceptive decision making" (Baker et al, 1996, p. 529).

An instrument was developed by Sable et al (2006) to measure physician intention to prescribe emergency contraception (EC). This study used TRA because this theory measures a person's intent to perform a behavior. Behavioral intention is influenced by a person's attitudes and perceptions of norms associated with the respective behavior. Attitudes and subjective norms can be measured directly or indirectly. The direct measure of attitude is the overall evaluation of

the behavior (e.g. prescribing EC or providing IUDs is either good or bad) (Sable et al, 2006). The indirect measure of attitude is based on a person's belief that engaging in the behavior (ex. IUD provision) is associated with certain outcomes (ex. litigation). This measure is the construct of behavioral beliefs. Thus, a CSP's behavioral belief about providing the IUD could be that the IUD would enhance a woman's reproductive options. This belief is weighted by the CSP's evaluation of the behavioral outcome (e.g., evaluation that enhancing a woman's reproductive options is good) (Sable et al, 2006).

Subjective norms are perceptions of how groups important to a given person view a behavior (Sable et al, 2006). Groups that could be of importance to CSPs could be their business colleagues, pharmaceutical companies, or religious leaders. The direct measure of subjective norms is the person's overall assessment of whether individuals important to him/her would approve or disapprove of a behavior (Sable et al, 2006). For example, the direct measure of a CSP's subjective norms about IUD provision could be his/her overall assessment of whether his/her colleagues who practice in the same community approve or disapprove of IUD provision. According to this measure, if a CSP perceives his/her colleagues to disapprove of providing the IUD to nulliparous women, the CSP will be influenced, and also may not offer the IUD to nulliparous women.

A person's perception of these subjective norms is weighted by his/her motivation to comply (Sable et al, 2006). For example, if a CSP is driven to agree with his/her colleagues' perception that IUDs should not be provided to nulliparous women, that CSPs behavioral intention likely will be similar to that of his/her colleagues.

According to Sable et al (2006), demographic variables and knowledge are not included in models and instruments that use TRA. Although knowledge is not usually measured in TRA,

it should be an included variable in studies where knowledge may be of importance (Sable et al, 2006). For example, if a CSP's knowledge is based on outdated literature, his/her attitudes (and therefore behavioral intention) may be affected by this inaccurate information.

Quantitative Research

> [Quantitative inquiry] focuses on the testing of specific hypotheses that are smaller parts of some larger theoretical perspective. This approach follows the traditional natural science model more closely than qualitative research, emphasizing experimental design and statistical methods of analysis. Quantitative research emphasizes standardization, precision, objectivity, and reliability of measurement as well as replicability and generalizability of findings (Scholfield & Anderson, 1984, p. 8-9).

Quantitative research utilizes deductive reasoning to explain, predict, or describe phenomena. Deductive reasoning involves moving from a general to a specific angle, based on observations that test whether expected patterns occur. Quantitative research is used to test theories (Neutens & Rubinson, 2002). Several designs can be employed when conducting quantitative research, such as cross-sectional, case control, and prospective (Neutens & Rubinson, 2002). Isaac and Michael (1995) discuss research methods such as descriptive, correlational, experimental, quasi-experimental, and causal-comparative.

Quantitative research in the health sciences often attempts to measure knowledge, attitudes, and behavior of a large selected sample, and make the measurements applicable to the larger selected population. One approach commonly used to measure knowledge, attitudes, and behavior of large samples in the field of health sciences is survey research.

Survey Research

According to Isaac and Michael (1995), "surveys are the most widely-used technique in education and the behavioral sciences for the collection of data" (p. 136). Several textbooks used in health education research methods courses such as Isaac and Michael (1995), Neutens and Rubinson (2002), McDermott and Sarvela (1999), and Alreck and Settle (2004) discuss survey research in detail.

McDermott and Sarvela (1999) claim "surveys permit investigators to reveal the characteristics of a school, worksite, patient care setting, or community by studying individuals who represent these entities, and to do so in a relatively unbiased and scientifically rigorous manner" (p. 244). Alreck and Settle (2004) state attributes such as flexibility, versatility, specialization, and efficiency contribute to the frequent utilization of surveys by different types of individuals in corporate and academic settings (Alreck & Settle, 2004).

Survey data can be collected by postal mail, face-to-face and telephone interviews, self-administration, and online administration (Neutens & Rubinson, 2002). According to Alreck and Settle (2004), the term "online data collection" refers to "data collected by e-mail, e-mail attachment, newsgroup inquiry or invitation, or by a questionnaire published on the World Wide Web" (p. 181). In this technological era, and as computer literacy increases among the general population, online survey administration is becoming increasingly popular (Venkataraman & Parker, 2009). Further, "for methodological and economic reasons, electronic surveys are attracting considerable interest," (Cook et al, 2000, p. 823).

Online Survey Administration

Online data collection is often the most effective way to reach certain populations. Businesses and professionals with a high frequency of Internet use have been known to be more

likely to return online surveys than those from postal mail (Parker, 1992). Kittleson and Brown (2005) compared response rates of e-mail versus web-based surveys given to 600 health educators, and found response rates to be of value. Moreover, response rates of e-mail versus web-based administration were nearly equal (43.0% versus 47.7%, respectively) (Kittleson & Brown, 2005).

Clinical services providers state they prefer online surveys as opposed to survey administration via postal mail, or telephone and face-to-face interviews. The main reasons for their preference are attributed to high time demands and hectic clinic schedules. Postal mail surveys, for example, may get lost in the shuffle of day-to-day office activities. Telephone and face-to-face interviews are simply too time consuming. The primary researcher contacted a representative of the CSP profession to assess the best method for survey administration among this group. The certified nurse midwife contacted, Ms. Eleni Smith, stated online surveys work best with clinicians' busy schedules. They can open the document and complete the survey at their convenience. Further, Ms. Smith stated her clinic uses email for intra-office communication (Smith, E. personal communication, September 7, 2009).

Just as with any other form of survey administration, online data collection has advantages and disadvantages. Advantages of online survey administration in comparison to other methods of data collection include low cost, convenience, ability to present visually stimulating material to participants, no risk of interviewer bias, and quick return of surveys. Disadvantages may include accessibility of email addresses, rigid length requirements (cannot be too lengthy), possible lack of anonymity, and risk of nonresponse bias (Alreck & Settle, 2004; McDermott & Sarvela, 1999).

According to Alreck and Settle (2004), "online surveys are subject to very substantial levels of non-response" (p. 37). Individuals most likely to respond to any given online survey often have less time constraints or belong to certain demographic groups, such as younger or elderly individuals. Another important factor, however, is how involved a participant is with the topic being studied. The more invested a participant has with the subject matter of the survey, the more likely he or she will respond (Alreck & Settle, 2004).

Summary

Birth control, in general, and the IUD, specifically, have faced controversy in the United States for numerous years. Revolutionaries have made strides to ensure reproductive rights, but challenges and barriers to accessing all forms of birth control still exist. Many studies have documented the lack of CSP's knowledge regarding the IUD, and the related implications (Cabiya et al, 2008; Cheng, 2002; Harper et al, 2008; Pasquale, 1996; Stanwood, 2002; and Zimmer, 1996). Further, no studies using TRA to measure behavioral intention of clinical services providers to provide the IUD have been conducted. In addition, conclusions by Grossman et al (2006) support the need for further exploration of attitudes and beliefs by nonphysician clinical services providers capable of IUD insertion. TRA is measurable using quantitative research methods, more specifically survey research. Existing literature on appropriate research methods and personal communication with clinical services providers have concluded online survey administration and data collection to be the most appropriate to reach this population. The following Chapter 3 will outline the specific methods for this study including population, sample, instrumentation, data collection, and data analysis.

CHAPTER THREE

METHODS

Overview

This chapter provides a detailed overview of the methods used for this study including research design, sampling methods, instrumentation, data collection procedures, and data analysis.

Purpose of the Study

The purpose of this study was to use the Theory of Reasoned Action to measure behavioral intention of clinical services providers (CSPs) to provide the intrauterine device (IUD).

Research Questions

For the purposes of this study, the following three research questions were posed:

1). What level of knowledge do clinical services providers have about the intrauterine device (IUD)?

2). What is the relationship among clinical services providers' knowledge, attitudes, subjective norms, and behavioral intention in regards to providing the intrauterine device (IUD)?

3). How much variation in clinical services providers' behavioral intention to provide the intrauterine device (IUD) can be accounted for by knowledge, attitudes, and social norms.

Research Design

"Design decisions depend on the purposes of the study, the nature of the problem, and the alternatives appropriate for its investigation…The nature of the problem then plays the major role determining what approaches are suitable" (Isaac & Michael, 1995, p. 45). Of the "nine

basic methods of research" proposed by Isaac and Michael (1995), correlational and descriptive research were employed for this study (p. 46). Isaac and Michael (1995) stated the purpose of descriptive research is "to describe systematically the facts and characteristics of a given population or area of interest, factually and accurately" (p. 50). This study aimed to validly and reliably survey variables of clinical services providers (CSP) associated with the constructs of TRA. According to Isaac and Michael, the term "descriptive research" often is synonymous with "survey studies" in a broader context (p. 50).

According to Isaac and Michael (1995), the purpose of correlational research is to "investigate the extent to which variations in one factor correspond with variations in one or more other factors based on correlation coefficients" (p. 53). The instrument for this study used the Theory of Reasoned Action (TRA) to measure behavioral intention. Therefore, factors such as attitudes, subjective norms, behavioral beliefs, and motivation to comply were investigated to measure the degree of variation in behavioral intention based on each factor.

According to Alreck and Settle (2004), survey research is conducted when "organizations and institutions…need answers to important questions" (p. 3). Alreck and Settle (2004) continue to list and describe potential survey topics to include attitudes, knowledge, behavior, lifestyle, feelings, images, decisions, and demographics. The current study incorporated several of the above listed topics. Specifically, the instrument included scales to measure attitudes, behavioral beliefs, subjective norms, behavioral intention, and knowledge.

Population

The purpose of this study was to measure the intention to perform the very specific behavior of providing the IUD. This task only can be performed by licensed professionals. As stated in Chapter One, clinical services providers (CSP), including nurse practitioners (NP),

certified nurse midwives (CNM), physician assistants (PA), and physicians, are the only professionals capable of providing the IUD in the United States. Moreover, mid-level practitioners, including NPs, CNM, and PAs, have the majority of patient exposure in government-funded family planning clinics across the country (Fowler et al, 2008).

The current study explored attitudes and beliefs of a select group of individuals based on selected skills and training. As a result, an association of professionals who meet criteria for this study was used. This membership, discussed in more detail below, served as the population for the study. Therefore, this study used enumeration (i.e. a census). According to Alreck and Settle, enumeration is "the alternative to sampling," and involves "counting the entire population" (Alreck and Settle, 2004, p. 55). A population is the "entire collection of events in which you are interested," and can be "a relatively small set of numbers, which can be collected easily" (Howell, 2007, p. 2). The population of this study was the membership of the National Association of Nurse Practitioners in Women's Health (NPWH).

The National Association of Nurse Practitioners in Women's Health (NPWH) "is a trusted source of information on nurse practitioner education, practice, and women's health issues" (NPWH, n.d., http://www.npwh.org/i4a/pages/index.cfm?pageid=3333). NPWH was founded in 1980, with the purpose of promoting quality health care services to all women, and valuing women's autonomy in health care decision-making (npwh.org). The NPWH was founded in 1980 with a mission "to assure the provision of quality health care to women of all ages by nurse practitioners." The association defines quality health care to be "inclusive of an individual's physical, emotional, and spiritual needs" (NPWH, n.d. http://www.npwh.org/i4a/pages/index.cfm?pageid=3333). NPWH is a trusted source of

information for the nurse practitioner profession, including "education, practice, and women's health issues" (NPWH, n.d., http://www.npwh.org/i4a/pages/index.cfm?pageid=3333).

The association has a board of directors involving 13 members, including representatives from North Atlantic, Southeast, South Central, and Western regions across the United States; four at-large members; and chairs of various committees such as education, research, finance, nominating, membership, policy, executive, and long range planning. One board member may hold several positions within the organization. For example, the secretary of the executive committee of the board of directors also may chair the finance committee (NPWH, n.d. http://www.npwh.org/i4a/pages/index.cfm?pageid=3283). The Association's staff includes the president and CEO, vice president and CFO, two coordinators, one director of education, one director of program accreditation, and an office administrator (NPWH, n.d. http://www.npwh.org/i4a/pages/index.cfm?pageid=3284). The Association is headquartered in Washington, D.C.

Publications for NPWH include professional journal, *Women's Health Care Journal*, and *Monthly Cycle* newsletter. The Association also publishes various clinical guidelines booklets, such as *Colposcopy Education and Clinical Training Standards*. Members have online access to the journal and newsletter by logging onto the website. Booklet access and non-member access to publications are obtained by order.

NPWH hold a national women's health convention each October. The conference in 2009 was in Providence, Rhode Island. The conference for October, 2010 is to be held in Palm Desert, California. The NPWH website provides information regarding call for abstracts and calendar of events for the annual happening.

Membership statistics are kept confidential, and are not published on the NPWH website. According to Elizabeth Kostas-Polston, RN, PhD, WHNP; Chair of the NPWH Education Committee, Policy Committee, and Research Committee; and Board of Directors representative for the South Central Region of the nation, the total membership for NPWH is approximately 4,000 (E. Kostas-Polston, personal communication, September 8, 2009). According to membership demographic data sent to the principle researcher from NPWH, however, the largest number provided was 2,388 (Carol Wiley, personal communication, May 10, 2010). Therefore, the principle research was given different membership counts, one by an oral approximation, and the other through a membership data set. The latter is more tangible, and therefore likely is the best estimator of NPWH membership statistics for use in this study. Appendix A includes membership data sent to the researcher of this study from NPWH.

Six membership categories exist in this association. Active membership is available to nurse practitioners (NP) and certified nurse midwives (CNM). Associate membership is available to nurses and other clinicians. Student membership is available to registered nurses (RN) who are currently enrolled in a nurse practitioner program. Supporting membership is available to individuals, such as executives, employers, and physicians. Retired membership is available to retired NPs. Discount membership is available to members of Association of Reproductive Health Professionals (ARHP). By examining the different memberships available, it is evident members may have various professional credentials, including but not limited to nurse practitioners, certified nurse midwives, registered nurses, family physicians, obstetricians/gynecologists, and physician assistants. Despite these potential diverse groups, however, all members must uphold the mission of the NPWH, "to assure the provision of quality

health care to women of all ages by nurse practitioners" (NPWH, n.d., http://www.npwh.org/i4a/pages/index.cfm?pageid=3277).

Two factors were considered when calculating the required number of completed surveys for the study. The first factor was response rate of the online survey. Response rates for online surveys have ranged from under 10% to over 50% (Kittleson & Brown, 2005). Kittleson (1997) concluded that one can expect a response rate of approximately 25-30% for online surveys if no follow-up reminders are provided. For N = 4,000, a typical response rate for this study can be estimated at 20% based on existing literature. Therefore, a response rate of 20% would yield 800 returned surveys. Alternatively, for N = 2388, a response rate of 20% would yield approximately 478 returned surveys. Using either number, measures were taken to enhance likelihood of meeting a response rate of at least 20%, such as incentives and follow-up emails, and are discussed in a following section.

The second factor associated with the required number of completed surveys is statistical power. Power is defined as "the probability of correctly rejecting a false null hypothesis (H_0) when a particular alternative hypothesis is true. Thus power = 1- β" (Howell, 2007, p. 214). Power is important to a study because it strives to decrease the likelihood of making a Type II error. A Type II error occurs when one fails to "reject H_0 when it is false and (the research hypothesis) H_1 is true" (Howell, 2007, p. 96). According to Howell (2007), as sample size (or in this study, the number of returned surveys of the population) increases, the standard error of the proportion gets smaller, and, thus, more certainty exists that the probability estimate (p) will be more accurate (Howell, 2007). According to Isaac and Michael (1995), a sample size of 351 is needed from a population of 4,000 for a sample proportion (p) to be within ± 0.05 of the population proportion (P) at a 95% confidence interval. Alternatively, a sample size of 331 is

needed from a population of 2,400. Although this study utilized a population, the number of 351 or 331 was still applicable as a minimum number of returned surveys required for statistical analyses.

Instrumentation

An instrument created by Sable et al (2006) used TRA to measure physicians' behavioral intention to prescribe emergency contraception (EC). EC is similar to the IUD in that both have been noted as controversial methods of pregnancy prevention (Dawn, 2008; Sultana, n.d.). Further, the IUD has been used as an emergency contraceptive. According to Princeton University's emergency contraception website, the copper IUD, ParaGard, can be inserted by a trained clinician up to five days after unprotected sex to help prevent unwanted pregnancy (Office of Population Research & Association of Reproductive Health Professionals, 2009).

According to Sable et al (2006), "TRA has been used to describe a variety of clinical practices among physicians and health care workers" (p. 21). TRA is a cognitive model, and, thus, is a "strong and valid prediction" of many health-related issues (Baker et al, 1996, p. 529). There is a lack of studies using TRA to better understand intention of IUD use. To date, no known published study has been conducted that uses TRA to measure clinicians' behavioral intention to provide IUDs. TRA has been used to measure behavioral intention of contraceptive use in other populations. Issues most often used in association with TRA include, "decisions about abortion, birth planning intentions, Lamaze childbirth intentions, weight loss, blood donation, infant-feeding decisions, signing up for alcohol treatment, intentions to use drugs, intentions to get flu shots, and numerous studies of contraceptive decision making" (Baker et al, 1996, p. 529).

The original instrument used by Sable, et al (2006) included 73 items, divided into 10 subscales. It was designed based on a review of related literature as well as several elicitation interviews conducted by Sable, et al (2006). The instrument includes a direct measure of attitudes that is a sum of three scores indicating how "good" or "bad" participants believed was prescribing and educating about emergency contraception (EC). Prescribing of EC and educating about EC are two separate subscales. Thus, this direct measure has a total of two different sums, a sum for each of these behaviors. Each scale is a seven-point Likert-type scale, with +3 being "extremely good/positive/and beneficial" and -3 being "extremely bad/negative/and harmful." Total possible sums for these measures could range from +9 to -9 (Sable et al, 2006).

On the original instrument, the indirect measure for attitudes included three subscales of ten items each. The first two subscales ask participants to indicate how likely or unlikely they perceived the statement to be in regards to prescribing EC and educating patients about EC respectively. Participants then ranked their response on a seven-point Likert-type scale ranging from +3 ("extremely likely") to -3 ("extremely unlikely"). The third subscale asks participants to indicate whether they believed statements represented good or bad results when prescribing EC. Participants selected their response on a seven-point Likert-type scale ranging from +3 ("extremely good") to -3 ("extremely bad") (Sable et al, 2006). All measures for attitudes – both direct and indirect – are independent variables (Sable et al, 2006).

On the original instrument, the direct measure for subjective norms was "based on a single statement using a seven-point Likert-type scale indicating whether participants thought that 'in general…most people or groups important to [them]' thought that they should prescribe emergency contraception" (Sable et al, 2006, p. 22). Responses for this subscale ranged from +3 ("definitely should") to -3 (definitely should not") (Sable et al, 2006).

The original instrument included indirect measures for subjective norms based on three subscales, including one measuring motivation to comply. Motivation to comply was measured based on a subscale of four items that asked "I want to comply with…" choices such as "my partners/colleagues," "community physicians," "my professional organization," and "current medical standards." (Sable et al, 2006). Responses for this seven-point Likert-type subscale ranged from 1 (not at all) to 7 (very much) (Sable, et al, 2006). The other two subscales for the indirect measure of subjective norms included items that asked how people/groups who may be influential in participants' decision-making may perceive prescribing EC and educating patients about EC respectively. Each subscale includes five items on a seven-point Likert-type scale ranging from +3 ("definitely should") to -3 ("definitely should not") (Sable, et al, 2006). All measures for subjective norms – direct and indirect – are independent variables.

The dependent variable for the original instrument is the measure for behavioral intention. Behavioral intention is measured based on two subscales of six items each. Participants were asked "to what extent do you intend to prescribe [educate about] emergency contraception in your practice" using a seven-point Likert-type scale, with 1 being "not at all" and 7 being "very much" (Sable et al, 2006). Please see Appendix B for a comprehensive listing of all variables and items in each subscale of the original instrument.

Although TRA does not measure knowledge, Sable et al (2006) included a knowledge scale in the original instrument. Based on their literature review, "knowledge was measured by the number of correct answers participants gave to five multiple-choice and true-false questions about emergency contraception," (Sable et al, 2006, p. 22). This decision is justified by studies that have shown increased provision of EC by physicians after educational interventions (Sable et al, 2006). The same decision can be made in regards to the current study of offering the IUD,

since knowledge about the IUD is a requisite for offering and inserting the device. For this reason, knowledge was assessed.

Finally, six demographic variables were included in the original instrument, including medical specialty, adolescent subspecialty, board certification, years in practice, age, and gender (Sable et al, 2006).

According to the article published by Sable et al (2006) on the study using the original instrument, validity and reliability of the original instrument were established: "We pilot-tested the questionnaire among community physicians and nurse practitioners ineligible for study participation. The final questionnaire was based on their feedback," (p. 21). Dr. Marjorie Sable was contacted by the researcher of the current study to access validity and reliability data for the original instrument. Unfortunately, according to the Dr. Sable, "we did not do validity/reliability testing other than doing construct validity testing with a sample of physicians similar to those who would be getting the survey (e.g., FP's, Peds, and OB's in the community)" (M. Sable, personal correspondence, December 7, 2009). Please refer to Appendix C for the email citing no reliability and validity data for the original instrument.

The actual study surveyed faculty physicians specializing in the fields of obstetrics and gynecology, family medicine, and pediatrics at four Midwest universities (Sable et al, 2006). Data were collected via two departmental meetings. A total of 96 participants completed the survey. Of these 96 participants, 52% were family practitioners, 30% were obstetrics-gynecologists, and 18% were pediatricians (Sable et al, 2006). More than half of participants (62%) were male, years in practiced ranged from 1 to 50 years with an average of 15.8 years, and the average age was 46.9 years, with a range of 29 to 79 years (Sable et al, 2006).

Permission to revise and use the original instrument was granted from Dr. Marjorie Sable, lead developer of the original instrument, via email communication on June 3, 2009 (Please refer to email correspondence in Appendix D). Revisions to the original instrument were done to adapt the instrument for the current study. Based on a review of literature about IUD use, the following changes were made during the first phase of instrument revisions: (1) revising EC specific items to IUD specific items by changing the wording, such as asking about a participant's behavioral intention to prescribe EC to "any woman who has had unprotected sexual intercourse and makes the request" (Sable et al, 2006, p. 4); (2) omitting EC specific items that would not be appropriate when asking participants about the IUD, such as asking about one's belief about prescribing EC to "women who have experienced incest or rape" (p. 4); (3) changing several knowledge items, such as one asking how effective EC is when taken within "x" number of hours after intercourse, to items that ask IUD specific knowledge questions (Sable et al, 2006); (4) adding an open-ended question to allow participants to add any additional comments regarding their use/non-use of IUDs in their practice; and (5) omitting all subscales asking about educating patients about EC. According to Dr. Marjorie Sable, these subscales were added to the instrument in the event that EC was to become available over-the-counter. Since this factor does not apply to the IUD, only the scales asking about providing the IUD were used (Sable, personal communication, 2009, June 3).

The instrument was reviewed for content and format by a panel of experts: Dr. John Pohlmann, Professor Emeritus of Educational Psychology at Southern Illinois University Carbondale, Ms. Christy Hamilton, Coordinator of Sexual Health, Relationship Violence and Sexual Assault Programs at the Southern Illinois University Carbondale Wellness Center, and Ms. Paula Clark, Division Director of HIV Services at Jackson County Health Department. In

addition, the researcher's dissertation committee reviewed the instrument for content accuracy and format. Each member on the expert panel was sent a copy of the instrument after the first phase of revisions (see above) with a "retain, revise, delete" rubric, along with a comments section after each item. One suggestion involved changing an item from stating "(the IUD) poses health risks for my patients" to "poses health risks for my patients who are nulliparous." A second suggestion involved adding an item that states, "(do you intend to provide the IUD) to sexually active women 20 + years of age? to supplement the pre-existing item, "(do you intend to provide the IUD) to sexually active teens?" Two other suggestions included to revising scales and re-phrasing instructions to be more clear and concise. The researcher revised the instrument according to the aforementioned suggestions.

The second phase of revisions made to the instrument was based on suggestions by members of the expert review panel and by the researcher after meeting with members of the researcher's committee. One revision after both panel and committee member feedback involved narrowing the original 7-point Likert-type scale with a neutral option to a 4-point, forced choice Likert-type scale. This revision allowed superfluous details of the instrument to be omitted, resulting in a more direct and concise instrument, more suitable for the study's population. In addition to narrowing the number of options for each scale's items, the original scale of +3 to -3 was changed to a scale of +2 to -2.

After the above changes, the instrument that was used for the pilot study consisted of 51 items, including 39 that measured constructs of the theory of reasoned action, 6 knowledge items, 5 demographic items and one final open-ended response item. A pilot study was conducted to measure reliability and validity of the instrument, as well as measure response rates and overall instrument quality. In addition, reliability scores were re-measured with the actual

study. In the following section, Tables 4 and 5 summarize the Cronbach alpha reliability coefficients for the pilot and actual study, respectively.

Pilot Study

A pilot study "permits a thorough check of the planned statistical and analytical procedures, allowing an appraisal of their adequacy in treating the data" (Isaac & Michael, 1995, p. 38). After obtaining Human Subjects Compliance (HSC), a pilot study was conducted to measure instrument internal reliability and provide insights regarding overall instrument quality. According to Isaac and Michael (1995), after piloting a questionnaire, one should "check the percent of responses as an estimate…" (p. 143).

A sample size of 20 to 50 participants is desirable for a pilot test (Sudman & Bradburn, 1986). Sample size for the pilot study was estimated using response rates from scientific literature. Fifty questionnaires were distributed to board of directors members of the National Association of Nurse Practitioners in Women's Health (NPWH). These members were appropriate for assessing validity and reliability of the instrument, as they are executive members of the Association and practicing mid-level practitioners.

Instrument Feedback

On Monday, February 15, 2010, the principle researcher sent the pilot survey and cover letter via email to Dr. Elizabeth Kostas-Polston, the NPWH liaison. On Thursday, February 18, 2010, Dr. Kostas-Polston emailed the survey to members of the Association's Board of Directors. After her own review of the pilot instrument, Dr. Kostas-Polston emailed the principle researcher with recommendations for revising the instrument to better customize it to the

population. A telephone conversation followed, and the following were the recommendations and subsequent revisions made to the instrument based on Dr. Kostas-Polston's feedback.

The first recommendation was to change the term clinical services providers (CSP) to healthcare provider (HCP), as the latter term is the one used by the population. Regarding Section A, item 1 of the instrument, it was recommended to change "reproductive options" to "contraceptive options" as Dr. Kostas-Polston believed the term "reproduction" would be interpreted by the population as referring to fertility versus pregnancy prevention. Language recommendations for the instructive statement of Section B included changing the statement from "…how you think or feel regarding the result of providing the IUD" to "…how you think or feel about providing the IUD." In addition, as with the change in Section A of switching "reproductive options" to "contraceptive options" the corresponding item in Section B also was revised accordingly.

The recommendation for Section C was to change the term "negative" on item 2 to "bad" to make it linear to item 1 which asks how "good" participants think regarding providing the IUD. The instructive statement for Section D was revised to state "Healthcare Providers and professional organizations' recommendations are influential in decision making. Please select your responses below." The original statement stated "The people and groups listed below may be influential in medical decision-making. Please indicate how you think the following consider providing the IUD. Please select the response that most closely describes your response." Dr. Kostas-Polston believed this revision would make the instructions less awkward, and read more easily. In addition, items 1 and 2, which originally asked about "partners/colleagues" and "community physicians/nurse practitioners/physician asst/midwives" were both changed to state

"healthcare providers." Dr. Kostas-Polston stated the term health care providers was the most appropriate term to encompass all partners and colleagues important to the population.

Section E revisions included changing the wording of the instructive statement from "Generally speaking, how important is it to you to do what these people/groups want you to do? (Select the response that most closely describes your response)." to "Healthcare providers make decisions based on recommendations by professional organizations and colleagues. Select the response that most closely corresponds with your practice." In addition, items that referred to important groups as "partners/colleagues/community physicians/nurse practitioners/physician asst/midwives" were changed to healthcare providers. The latter was a revision to the single item of Section F.

Section H revisions were done to item 2. Based on Dr. Kostas-Polston's recommendations, the question was changed to read "Based on the 2008 World Health Organization's Medical Eligibility Criteria (MEC), which of the following…" Adding the specific year and clarifying which "guidelines" to which the question was referring clarifies the item for the population. The final revision was regarding a slight change in wording on item 5 of Section H to read "Which are the best theoretical understandings of the mechanism of action for the ParaGard (TCu380A) (select all that apply)." The original statement was "What are the best…for the ParaGard (TCu380A) includes (select all that apply)". These revisions, according to Dr. Kostas-Polston, allow for better flow, and eliminate superfluous confusion of participants. Please refer to Appendix E for the final instrument used in the study.

Pilot Study Data

A total of 21 participants completed the pilot survey. A total of 4 surveys, however, were removed from data analysis due to missing data for the theory of reasoned action (TRA) scales.

According to established criteria, any survey lacking more than 5% of the total number of responses was removed (Alreck and Settle, 2004). Missing data throughout the survey were replaced with the mean score for each respective item in data analysis. Therefore, the total number of participants who answered the survey completely was 17 (n = 17). Additionally, 4 participants who otherwise completed the TRA scales chose not to disclose some demographic information, such as professional title, age, number of years in practice, and state of practice. These individuals were not omitted from the entire study, however, as the demographic items were optional. Only 13 of the 17 participants (76.47%) answered all demographic items excluding age. The age item had a total of 12 respondents (70.59%).

Demographic items resulted in lower response rates than the instrument as a whole. One possible reason for this non-response may have been due to the placement of demographics at the end of the survey. In agreement with recommendations in the literature, demographics were placed at the end of the instrument. For example, McDermott and Sarvela (1999) believe "when demographic questions are at the end, the respondent has already vested time in completing the survey, and therefore, is more likely to answer the demographic questions and return the survey" (p. 254). The contrary, however, occurred for this particular pilot study. Schedule demands of nurse practitioners, perception of demographic items as superfluous to the rest of the instrument, or general lack of interest could have attributed to the lack of responses. Another potential deterrent to participation could have been potential uncertainty over confidentiality of responses. Although participants were given a cover letter verifying confidentiality, and gave voluntary consent, some potential participants may have felt anxious about providing opinions to potentially sensitive questions, in the fear that their membership ID number would somehow be tied to their responses.

All (100%) of the participants who responded held active membership in the National Association of Nurse Practitioners in Women's Health (NPWH), (100%) participants who responded were female. The average age of participants who responded to the age item was 53.75 years. Of participants who responded, the average number of years in practice was 21.76 years. The current state of practice of those who responded included Virginia (VA), Colorado (CO), Connecticut (CT), Arizona (AZ), Missouri (MO), California (CA), West Virginia (WV), Georgia (GA), Texas, (TX), and Tennessee (TN). Overall, (female) participants practiced throughout the U.S., and identified as a nurse practitioner. Table 5 provides a summary of the pilot study demographics.

Cronbach alpha internal consistency reliability coefficients were calculated for each scale of the instrument. Internal consistency reliability measures "the degree to which the items 'hang together,' that is, the degree to which items relate to each other (McDermott and Sarvela, 1999, p. 139). According to McDermott and Sarvela (1999), "for basic research or evaluation studies, a minimum value of 0.60 is desirable" (p. 139). Table 6 summarizes the Cronbach alpha scores from the pilot study. Table 7 summarizes the Cronbach alpha scores from the actual study.

Table 5

Pilot Study Demographics

Demographic Variable	Frequency (n)	Percentage of participants who responded*(%)	Percentage of total participants** (%)
Gender			
Male	0	0.00	0.00
Female	13	100.00	100.00
Membership type			
Active	13	100.00	100.00
State of Practice			
Arizona	1	7.69	5.88

California	3	23.07	17.65
Colorado	1	7.69	5.88
Connecticut	1	7.69	5.88
Georgia	1	7.69	5.88
Missouri	2	15.38	11.76
Tennessee	1	7.69	5.88
Texas	1	7.69	5.88
Virginia	1	7.69	5.88
West Virginia	1	7.69	5.88
Professional Title			
Women's Health Nurse practitioner (WHNP)	6	46.15	35.29
Family Nurse Practitioner (FNP)	2	15.38	11.76
Certified Nurse Practitioner	1	7.69	5.88
Advanced Nurse Practitioner	1	7.69	5.88
WHN-BC	1	7.69	5.88
RNP	1	7.69	5.88
Nurse Practitioner	1	7.69	5.88

*13 (of n=21) responded to demographic items represented in this survey
**Total participants (n) = 17

Table 6

Pilot Study Cronbach Alpha Coefficients for Theory of Reasoned Action (TRA) Scales and Knowledge

Construct	Cronbach's Alpha	Number of items
Behavioral Beliefs	0.755	9
Evaluation of Outcomes	0.899	9
Direct Attitudes	0.880	3
Normative Beliefs	0.764	5
Motivation to Comply	0.528	4
Direct Subjective Norms	n/a	1
Behavioral Intention	0.545	8
Total TRA	0.729	39
Knowledge	0.427	29

Table 7

Final Study Cronbach Alpha Coefficients for Theory of Reasoned Action (TRA) Scales and Knowledge

Construct	Cronbach's Alpha	Number of items
Behavioral Beliefs	0.667	9
Evaluation of Outcomes	0.865	9
Direct Attitudes	0.811	3
Normative Beliefs	0.755	5
Motivation to Comply	0.726	4
Direct Subjective Norms	n/a	1
Behavioral Intention	0.754	8
Total TRA	0.763	39
Knowledge	0.701	29

Knowledge items were multiple answer and true/false. Knowledge scores from the pilot study suggested that pilot participants were more competent in the true/false items regarding the association of IUD and PID, as well as the risk for ectopic pregnancy among IUD users. Multiple answer items, however, had lower scores, and asked participants about contraindications to IUD use, potential side effects of ParaGard® and Mirena®, and theoretical mechanism of action of the IUD. Overall, knowledge scores were high (94%), at a moderate A-average. Knowledge scores are summarized in Table 8.

Table 8

Percentage Distribution of Knowledge Scores from Pilot Study

Question	n	Correct (%)	Incorrect (%)	Don't know (%)
An IUD increases a woman's chance of PID regardless of her history of STDs.	18	83.33*	16.67	0.00
Based on the World Health Organization's guidelines, which of the following would be contraindications to IUD use?	18	11.11**	88.89	11.11
Which of the following are potential side Effects of the ParaGard (TCu380A)?	18	55.56†	44.44	0.00
Which of the following are possible side Effects of the Mirena (LNG-IUS)?	18	44.44±	55.56	5.56
What are the best theoretical understandings of the mechanism of action for the ParaGard (TCU380A)?	18	11.11††	88.89	5.56
The IUD increases a woman's chance of ectopic pregnancy.	18	72.22±±	27.78	0.00

*False.**Wilson's Disease, Acute Liver Disease, and Post-abortal endometritis in the past 3 months. †Heavier periods, increased cramping, pain/discomfort. ±None of the above. ††Prevents fertilization of an egg, Prevents attachment of a fertilized egg. ±± False

Measures of central tendency and dispersion were calculated for each item and entire scales measuring theory of reasoned action (TRA) constructs of behavioral beliefs, evaluation of outcomes, direct attitudes, normative beliefs, motivation to comply, direct subjective norms, and behavioral intention. Table 9 summarizes descriptive statistics calculated for TRA construct scales. Overall, pilot participants had moderately positive beliefs and moderate intention to provide the IUD (behavioral intention of 70%). Tables summarizing descriptive statistics and frequencies of each item are found in Appendix F.

A total of 7 respondents answered the open response item. With the exception of one statement regarding beliefs about IUDs, all the responses were critics of the survey instrument. Instrument revisions were based, in part, on these statements, and were explained in the section above. Appendix G includes the coding table of the qualitative data from the pilot study.

Table 9
Descriptive Statistics for TRA Constructs from Pilot Study

Construct	**n**	**Possible Scores**	**Mean**	**Std. Deviation**	**Variance**	**Range**	**Min**	**Max**
Behavioral Beliefs	21	$^{-}18$ - $^{+}18$	14.13	3.22	10.36	11.00	7.00	18.00
Evaluation of Outcomes	21	$^{-}18$ - $^{+}18$	14.28	3.33	11.09	9.00	9.00	18.00
Direct Attitudes	20	$^{-}6$ - $^{+}6$	5.35	1.14	1.30	1.00	3.00	6.00
Normative Beliefs	19	$^{-}10$ - $^{+}10$	5.58	2.81	7.90	8.00	0.00	8.00
Motivation to Comply	18	$^{-}8$ - $^{+}8$	4.78	1.80	3.24	7.00	0.00	7.00
Direct Subjective Norms	20	$^{-}2$ - $^{+}2$	1.45	0.51	0.26	1.00	1.00	2.00
Behavioral Intention	17	$^{-}16$ - $^{+}16$	11.35	2.87	8.24	10.00	5.00	15.00

Data Collection

According to Alreck and Settle (2004), online surveys are appropriate for 1). "those to be reached at work; 2). companies, organizations, and institutions; and 3). educational or scientific occupations" (p. 184). An online survey was developed using SurveyMonkey.com.

SurveyMonkey™ is an online survey administration service. Surveys can be developed and managed, data can be collected, and results can be analyzed. These fundamental services are free of charge, but additional services can be utilized for a monthly fee. The researcher used a "pro" account, which was $20 a month, and allowed for unlimited survey length and data collection timeframe (SurveyMonkey™, 2010). A cover letter and a link were sent to members of the NPWH association via on-file email addresses. To protect confidentiality, the researcher sent the survey link to a representative of NPWH, Dr. Elizabeth Kostas-Polston, Chair of the NPWH research committee, who sent the links to potential participants. The researcher did not have any direct contact with prospective participants. Please refer to Appendix H for the series of email correspondence between the principle researcher and Dr. Elizabeth Kostas-Polston.

On behalf of the organization, Dr. Kostas-Polston acted as a channel of communication between the researcher and participants of the study. The researcher sent the intermediary links to the survey. Dr. Kostas-Polston distributed the link to the organization's membership. One member who completed the survey was randomly selected as the winner of complementary registration for next year's conference. The researcher used a random numbers table to select the winning participant from the queue of completed surveys on the surveymonkey.com page into which completed surveys were deposited. From there, the researcher sent the membership identification number entered on the survey to Dr. Kostas-Polston, who matched the membership identification number to the respective member and contacted her (Urbaniak and Plous, 2008). Therefore, the researcher was removed from any direct identification of the study's participants. The winner was a reported 60-year-old nurse practitioner currently practicing in Arizona, with 25 years of experience, holding an active membership to the association.

When administrating surveys via mail – postal or virtual – one must consider the important consequence of non-response. "The reliability of the data depends on the size of the sample *obtained*, and not the number of surveys sent…" (Alreck and Settle, 2004, p. 36-37). There are principles to help gauge the degree of non-response bias by examining factors specific to a given study. Certain types of individuals less more likely to complete and return a survey than others, such as those who are less pressured for time, those who are not interested in the survey content, or those living in large urban areas. On the other hand, individuals who feel strongly positive or negative towards survey content may be more inclined to participate (Alreck and Settle, 2004). For this particular study, participants were more likely to feel inclined to complete and return the survey as it relates to their professional careers. Individuals asked to participate in this study are also very busy, however, and possibly did not respond due to time constraints.

Non-response

Online survey administration is commonly associated with a low response rate (Alreck and settle, 2004). A possible result of low response rate is nonresponse bias. According to McDermott and Sarvela (1999), nonresponse bias is caused by a potentially misleading interpretation of results when response rate is lower than 100%. If time and money are available, some researchers follow-up with nonrespondents via the same means as initial administration. Others may reach nonrespondents by an additional means (for example, via telephone if original administration was through email). McDermott and Sarvela (1999) also suggest comparing data to a standard: "If there are demographic or other relevant data available on the population from which the sample was taken, comparisons between respondents and the parent population" (p. 284). For this study, demographics from the survey participants were compared to those of the parent population of the NPWH membership. Overall, based on the comparison of

demographics, the survey participants were reflective of the NPWH membership. Chapter 4 summarizes the comparisons made to help control nonresponse bias.

Inducement for response was used to help increase response rate. The incentive for participating in the study was a chance to win free registration to the national conference on women's health to be held in October, 2010, paid for by the researcher, as the researcher wanted to offer an incentive tailored to and of interest to study participants. This incentive was appropriate since membership dues and conference costs are likely annual financial obligations for members of the association. Each participant was asked to enter a membership identification number at the end of the survey to be eligible to win the prize.

One email reminder was sent to prospective participants. The researcher chose to only provide one reminder email since studies have suggested significant effects of one follow-up reminder, but marginal effects of three or four reminders on email administered survey response rate (Kittleson, 1997). Following the initial forward of the surveys, an additional email blast was forwarded 21 days after the initial message. The follow-up email contained the same cover letter, complete with the survey link; inducement information; and research information, as contained in the original cover letter. Details regarding the incentive were mentioned in the cover letter placed in the body of the email message. Appendix H includes the email correspondence citing endorsement of the study by the National Association for Nurse Practitioners in Women's Health (NPWH). Further, Appendix I includes the Institutional Review Board (IRB) approval. Appendix J includes the email solicitation request, revised from the sample solicitation request on the Southern Illinois University Carbondale, Human Subjects Compliance website.

Response Patterns

The total number of at least partially completed surveys was 734. The first wave of respondents occurred approximately 48 hours after the initial email blast to the NPWH membership. Within the first 48 hours of data collection, 47% of the final total of completed surveys were taken (345 out of 734). By the end of the first week of data collection, the total number of completed surveys increased to 460 (approximately 62.7% of all completed surveys). Response rate continued to decrease during the second week of data collection. By the end of the second week, a total of 490 completed surveys were at least partially completed (approximately 66.8% of all completed surveys).

Approximately three weeks after the initial email was distributed, a second wave of data collection commenced with an additional email blast to the NPWH membership. Response rate increased once again, but at a lower magnitude than during the first wave. Within the first 24 hours of data collection during the second wave, a total of 102 new surveys were completed, increasing the total number of surveys to 600 (approximately 81.7% of all completed surveys). During the first week of the second wave, the response rate steadily declined. A total of 120 additional surveys were completed in the first week of the second wave of data collection (increasing N to 720, 98% of total completed surveys), and an additional 14 surveys were completed during the second week of the second wave of data collection. The final total of at least partially completed surveys at the end of one month of data collection was 734.

These response patterns parallel previous studies that have explored email and Web-based survey response rate. Kittleson and Brown (2005) received 42.6% of all completed email-based surveys within the first 24 hours of sending out the email survey solicitation. Similarly, Yum and

Trumbo (2000) suggested the highest response rate for online-based surveys occur within the first 72 hours after initial solicitation.

Studies using email-based surveys have received varied response rates. Some studies have received response rates from email surveys as high as 76%, which surpassed paper administration of the same instrument (Walsh et al, 1992). Schuldt and Totten (1994) and Swoboda et al (1997), however, received response rates of 19% and 21%, respectively in comparison to higher response rates from paper administration.

In addition to response rate, missing data had to be assessed. According to Alreck and Settle, the researcher should establish a protocol of completeness by examining each survey, and placing each one into a "yes", "no", and "maybe" file. "There will inevitably be individual items respondents fail to complete" (Alreck and Settle, 2004, p. 245). Therefore, the researcher must judge whether or not a survey is useful. For this study, the researcher discarded surveys missing an entire TRA or knowledge scale. Since "some missing data can almost always be tolerated", the researcher kept surveys missing a few items sporadically, not equaling more than 10% of the entire survey (Alreck and Settle, 2004, p. 245). Demographic items were not counted as part of the completeness, as the principles of the theory of reasoned action state demographics are not a valuable predictor of behavioral intention (Ajzen and Fishbein, 1980). After completeness was judged, and partially completed surveys were discarded, 39 surveys were eliminated from data analysis. Therefore, the total number of study participants in this study (N) was 695.

Data Analysis

Quantitative Analysis

All data analyses were performed using the Statistical Package for the Social Sciences (SPSS) Version 17.0. Descriptive statistics, such as percentages, frequencies, measures of central

tendency (mean, median, mode), and dispersion were calculated for each item including demographics. Variables include professional title, number of years in practice, age in years, state of practice, and gender. Continuous variables within the entire instrument were those that correspond to number of years in practice and age in years. In addition, scores on the Likert-type scales were summed and/or multiplied to provide continuous data for analysis. The type of variable dictated the type of analysis conducted.

Knowledge scores were summed to become a continuous scale. The original scores of zero (0) for an incorrect answer (including "I don't know") and one (1) for a correct answer were summed across each participant for a continuous scale. Making the knowledge scores continuous allowed for their incorporation into correlation and regression models to answer the second and third research questions in this study.

According to the theory of reasoned action, data analysis of its constructs occurs in two steps. First, correlation and stepwise multiple regression were used to assess the level at which direct measures of attitudes and the direct measures of subjective norms contribute to predicting behavioral intention. "Multiple linear regression is a commonly used statistical technique in the behavioural sciences. In its simplest form it allows the linear relationship between several independent variables (IV, or predictor variables) and a single dependent variable (DV, or predicted variable) to be quantified" (Hankins et al, 2000, p. 153). Attitudes and subjective norms were entered as independent variables, while behavioral intention was entered as the dependent variable.

Second, for statistically significant correlations, intention was regressed on direct subjective norm and direct attitude measures. If selected constructs do not independently contribute to prediction of behavioral intention, they should not be further analyzed (Glanz et al,

2002). For example, specific to the current study, if the direct measure of attitudes was a statistically significant contributor to the prediction of providing the IUD (as measured by regression in the first step), behavioral beliefs (individual and weighted with evaluation of outcomes) each was correlated with the behavioral intention (i.e. providing the IUD). To do this, and predict which behavioral beliefs independently contributed to behavioral intention, all weighted beliefs were entered into a stepwise regression. Therefore, intention was regressed on the statistically significant behavioral beliefs. The same was done with the direct measure of subjective norms as a statistically significant contributor to the prediction of behavioral intention. Indirect measures for subjective norms, normative belief scores multiplied with motivation to comply with each corresponding normative belief, were entered into a stepwise regression to predict which normative beliefs independently contributed to the prediction of behavioral intention (Glanz, et al, 2002).

After identifying which behavioral and normative beliefs independently contributed to behavioral intention, behavioral intention was regressed on all statistically significant multivariate predictors already identified to determine critical targets for intervention and education (Glanz, et al, 2002). Implications based on the determination of critical targets based off this regression analysis are discussed in the chapter 5.

The dependent variable was clinical services provider intention to provide the IUD. Pearson's product moment correlation coefficient (r) was used to measure the relationship between behavioral intention and three independent variables: (1) attitudes, (2) subjective norms, and (3) knowledge scores. Theory of Reasoned Action constructs were summed and/or multiplied to create continuous, interval scales. "With an interval scale, we have a measurement scale in which we can legitimately speak of differences between scale points" (Howell, 2007, p.

6). Knowledge items in this instrument were considered to be on a categorical, nominal scale. According to Howell (2007), "…categorical data are usually measured on a nominal scale, because we merely assign category labels" (p. 6). T-tests or ANOVAs were not run to compare means of other demographic variables and behavioral intention, because "according to the theory of reasoned action, external variables, such as demographic variables…do not predict intention (Sable et al, 2006, p. 21). Therefore, doing so would not be staying true to the theory. Table 10 presents the data analysis applied to answer each research question.

Table 10.
Statistical Analysis Summary: Research Questions

Research Question	Data Collection	Data Analysis
1). What level of knowledge do clinical services providers have about the intrauterine device (IUD)?	A). Knowledge scores	A). Descriptive statistics of knowledge item scores
2). What is the relationship among clinical services providers' knowledge, attitudes, subjective norms, and behavioral intention in regards to providing the intrauterine device (IUD)?	A). Attitude direct measure scores (how extremely good/bad is IUD provision?) B). Indirect measure scores (behavioral beliefs weighted by evaluation of outcomes) • Behavioral beliefs • Evaluation of outcomes C). Behavioral intention scores (dependent variable)	A). Pearson Product-Moment Correlation
2). (continued) What is the relationship among clinical services providers' knowledge, attitudes, subjective norms, and behavioral intention in regards to providing the intrauterine device (IUD)?	A). Subjective norms direct measure scores (general perception if important group thinks IUD should/should not be provided) B). Indirect measure scores (specific perceptions weighted by motivation to comply) • Specific perceptions based on type of referent • Motivation to comply C). Behavioral intention scores	A). Pearson Product-Moment Correlation
Table 10 (*continued*)		
3). How much variation in clinical	A). Attitude direct measure scores	A). General linear models

services providers' behavioral intention to provide the intrauterine device (IUD) can be accounted for by knowledge, attitudes, and social norms?	(how extremely good/bad is IUD provision?) B). Indirect measure scores (behavioral beliefs weighted by evaluation of outcomes) • Behavioral beliefs • Evaluation of outcomes C). Behavioral intention scores (dependent variable)	
3). (continued) How much variation in clinical services providers' behavioral intention to provide the intrauterine device (IUD) can be accounted for by knowledge, attitudes, and social norms?	A). Subjective norms direct measure scores (general perception if important group thinks IUD should/should not be provided) B). Indirect measure scores (specific perceptions weighted by motivation to comply) • Specific perceptions based on type of referent • Motivation to comply C). Behavioral intention scores (dependent variable)	A). General linear models

Qualitative Analysis

"Data analysis in qualitative research consists of preparing and organizing the data for analysis, then reducing the data into themes through a process of coding and condensing the codes…" (Creswell, 2007, p. 148). According to Creswell (2007), the process of data collection, data analysis, and the write-up of results are not discrete steps, but rather events likely to occur concurrently. Creswell (2007) also states there are no "off-the-shelf" rules regarding qualitative analysis (p. 150). The researcher often goes on "insight, intuition, and impression" and learns as he/she goes (p. 150).

Creswell (2007) illustrates the "data analysis spiral" to describe the non-linear, cyclical process of qualitative data analysis (p. 151). According to Creswell (2007):

> This process consists of moving from one the reading and memoing loop (of the spiral) into the spiral to the describing, classifying, and interpreting loop…here researchers describe in detail, develop themes or dimensions through some classification system, and provide an interpretation in light of their own views or view of perspectives in the literature (p. 151).

The data analysis spiral was incorporated into analysis of the qualitative responses of this study.

For purposes of this predominantly quantitative study, the survey instrument included one item representing the qualitative research paradigm. Further, this item was not completed by all participants. Responses varied in length, depth, and breadth.

Responses were analyzed according to their content. Qualitative analysis of the single, open-ended item on the instrument was conducted with content analysis of major themes of responses. The unit of analysis was a thought made by each participant. Initial phases of content analysis included repeated review of the responses and data management. Data were managed by organizing units of analysis (thoughts) into a Microsoft Word document. This management allowed the researcher to color-code similar thoughts, with specific colors representing specific thoughts. The researcher inductively analyzed the data until themes emerged from collective responses. These themes were reported in Chapter 4, with specific examples to support each theme included.

To protect confidentiality, responses were coded by the order in which responses were listed in the SurveyMonkey queue. Similar to the quantitative codebook, the first completed survey in the queue, was #1, the second was #2 and so on. Therefore, qualitative responses followed this chronological order, and read: Participant #1 stated the following… A specific response accompanied this statement for each theme discussed.

The principle researcher served as a human coder of the data. “Human coding involves the use of people as coders, with each using a standard codebook and coding form to read, view, or otherwise decode the target content and record his or her objective…” (Neuendorf, 2002, p. 52). Use of human coding procedures required methods to protect inconsistencies in data analysis.

Measures were taken to ensure reliability of data analysis. Intraobserver stability reliability was established through test-retest procedures. According to Krippendorff (2004) “stability is the degree to which a process is unchanging over time” (p. 215). Stability reliability was established through the test-retest design to explore potential intraobserver inconsistencies.

The primary researcher reread and recoded the same set of responses one week following initial coding to establish stability reliability. According to Krippendorff (2004), assessment of intraobserver consistency occurs when “one observer rereads, recategorizes, or reanalyzes the same text, usually after some time has elapsed…” (p. 215). The principle researcher randomly chose 20% (approximately 41 responses) of the originally coded data, and recoding those respective responses one week later. The resulting agreement was 95%

Responses for each question were analyzed by the primary coder, as well as an additional doctoral candidate in health education trained in content analysis, to establish reproducibility reliability through the test-test design. This procedure explored intraobserver inconsistencies and interobserver disagreements, and is a stronger procedure to verify reliability than stability.

In a similar manner as with the intraobserver reliability measures, using a random numbers generator, the interobserver randomly chose 20% (approximatley 41) of the responses in the data set to code. The interobserver’s coding was compared to the coding of the primary researcher for consistency. The resulting agreement was 55%. According to Krippendorff (2004),

an acceptible level of reliability is .80. A total of 203 IUD-specific responses composed the total data set to be analyzed for consistency. This number did not include the set of 24 additional responses critiquing the survey instrument.

Summary

This chapter discussed the detailed methods used to answer the proposed research questions for this study. The population for this study included membership of the National Association of Nurse Practitioners in Women's Health (NPWH), and the entire population was surveyed, making this study a census. Through an initial expert panel review and pilot study feedback, the survey instrument went through a series of phases to become the final instrument used for data collection. Internal reliability (Cronbach's alpha) was established for the final instrument. Data were collected through online administration via Survey Monkey for approximately one month. A total of 695 (N = 695) completed surveys were analyzed. To answer the three research questions, quantitative data were analyzed with descriptive statistics, Pearson Product Moment Correlations, and Multiple Linear Regression. Qualitative data were collected and analyzed through content analysis.

The Chapter 4 provides a thorough presentation of the quantitative findings from this study, answering each proposed research question. Qualitative results are also discussed, as they transition the discussion and recommendations discourse in Chapter 5.

CHAPTER 4

RESULTS

Overview

This chapter provides a review of the descriptive and inferential statistics as well as qualitative content analysis utilized for this study. Further, this chapter offers a detailed explanation of results of the survey instrument for each research question obtained that assessed the influence of attitudes, beliefs, subjective norms, and knowledge on behavioral intention of mid-level healthcare practitioners to provide the intrauterine device (IUD).

Purpose of the Study

The purpose of this study was to use the Theory of Reasoned Action to measure behavioral intention of healthcare providers (HCPs) to provide the IUD.

Research Questions

For the purposes of this study, the following three research questions were posed:

1). What level of knowledge do clinical services providers have about the intrauterine device (IUD)?

2). What is the relationship among clinical services providers' knowledge, attitudes, subjective norms, and behavioral intention in regards to providing the intrauterine device (IUD)?

3). How much variation in clinical services providers' behavioral intention to provide the intrauterine device (IUD) can be accounted for by knowledge, attitudes, and social norms?

Census Demographics

Participants for the study included members of the National Association of Nurse Practitioners in Women's Health (NPWH), who were recruited via a membership email listserv.

A total of 734 participants initiated the survey. A total of 39 surveys (5.31%) were rejected due to missing data. A survey was deemed incomplete if more than 5% of the data were missing and/or more than 2 scales were missing. The remaining 695 surveys (94.67%) composed the total number of participants for the study (N = 695).

Out of those who responded (n = 604), 100% were female. In regards to membership category, the great majority (93.33%, n = 561) were active members. Student members composed 5.20% of participants (n = 31). Five (0.80%) held retired memberships. Two (0.80%) held discount memberships, and a final 2 (0.80%) were supporting members.

Out of the 596 (85.75%) responses, the mean age was 48.78 years, with a minimum of 23.00 years and a maximum of 75.00 years. The standard deviation was 10.79, with a variance of 116.41. Out of the 610 (87.77%) responses, the mean years of practice was 13.82 years, with a minimum of 0.00 years and a maximum of 43.00 years. The standard deviation was 9.54, with a variance of 91.01. Possibly due to student participants, 17 (2.45%) had zero years of experience, while 48 (6.91%) reported one year or less of experience. On the other hand, 167 (24.03%) reported 20 or more years of experience. Table 11 summarizes frequency data for gender, membership category, age, and years of practice.

The most frequently reported state of practice was tied between Pennsylvania (PA) and Texas (TX) (n = 42, 6.04%), followed by Illinois (IL) (n = 36, 5.18%), California (CA) (n = 34, 4.89%), and New York (n = 26, 3.76%). Dividing the state of practice into geographic regions of the United States, the most populous area was New England (n = 117, 16.83%), followed by the Upper Midwest (n= 100, 14.39%), South Central and Intermountain West (each with n= 75, 10.79%), West Coast (n = 65, 9.35%), Great Plains (n = 63, 9.07%), Southeast (n = 56, 8.06%), and Mid-Atlantic (n = 45, 6.48%). Nine (1.30%) participants reported practicing in more than

one state, including PA, NJ, and NY; MN and ND; TX and NM; WA and MI; NH and VT; OR and WA, IL and WI; and one response of simply "multiple." Four (0.58%) participants' responses fell in the "other" category, and included two (0.29%) from Ontario Canada, U.S. Air Force, and St. John Virgin Islands. Finally, one participant (0.14%) reported "not currently practicing."

The most frequently reported professional title was nurse practitioner (NP) (n = 483, 69.50%), followed by family nurse practitioner (FNP) (n = 21, 5.90%), and certified nurse midwife (CNM) (n = 27, 3.88%). The majority of the participants (n = 566, 81.44%) were either nurse practitioners, certified nurse midwives, or both. Seventeen participants (2.45%) reported being students of a nurse practitioner program. Six participants' reported professional titles fell into the "other" category, and included registered nurses (RN), director of a kids' health program, and a manager of a women's health program. Eight participants (1.15%) of participants reported a professional title affiliated with an educational setting (assistant clinical professor, assistant professor, associate professor, clinical instructor, and instructor). Tables 12 and 13 summarize the demographics of professional title and state of practice, respectively.

Table 11
Demographics of Study Participants (N = 695)

Demographic Variable	Frequency (n)	Percentage* (%)
Gender		
Male	0	0.00
Female	604	100.00
Membership type		
Active	561	93.30
Associate	0	0.00
Discount	2	0.30
Retired	5	0.80
Student	31	5.10

Membership Type	Frequency (n)	Percentage* (%)
Supporting	2	0.30
23	1	0.14
24	6	0.86
25	4	0.58
26	4	0.58
27	4	0.58
28	7	1.01
29	14	2.01
30	5	0.72
31	7	1.01
32	11	1.58
33	10	1.44
34	18	2.59
35	6	0.86
36	9	1.30
37	9	1.30
38	11	1.58
39	9	1.30
40	11	1.58
41	7	1.01
42	8	1.15
43	11	1.58
44	7	1.01
45	15	2.16
46	14	2.01
47	20	2.88
48	17	2.45
49	21	3.02
50	23	3.31
51	20	2.88
52	26	3.74
53	20	2.88
54	28	4.03
55	26	3.47
56	22	3.17
57	26	3.74
58	32	4.60
59	16	2.30
60	24	3.45
61	12	1.73
62	18	2.59
63	12	1.73
64	8	1.15
65	6	0.86
Age	**Frequency (n)**	**Percentage* (%)**
66	3	0.43

67	3	0.43
70	1	0.14
71	2	0.29
72	1	0.14
75	1	0.14
Years of Practice		
0.00	17	2.45
0.50	5	0.72
0.75	1	0.14
1.00	25	3.60
1.50	6	0.86
2.00	18	2.59
2.50	2	0.29
3.00	23	3.31
3.50	1	0.14
4.00	21	3.02
4.50	3	0.43
5.00	23	3.31
6.00	12	1.73
7.00	23	3.31
8.00	23	3.31
9.00	18	2.59
10.00	37	5.32
11.00	16	2.30
12.00	27	3.89
13.00	22	3.17
14.00	24	3.45
15.00	34	4.89
16.00	20	2.88
17.00	14	2.01
18.00	18	2.59
19.00	10	1.44
20.00	35	5.04
21.00	8	1.15
22.00	7	1.01
23.00	9	1.30
24.00	9	1.30
24.50	1	0.14
25.00	24	3.45
26.00	3	0.43
27.00	6	0.86
28.00	9	1.30
29.00	3	0.43
Years in Practice	**Frequency (n)**	**Percentage* (%)**
30.00	18	2.59
31.00	1	0.14
32.00	7	1.01
33.00	6	0.86

34.00	6	0.86
35.00	6	0.86
37.00	2	0.29
40.00	5	0.72
42.00	1	0.14
43.00	1	0.14

*Percentages not equaling 100% indicate missing data; gender (n = 604), membership category (n = 601), age (n = 596), years in practice (n = 610)

Table 12

Professional Titles of Study Participants (N = 695)

Professional Title	Frequency (n)	Percentage (%)
Assistant Clinical Professor	1	0.14
Assistant Professor	2	0.29
Associate Professor	3	0.43
Captain	1	0.41
Certified Nurse Practitioner	1	0.14
Certified Nurse Midwife (CNM)	27	3.88
Clinical Instructor	1	0.14
Clinician	1	0.14
Coordinator	1	0.14
Director	1	0.14
Director, Women's Health	1	0.14
Family Nurse Practitioner	41	5.9
Instructor	1	0.14
Medical Director	1	0.14
Nurse Practitioner (NP)	483	69.5
Student - Nurse Practitioner	17	2.45
Nursing Consultant	1	0.14
Physician	1	0.14
Regional Nurse Consultant	1	0.14
Women’s’ Health Care Nurse Practitioner	3	0.43
Other	6	0.86
Both CNM and NP	15	2.16
Total	610	87.99

Table 13

State of Practice of Study Participants (N = 695)

State	Frequency (n)	Percentage (%)
Alaska (AK)	5	0.72
Alabama (AL)	3	0.43
Arkansas (AR)	4	0.58
Arizona (AZ)	15	2.16
California (CA)	34	4.89
Colorado (CO)	24	3.45
Connecticut (CT)	10	1.49
Delaware (DE)	2	0.29
Florida (FL)	25	3.6
Georgia (GA)	12	1.73
Hawaii (HI)	2	0.29
Iowa (IA)	8	1.15
Idaho (ID)	2	0.29
Illinois (IL)	36	5.18
Indiana (IN)	17	2.45
Kansas (KS)	6	0.86
Kentucky (KT)	3	0.43
Louisiana (LA)	7	1.01
Massachusetts (MA)	24	3.45
Maryland (MD)	7	1.01
Maine (ME)	2	0.29
Michigan (MI)	15	2.16
Minnesota (MN)	15	2.16
Missouri (MO)	18	2.59
Mississippi (MS)	2	0.29
Montana (MT)	4	0.58
North Carolina (NC)	16	2.3
North Dakota (ND)	5	0.72
Nebraska (NE)	6	0.86
New Hampshire (NH)	4	0.58
New Jersey (NJ)	17	2.45
New Mexico (NM)	7	1.01
Nevada (NV)	10	1.49
New York (NY)	26	3.76
Ohio (OH)	17	2.45
Oklahoma (OK)	1	0.14
Oregon (OR)	6	0.86
State	**Frequency (n)**	**Percentage* (%)**
Pennsylvania (PA)	42	6.04

Rhode Island (RI)	1	0.14
South Carolina (SC)	3	0.43
South Dakota (SD)	4	0.58
Tennessee (TN)	14	2.01
Texas (TX)	42	6.04
Utah (UT)	9	1.3
Virginia (VA)	19	2.73
Vermont (VT)	4	0.58
Washington (WA)	18	2.59
Wisconsin (WI)	15	2.16
West Virginia (WV)	4	0.58
Wyoming (WY)	4	0.58
More than one state	9	1.3
Other	4	0.58
Not currently practicing	1	0.14
Total	610	87.93
Missing	85	12.23

Comparison to NPWH Demographics

"If there are demographics or other relevant data available on the population from which the sample was taken, comparisons between respondents and the parent population may be made," (McDermott and Sarvela, 1999). Although this study used a census, the reasoning presented by McDermott and Sarvela (1999) applies to those who participated in this study. Tables 14 and compare the demographic findings from this study with those on record at the NPWH.

Table 14
Comparison of Demographics from Study and NPWH Data: Professional Title

Professional Title	**NPWH Membership Demographic Data**		**Current Study Demographic Data**	
	Frequency (n)	**Percentage (%)***	**Frequency (n)**	**Percentage (%)**
Assistant Clinical Professor	11	4.52	1	0.14
Assistant Professor	7	2.90	2	0.29

Associate Professor	6	2.87	3	0.43
Captain	1	0.41	1	0.41
Certified Nurse Practitioner	1	0.41	1	0.14
Certified Nurse Midwife (CNM)	27	11.07	27	3.88
Clinical Instructor	2	0.82	1	0.14
Clinician	3	1.23	1	0.14
Coordinator	2	0.82	1	0.14
Director	3	1.23	1	0.14
Director Women's Health	1	0.41	1	0.14
Family Nurse Practitioner (FNP)	6	2.46	41	5.90
Instructor	1	0.41	1	0.14
Medical Director	1	0.41	1	0.14
Nurse Practitioner (NP)	96	39.34	483	69.50
Nurse Practitioner Student	1	0.41	17	2.45
Nurse Consultant	1	0.41	1	0.14
Physician	1	0.41	1	0.14
Public Health Nurse Consultant	1	0.41	1	0.14
Women's Health Care Nurse Practitioner	20	0.82	3	0.43
**Other	-	-	6	0.86
**Both CNM and NP	-	-	15	2.16
Total	192	71.77	610	87.99†

*Only professional titles that correspond with study findings are included in this table
**Categories exclusive to actual study data
†Percentages not equaling 100% indicate missing data

Table 15

Comparison of Demographics from Study and NPWH Data: State of Practice

State of Practice				
	NPWH Membership Demographic Data		**Current Study Demographic Data**	
	Frequency (n)	**Percentage (%)**	**Frequency (n)**	**Percentage (%)**
Alaska (AK)	15	0.63	5	0.72
Alabama (AL)	28	0.99	3	0.43
Arkansas (AR)	17	0.71	4	0.58
Arizona (AZ)	40	1.68	15	2.16
California (CA)	165	6.91	34	4.89
Colorado (CO)	58	2.43	24	3.45
Connecticut (CT)	38	1.59	10	1.49
Delaware (DE)	13	0.54	2	0.29
Florida (FL)	120	5.03	25	3.60
Georgia (GA)	75	3.14	12	1.73
Hawaii (HI)	8	0.34	2	0.29

Iowa (IA)	28	1.17	8	1.15
Idaho (ID)	14	0.59	2	0.29
Illinois (IL)	102	4.27	36	5.18
Indiana (IN)	68	2.85	17	2.45
Kansas (KS)	13	0.54	6	0.86
Kentucky (KT)	18	0.75	3	0.43
Louisiana (LA)	32	1.34	7	1.01
Massachusetts (MA)	93	4.02	24	3.45
Maryland (MD)	44	1.84	7	1.01
Maine (ME)	21	0.88	2	0.29
Michigan (MI)	73	3.06	15	2.16
Minnesota (MN)	56	2.34	15	2.16
Missouri (MO)	64	2.68	18	2.59
Mississippi (MS)	5	0.21	2	0.29
Montana (MT)	16	0.67	4	0.58
North Carolina (NC)	61	2.55	16	2.30
North Dakota (ND)	12	0.50	5	0.72
Nebraska (NE)	18	0.75	6	0.86
New Hampshire (NH)	17	0.71	4	0.58
New Jersey (NJ)	80	3.35	17	2.45
New Mexico (NM)	30	1.26	7	1.01
Nevada (NV)	21	0.88	10	1.49
New York (NY)	149	6.24	26	3.76
State of Practice				
Ohio (OH)	80	3.35	17	2.45
Oklahoma (OK)	15	0.63	1	0.14
Oregon (OR)	25	1.05	6	0.86
Pennsylvania (PA)	140	5.86	42	6.04
Rhode Island (RI)	12	0.50	1	0.14
South Carolina (SC)	16	0.67	3	0.43
South Dakota (SD)	9	0.38	4	0.58
Tennessee (TN)	68	2.85	14	2.01
Texas (TX)	144	6.03	42	6.04
Utah (UT)	23	0.96	9	1.30
Virginia (VA)	68	2.85	19	2.73
Vermont (VT)	9	0.38	4	0.58
Washington (WA)	71	2.97	18	2.59
Wisconsin (WI)	54	2.39	15	2.16
West Virginia (WV)	16	0.67	4	0.58
Wyoming (WY)	6	0.25	4	0.58
Washington DC*	6	0.25		
Canada/Foreign*	14	0.59		
More than one state**			9	1.3

Other**	4	0.58
Not currently practicing**	1	0.14
Total	610	87.93†

*Categories exclusive to NPWH data
**Categories exclusive to current study data
† Percentages not equaling 100% indicate missing data

Examination of Research Questions

A Note about Family Wise Error Rate (FWER)

Family Wise Error Rate (FWER) is defined by Gordon (2007), as the probability of rejecting at least one true hypothesis. According to Holm (1979) controlling FWER can be done by dividing the a priori established alpha (for this study $\alpha = 0.50$), by the number of comparisons made (c); therefore, ($\alpha' = \alpha/c$). The α for this study, was adjusted according to the number of comparisons made for each correlation and regression model. The more comparisons made, the smaller the desired level of significance (*p*). FWER is done to control the possibility of Type II error occurrence.

1). What level of knowledge do clinical services providers have about the intrauterine device (IUD)?

The mean score for all knowledge items was 23.45 out of 29.00 (80.86%). One respondent had a total correct score of 0.00 (0.00%), and 3 (0.40%) respondents scored a 29.00 (100.00%). The mean score for Question 1 was 0.86 out of 1.00 (86.00%), and the mean score for Question 6 was 0.44 out of 1.00 (44.00%), making it the knowledge item with the lowest mean score. The mean score for Question 2 was 5.12 out of 7.00 (73.14%), with 52 (7.50%) respondents earning a score of 0.00, and 85 (12.20%) of respondents getting a score of 7.00 (100.00%). The mean score for Question 3 was 5.94 out of 7.00 (84.86%), with 40 (5.80%) respondents receiving a score of 0 (0.00%), and a total of 283 (40.70%) respondents getting a

score of 7.00 (100.00%). The mean score for Question 4 was 6.25 out of 7.00 (89.29%), with 15 (2.20%) of respondents earning a score of 0.00 (0.00%), and 417 (60.00%) receiving a score of 7.00 (100.00%). The mean score for Question 5 was 4.86 (81.00%), with 40 (5.80%) respondents receiving a score of 0.00 (0.00%), and 155 (22.3%) respondents receiving a score of 6.00 out of 6.00 (100.00%). Tables 16 through 31 summarize the descriptive statistics for knowledge items and scales. Overall, the total knowledge score among all participants was approximately 80%, a B- average.

The majority (n = 577, 82.90%) of respondents scored correctly on knowledge Question 1, which asked if the IUD increased a woman's chance of pelvic inflammatory disease (PID) regardless of her history of sexually transmitted diseases (STD). Question 6 asked respondents about the association between ectopic pregnancy and the IUD. The distribution of responses for question 6 was nearly equally divided between correct and incorrect responses. Of all respondents, 378 (54.3%) responded incorrectly to the question, while 296 (42.5%) responded correctly.

Knowledge Questions 2 through 5 had multiple correct answers. Therefore, results were reviewed for each option, individually, as well as summed across each question. For knowledge Question 2, most respondents (n = 670, 96.30%) knew post-abortal endometritis within the past 3 months is considered a contraindication to IUD use according to the World Health Organization's (WHO) Medical Eligibility Criteria (MEC). Three hundred and thirty five (48.10%) correctly recognized Wilson's Disease as a contraindication to IUD use according to the WHO MEC. Only 156 (22.40%) correctly recalled Acute Liver Disease to be a contraindication to IUD use according to the WHO MEC. On the other hand, 91 (13.10%) of respondents incorrectly chose nulliparity as a contraindication to IUD use, while 62 (8.80%)

respondents incorrectly chose multiparity as a contraindications to IUD use. A total of 61 (8.80%) of respondents selected the "all of the above" option, while another 61 (8.80%) of respondents chose the "I don't know" option. Overall, most participants were aware of post-abortal endometritis as a contraindications for IUD use, but over two-thirds did not correctly recognize acute liver disease as a contraindication to IUD use (LNG-IUS, specifically), and over half were unaware that women with Wilson's disease are contraindicated for IUD use. In addition, a few participants incorrectly perceive parity as a condition that determines candidacy for IUD use.

Knowledge Questions 3 and 4 inquired about potential side effects of ParaGard® and Mirena® use, respectively. The most frequent correctly recognized possible side effect for ParaGard® was increased cramping (n = 576, 82.50%), followed by heavier periods (n = 500, 86.10%), and pain/discomfort (318, 45.70%). On the other hand 356 (51.10%) respondents failed to identify pain/discomfort as a potential side effect of ParaGard®. In addition, 41 (5.90%) respondents chose the "none of the above" option, while another 44 (6.30%) respondents stated "I don't know." Overall, most participants correctly recognized two of the three potential side effects of TCu380A use. Less than one-half of participants, however, did not correctly recognize pain/discomfort as a possible side effect of the device.

The majority (n = 653, 93.70%) of respondents correctly identified changes in menstrual bleeding as a possible side effect of Mirena®. This option was the only correct choice for knowledge Question 4, but 169 (24.30%) incorrectly identified weight gain and 164 (23.60%) incorrectly identified irritability as possible side effects of the LNG-IUS. In addition, 16 (2.30%) respondents chose the "none of the above" option, while another 16 (2.30%) stated "I don't

know." The mean for the summed items of knowledge Question 4, however, was the highest (μ = 6.25 [89.29%]; σ^2 = 1.72).

Knowledge Question 5 asked participants to select one or more of the best theoretical understandings regarding the mechanism of action for the TCu380A (ParaGard®). A total of 474 (68.10%) respondents selected "prevents fertilization of an egg," making it the most frequently reported correct response. The second correct response, "prevents the attachment of a fertilized egg", was correctly chosen by 358 (54.40%) respondents. A total of 316 (45.40%) respondents, however, did not chose the "attachment" option, while 210 (28.90%) did not chose the "prevents fertilization" option. A total of 40 (5.70%) each chose the "none of the above" and the "I don't know" options. Overall, the possible IUD mechanism of action to prevent fertilization was not correctly recognized by approximately half of participants. Even fewer participants correctly recognized the possibility of an IUD preventing attachment of a fertilized egg.

Table 16

Frequencies and Percentages for Question 1: An IUD increases a woman's chance of PID regardless of her history of STDs. (n = 695)

	Frequency (n)	Percentage (%)**
Incorrect*	97	13.90
Correct*	577	82.90

*Incorrect responses included "true" and "I don't know." Correct response included "false"
** Percentages not equaling 100 indicate missing data

Table 17

Frequencies and Percentages for Question 2: Based on the World Health Organization's Medical Eligibility (MEC) guidelines, which of the following would be contraindications to IUD use (n = 695)

Choices	Frequency (n) Incorrect	Percentage (%) Incorrect	Frequency (n) Correct	Percentage(%) Correct
a Nulliparity	91	13.10	579	83.20
b Wilson's Disease	335	48.10	335	48.10
c Acute Liver Disease	514	73.90	156	22.40
d Post-abortal Endometritis in the past 3 months	138	19.80	670	96.30
e Multiparity	62	8.90	608	87.40
f All of the above	61	8.80	609	87.50
g I don't know	61	8.80	609	87.50

Note. Incorrect responses are listed first because they were listed first in SPSS output
* Percentages not equaling 100 indicate missing data

Table 18

Frequencies and Percentages for Question 3: Which of the following are potential side effects of ParaGard (TCu380A) (select all that apply)? (n = 695)

Choices	Frequency (n) Incorrect	Percentage (%) Incorrect	Frequency (n) Correct	Percentage(%) Correct
a Weight gain	44	6.30	630	90.50
b Heavier periods	75	10.80	500	86.10
c Irritability	54	7.80	620	89.10
d Increased cramping	100	14.40	574	82.50
e Pain/discomfort	356	51.10	318	45.70
f None of the above	41	5.90	633	90.90
g I don't know	44	6.30	630	90.50

Note. Incorrect responses are listed first because they were listed first in SPSS output
* Percentages not equaling 100 indicate missing data

Table 19

Frequencies and Percentages for Question 4: Which of the following are potential side effects of Mirena (LNG-IUS) (select all that apply)? (n = 695)

Choices	Frequency (n) Incorrect	Percentage (%) Incorrect	Frequency (n) Correct	Percentage(%) Correct
a Weight gain	169	24.30	506	72.70
b Irritability	164	23.60	511	73.40
c Heavier periods	56	8.00	619	88.90
d Changes in menstrual bleeding	23	3.30	652	93.70
e Longer menstrual periods	63	9.10	612	87.90
f None of the above	16	2.30	659	94.70
g I don't know	16	2.30	659	94.70

Note. Incorrect responses are listed first because they were listed first in SPSS output
* Percentages not equaling 100 indicate missing data

Table 20

Frequencies and Percentages for Question 5: Which of the following are the best theoretical understandings of the mechanism of action for the ParaGard (select all that apply)? (n = 695)

Choices	Frequency (n) Incorrect	Percentage (%) Incorrect	Frequency (n) Correct	Percentage(%) Correct
a Delays ovulation	76	10.90	599	86.10
b Prevents fertilization of an egg	201	28.90	474	68.10
c Prevents attachment of fertilized egg	316	45.40	358	54.40
d Causes expulsion of fertilized egg	94	13.50	581	83.50
e None of the above	40	5.70	634	91.10
g I don't know	40	5.70	635	91.50

Note. Incorrect responses are listed first because they were listed first in SPSS output
* Percentages not equaling 100 indicate missing data

Table 21

Frequencies and Percentages for Question 6: The IUD Increases a Woman's Chance of Ectopic Pregnancy (n = 695)

	Frequency (n)	Percentage (%)**
Incorrect*	378	54.30
Correct*	296	42.50

Note. Incorrect responses are listed first because they were listed first in SPSS output
*Incorrect responses included "true" and "I don't know." Correct response included "false"
** Percentages not equaling 100 indicate missing data

Table 22

Frequencies and Percentages for Question 2: Summed Scores (n = 695)

Summed Scores	Frequency (n)	Percentage* (%)
0.00	52	7.50
1.00	1	0.10
2.00	2	0.30
3.00	6	0.90
4.00	24	3.40
5.00	286	41.10
6.00	214	30.70
7.00	85	12.20
Total	670	96.30

* Percentages not equaling 100 indicate missing data

Table 23

Frequencies and Percentages for Question 3: Summed Scores (n = 695)

Summed Scores	Frequency (n)	Percentage* (%)
0.00	40	5.80
1.00	1	0.10
4.00	4	0.60
5.00	70	10.10
6.00	276	39.70
7.00	283	40.70
Total	674	96.00

* Percentages not equaling 100 indicate missing data

Table 24

Frequencies and Percentages for Question 4: Summed Scores (n = 695)

Summed Scores	Frequency (n)	Percentage* (%)
0.00	15	2.20
1.00	1	0.10
3.00	6	0.90
4.00	14	2.00
5.00	108	15.50
6.00	114	16.40
7.00	417	60.00
Total	675	97.10

* Percentages not equaling 100 indicate missing data

Table 25

Frequencies and Percentages for Question 5: Summed Scores (n = 695)

Summed Scores	Frequency (n)	Percentage* (%)
0.00	15	2.20
3.00	6	0.90
4.00	36	5.20
5.00	435	62.50
6.00	153	22.00
Total	674	96.80

* Percentages not equaling 100 indicate missing data

Table 26

Frequencies and Percentages for All Knowledge Items: Summed Scores (n = 695)

Summed Scores	Frequency (n)	Percentage* (%)
0.00	1	0.10
5.00	1	0.10
7.00	4	0.60
8.00	1	0.10
10.00	1	0.10
11.00	1	0.10
12.00	4	0.60
13.00	4	0.60
14.00	3	0.40
15.00	3	0.40
16.00	6	0.90
17.00	6	0.90
18.00	18	2.60
19.00	37	5.30
20.00	25	3.60
21.00	23	3.30
22.00	22	3.20
23.00	67	9.60
24.00	120	17.30
25.00	122	17.60
26.00	119	17.10
27.00	46	6.60
28.00	22	3.20

Table 26 (*continued*)

29.00	3	0.40
Total	659	94.80

* Percentages not equaling 100 indicate missing data

Table 27

Descriptive Statistics for Knowledge Items (n = 695)

	Frequency (n)	Minimum Score	Maximum Score**	Mean Score	Mean Score Percentage (%)	Std. Deviation	Variance
Question 1	674	0.00	1.00	0.86	86.00	0.35	0.12
Question 2*	670	0.00	7.00	5.12	73.14	1.70	2.89
Question 3*	674	0.00	7.00	5.94	84.86	1.65	2.72
Question 4*	675	0.00	7.00	6.25	89.29	1.31	1.72
Question 5*	674	0.00	6.00	4.86	81.00	1.34	1.80
Question 6	674	0.00	1.00	0.44	44.00	0.50	0.25
All Questions	659	0.00	29.00	23.45	80.86	3.61	13.03

*Indicates summed responses
**Total points possible for Question 1 = 3; Question 2 = 7; Question 3 = 7; Question 4 = 7; Question 5 = 6; Question 6 = 3. Total points possible for all questions = 29

Table 28

Descriptive Statistics for Knowledge Items: Question 2

	Frequency (n)	Minimum Score	Maximum Score	Mean Score	Std. Deviation	Variance
Nulliparity	670	0.00	1.00	0.86	0.34	0.12
Wilson's Disease	670	0.00	1.00	0.50	0.50	0.25
Acute Liver Disease	670	0.00	1.00	0.91	0.29	0.08
Post-abortal endometritis	670	0.00	1.00	0.79	0.40	0.16
Multiparity	670	0.00	1.00	0.91	0.29	0.08
All of the above	670	0.00	1.00	0.91	0.29	0.08

Table 28 (*continued*)

I don't know	670	0.00	1.00	0.91	0.29	0.08

Table 29

Descriptive Statistics for Knowledge Items: Question 3

	Frequency (n)	Minimum Score	Maximum Score	Mean Score	Std. Deviation	Variance
Weight gain	674	0.00	1.00	0.93	0.25	0.06
Heavier periods	674	0.00	1.00	0.89	0.31	0.10
Irritability	674	0.00	1.00	0.92	0.27	0.07
Increased cramping	674	0.00	1.00	0.85	0.36	0.13
Pain/discomfort	674	0.00	1.00	0.47	0.50	0.25
None of the above	674	0.00	1.00	0.93	0.24	0.06
I don't know	674	0.00	1.00	0.93	0.25	0.06

Table 30

Descriptive Statistics for Knowledge Items: Question 4

	Frequency (n)	Minimum Score	Maximum Score	Mean Score	Std. Deviation	Variance
Weight gain	675	0.00	1.00	0.75	0.43	0.19
Irritability	675	0.00	1.00	0.76	0.43	0.19
Heavier periods	675	0.00	1.00	0.92	0.28	0.08
Changes in menstrual bleeding	675	0.00	1.00	0.97	0.18	0.03
Longer menstrual periods	675	0.00	1.00	0.91	0.29	0.08
None of the above	675	0.00	1.00	0.98	0.15	0.02
I don't know	675	0.00	1.00	0.98	0.15	0.02

Table 31

Descriptive Statistics for Knowledge Items: Question 5

	Frequency (n)	Minimum Score	Maximum Score	Mean Score	Std. Deviation	Variance
Delays ovulation	675	0.00	1.00	0.89	0.32	0.10
Prevents fertilization of an egg	675	0.00	1.00	0.70	0.46	0.21
Prevents attachment of a fertilized egg	675	0.00	1.00	0.53	0.50	0.25
Causes expulsion of a fertilized egg	675	0.00	1.00	0.86	0.35	0.12
None of the above	675	0.00	1.00	0.94	0.24	0.06
I don't know	675	0.00	1.00	0.94	0.24	0.06

2). What is the relationship among clinical services providers' knowledge, attitudes, subjective norms, and behavioral intention in regards to providing the intrauterine device (IUD)?

Correlations were run to first identify any statistically significant relationships for the direct attitude and direct subjective norms with behavioral intention to provide the IUD. Statistically significant correlations were found between both direct measures (attitudes and subjective norms) and behavioral intention ($r(693) = .52$, $p = .00$ and $r(693) = .44$, $p = .00$, respectively). Therefore, stepwise correlations were computed to explore statistically significant relationships among indirect measures of behavioral beliefs, evaluation of outcomes (of each behavioral belief), normative beliefs, and motivation to comply. All indirect measures had positive correlations to behavioral intention, with behavioral beliefs having the strongest positive correlation ($r(693) = .51$, $p = .00$). Therefore, each item under the indirect scales (behavioral beliefs, evaluation of outcomes, normative beliefs, and motivation to comply) were correlated to behavioral intention. Weak positive correlations were found to be statistically significant at $p < .001$.

Knowledge scores were found to have a weak positive correlation to behavioral intention to provide the IUD ($r(657) = .20$, $\rho = .00$). Individual knowledge scores all had weak positive correlations to behavioral intention, with the exception of Question 5, which asked the best theoretical understanding of the mechanism of action of the IUD ($r(657) = .06$, $p = .14$). Tables 32 through 38 summarize all correlations. In addition, Appendix K includes all descriptive statistics, including measures of central tendency and dispersion for theory of reasoned action construct scales.

Table 32

Pearson Product Moment Correlations(r) Between Theory of Reasoned Action Constructs and Knowledge Items

	Behavioral Intention	Indirect Attitude	Indirect S.N.	Direct Attitude	Direct S.N.	Knowledge
Behavioral Intention	1	.438*	.494*	.516*	.441*	.204*
Indirect Attitude	.438*	1	.385*	.423*	.295*	.177*
Indirect S.N.	.494*	.385*	1	.427*	.590*	.290*
Direct Attitude	.516*	.423*	.427*	1	.377*	.181*
Direct S.N.	.441*	.295*	.590*	.377*	1	.186*
Knowledge	.206*	.177*	.209*	.181*	.186*	1

Note. Subjective norms = S.N.
*p< .01

Table 33

Pearson Product Moment Correlations(r) Between Behavioral Beliefs, Evaluation of Outcomes, Normative Beliefs, Motivation to Comply, and Behavioral Intention.

	Behavioral Intention	Behavioral Beliefs	Evaluation of Outcomes	Normative Beliefs	Motivation to Comply
Behavioral Intention	1	.507*	.387*	.499*	.406*
Behavioral Beliefs	.507*	1	.611*	.367*	.293*
Evaluation of Outcomes.	.387*	.611*	1	.321*	.293*
Normative Beliefs	.499*	.367*	.321*	1	.430*
Motivation to Comply	.406*	.293*	.239*	.430*	1

*p< .01

Table 34

Pearson Product Moment Correlations(r) Between Behavioral Belief Items and Behavioral Intention

	Behavioral Intention	Enhances reproductive options	Reduces # unintended pregnancies	Increases chance of litigation	Takes too much time in clinic
Behavioral Intention	1	.279*	.274 *	.188*	.203*
Enhances reproductive options	.279*	1	.834*	.063	.071
Reduces # unintended pregnancies	.274*	.834*	1	.066	.107*
Increases chance of litigation	.188*	.063	.066	1	.217*
Takes too much time in clinic	.203*	.071	.107*	.217*	1

Note. Item phrasing abbreviated for space purposes
*p< .01

Table 34 (*continued*)

	Behavioral Intention	Poses risks for nulliparous	Causes an abortion	Is safe for nulliparous	Causes PID	Encourages unprotected sex
Behavioral Intention	1	.378*	.236 *	.344*	.286*	.247*
Poses risks for nulliparous	.387*	1	.199*	.296*	.338*	.278*
Causes an abortion	.236*	.199*	1	.112*	.214*	.236*
Is safe for nulliparous	.344*	.296*	.112*	1	.153*	.178*
Causes PID	.286*	.338*	.214*	.153*	1	.361*
Encourages unprotected sex	.247*	.278*	.236*	.178*	.361*	1

Note. Item phrasing abbreviated for space purposes
Note. Pelvic inflammatory disease = PID
*p< .01

Table 35

Pearson Product Moment Correlations(r) Between Evaluation of Outcome Items and Behavioral Intention

	Behavioral Intention	Enhances reproductive options is good result of IUDs	Reduces # unintended pregnancies is good result of IUDs	Increases chance of litigation is bas result of IUDs	Takes too much time in clinic is bad result of IUDs
Behavioral Intention	1	.435*	.365 *	.182*	.191*
Enhances reproductive options is good result of IUDs	.435*	1	.701*	.099*	.202*
Reduces # unintended Pregnancies is good result of IUDs	.365*	.701*	1	.048	.145*
Increases chance of litigation is bad result of IUDs	.182*	.099*	.048	1	.546*
Takes too much time in clinic is bad result of IUDs	.191*	.202*	.145*	.546*	1

Note. Item phrasing abbreviated for space purposes
*p< .01

Table 35 (*continued*)

	Behavioral Intention	Poses risks for nulliparous is bad result of IUDs	Causes an abortion is bad result of IUDs	Risking safety of nulliparous is bad result of IUDs	Cauing PID is bad result of IUDs	Encouraging unprotected sex is bad result of IUDs
Behavioral Intention	1	.336*	.281*	.335*	.304*	.282*
Poses risks for nulliparous is bad result of IUDs	.336*	1	.525*	.782*	.666*	.534*
Causing an abortion is bad result of IUDs	.281*	.525*	1	.606*	.619*	.512*
Risking safety of nulliparous is bad result of IUDs	.335*	.782*	.606*	1	.691*	.576*
Causing PID is bad result of IUDs	.304*	.666*	.619*	.691*	1	.603*
Encouraging unprotected sex is bad result of IUDs	.282*	.534*	.521*	.576*	.603*	1

Note. Item phrasing abbreviated for space purposes; Pelvic inflammatory disease = PID
*p< .01

Table 36

Pearson Product Moment Correlations (r) Between Normative Beliefs and Behavioral Intention

	Behavioral Intention	HCPSs think I should provide IUDs	HCPs think I should not provide IUDs	Professional organizations think I should not provide IUDs	Medical standards recommend I should provide IUDs	Most groups important to me think I should provide IUDs
Behavioral Intention	1	.408*	.312*	.211*	.419*	.472*
HCPs think I should provide IUDs	.408*	1	.635*	.207*	.480*	.627*
HCPs think I should not provide IUDs	.312*	.635*	1	.306*	.382*	.456*
Professional organizations Think I should not provide IUDs	.211*	.207*	.306*	1	.194*	.264*
Medical standards recommend I should provide IUDs	.419*	.480*	.382*	.194*	1	.577*
Most groups important to me Think I should provide IUDs	.472*	.627*	.456*	.264*	.577*	1

Note. Item phrasing abbreviated for space purposes; healthcare provider = HCP
*p< .01

Table 37

Pearson Product Moment Correlations (r) Between Normative Beliefs and Behavioral Intention

	Behavioral Intention	I want to comply with HCPs	I do not want to comply with HCPS	I want to comply with professional organizations	I want to comply with medical standards
Behavioral Intention	1	.275*	.243*	.325*	.403*
I want to comply with HCPs	.275*	1	.547*	.352*	.288*
I do not want to comply with HCPs	.243*	.547*	1	.343*	.304*
I want to comply with professional organizations	.325*	.352*	.343*	1	.624*
I want to comply with medical standards	.405*	.288*	.304*	.624*	1

Note. Item phrasing abbreviated for space purposes; healthcare providers = HCP
*p< .01

Table 38

Pearson Product Moment Correlations (r) Between Knowledge and Behavioral Intention

	Behavioral Intention	IUD causes PID	contra-indications	Side effects ParaGard	Side effects Mirena	Mechanism of action	IUD causes ectopic pregnancy
Behavioral Intention	1	213**	.099*	.114**	.131**	.057	.145**
IUD causes PID	.213**	1	.166**	.011	.052	.091*	.128**
Contraindications	.099*	.166**	1	.138**	.034	.096*	.074
Side effects ParaGard	.114**	.011	.138**	1	.098*	.241**	-.065
Side effects Mirena	.131**	.052	.034	.098*	1	.078*	.031
Mechanism of Action	.057	.091*	.096*	.241**	.078*	1	-.065
IUD causes ectopic pregnancy	.145**	.128**	.074	-.065	.031	-.065	1

Note. Item phrasing abbreviated for space purposes; Pelvic inflammatory disease = PID
*p< .05
**p< .01

3). How much variation in clinical services providers' behavioral intention to provide the intrauterine device (IUD) can be accounted for by knowledge, attitudes, and social norms?

Prior to running regression analyses, Cook's *D* diagnostics were run to assess the potential existence of outliers in the data. According to the Cook's *D* diagnostic results, no outliers in the data were found. Multiple linear regression, through a series of 8 models, was conducted to investigate the best predictors of behavioral intention to provide the IUD. Tables 39 through 47 summarize all regression models.

The first regression was run between *Y*, direct attitudes, direct subjective norms, and knowledge. The R^2 value for the model was .345, meaning 34.5% of the variance in behavioral intention to provide the IUD could be due to direct attitudes, direct subjective norms, and knowledge. An ANOVA showed this variance to be significant at p <.001 ($F(3, 655) = 114.83$; $p = .000$). Both direct attitudes and direct subjective norms showed to be statistically significant

predictors of the variance in behavioral intention. Direct attitudes showed to be a more influential predictor of behavioral intention ($t(658) = 11.62$; $p = .000$), while direct subjective norms was the second most influential predictor of behavioral intention ($t(658) = 7.92$; $p = .000$). Knowledge was not a statistically significant predictor of behavioral intention.

According to the unstandardized regression coefficients, predicted values for behavioral intention would be higher by 1.34 units for every one-unit increase in direct attitudes, and by 1.783 units for every one-unit increase in direct subjective norms. According to the standardized regression coefficients, a one-unit difference (a difference in one standard deviation) in the standardized direct attitudes variable with all other variables held constant will be associated with a difference in behavioral intention of .40 units (and thus a difference in behavioral intention of .40 standard deviations). A one-unit difference in the standardized subjective norms variable with all other variables held constant will be associated with a difference in behavioral intention of .273 units. Both were statistically significant at $p = .000$.

Since the direct measure of attitudes showed to be a statistically significant predictor of behavioral intention, indirect attitude measures of behavioral beliefs and evaluation of outcomes were entered into a second multiple linear regression model. Behavioral beliefs showed to be a statistically significant predictor of behavioral intention ($t(694) = 10.47$; $p = .000$), while evaluation of outcomes only showed statistical significance at a $p = .003$ level (2-tailed). The R^2 value of behavioral beliefs was .266, meaning 26.6% % of the variance in behavioral intention was explained by the behavioral beliefs and evaluation of outcomes measures ($F(2, 694) = 125.63$; $p = .000$).

Behavioral intention was then regressed (regression model number 3) on all individual behavioral belief items. The R^2 value for the model was .278, meaning 27.8% of the variance in

behavioral intention was based on individual behavioral belief items. An ANOVA showed the variance to be statistically significant at $p = .000$ ($F(9, 685) = 29.27$; $p = .000$). The three behavioral beliefs that showed to significantly predict behavioral intention included item 1e ($t(694) = 4.95$; $p = .000$), which stated "(the IUD) poses health risks for my patients who are nulliparous"; 1f ($t(694) = .110$; $p = .001$), which stated "An IUD causes an abortion in women who have conceived"; and 1g ($t(694) = .206$; $p = .000$), which stated "An IUD is safe for nulliparous women."

In addition to individual behavioral beliefs, behavioral intention was regressed on behavioral beliefs weighted by their respective evaluation of outcome (regression 4). The behavioral belief of "An IUD enhances a woman's contraceptive options" weighted by the corresponding evaluation of "Enhancing a woman's contraceptive options is a good result of providing the IUD", was the only statistically significant predictor of behavioral intent at $p < .001$ level. ($t(651) = 3.81$, $p = .000$). The behavioral belief of "(the IUD) causes pelvic inflammatory disease" weighted by the evaluation of outcome statement "Causing pelvic inflammatory disease is a bad result of providing the IUD" was a significant predictor at $p = .003$ level. The R^2 value was .049, meaning 4.9% of variance in behavioral intention is based on this weighted behavioral belief. An ANOVA confirmed this variance to be significant ($F(9, 642) = 26.89$; $p < .001$).

Behavioral intention was also regressed on indirect subjective norm measures (regression 5). Both normative beliefs ($t(694) = 11.23$; $p = .000$) and motivation to comply ($t(694) = 6.65$; $p = .000$) were significant predictors of variance in behavioral intention, with normative beliefs being the more influential predictor. The R^2 values were .294, meaning 29.4% of variance in

behavioral intention was due to normative beliefs and for motivation to comply. An ANOVA confirmed the variance to be significant at $p = .000$ ($F(2, 692)$; $p = .000$).

A regression was run to further explore individual normative beliefs (regression 6). The only normative beliefs that showed to be significant predictors of variance in behavioral intention at the $p = .001$ level included the statement "Medical standards recommend I should provide the IUD" ($t(670) = 4.80$; $p = .000$), and "Most groups important to me think I should provide the IUD" ($t(670) = 5.28$; $p = .000$). The R^2 value was .281, meaning the 28.1% of the variance in behavioral intention was due to normative beliefs, and an ANOVA confirmed this variance to be statistically significant ($F(5, 665)$; $p = .000$).

A regression was run to explore individual motivation to comply statements (regression 7). The only motivation to comply statement found to be a statistically significant predictor at the $p = .000$ level was "I want to comply with current medical standards" ($t(672) = 7.12$, $p = .000$). The R^2 value for the model was .199, meaning 19.9% of the variance was due to motivation to comply items. An ANOVA confirmed this variance to be statistically significant at the $p = .000$ level ($F(4, 668) = 41,62$; $p = .000$).

When weighted with their corresponding motivation to comply statements, two normative beliefs were found to be statistically significant predictors at the $p < .000$ level (regression number 8). "Healthcare providers think I should provide the IUD" weighted by "I want to comply with health care providers" was significant ($t(657) = 4.04$, $p = .000$), as well as "Medical standards think I should provide the IUD" weighted by "I want to comply with medical standards" ($t(667) = 8.38$; $p = .000$). The R^2 value (.278) 27.8% of the variance to be due to normative beliefs weighted by motivation to comply. An ANOVA showed this variance to be statistically significant ($F(4, 653) = 62.99$; $p = .000$).

Finally, behavioral intention was regressed on all statistically significant predictors (regression 9). The R^2 value for the model was .470, meaning 47.0% of the variance in behavioral intention was due to items included in the model. An ANOVA confirmed statistical significance ($F(15, 630) = 37.30$; $p = .000$). The only statistically significant predictor was the direct attitudes measure ($t(645) = 4.45$, $p = .000$).

Table 39

Multiple Linear Regression Analysis Summary for Direct Attitudes, Direct Subjective Norms, and Total Knowledge Scores Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.587	.345	.342	3.43

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	4051.122	3	1350.374	114.83	.000*
Residual	7702.72	655	11.76		
Total	11753.84	658			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
Direct Attitudes	1.36	.40	11.62	.000*
Direct Subjective Norms	1.78	.27	7.92	.000*
Total Knowledge	.10	.08	2.50	.013

*p < .001

Table 40

Multiple Linear Regression Analysis Summary for Direct Attitudes and Direct Subjective Norms Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.516	.266	.264	3.60

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	3253.20	2	1626.60	125.63	.000*
Residual	8959.72	692	12.95		
Total	12212.92	694			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
Behavioral Beliefs	.46	.43	10.47	.000**
Evaluation of Outcomes	.09	.13	3.03	.003*

*p < .005
**p< .001

Table 41

Multiple Linear Regression Analysis Summary for Individual Behavioral Beliefs Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.527	.278	.268	3.59

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	3392.24	9	376.92	29.27	.000*
Residual	8820.68	685	12.88		
Total	12212.92	694			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
Enhances a woman's contraceptive options	.88	.10	1.77	.078
Reducing number of unintended pregnancies	.38	.05	.76	.449
Increases my chance of litigation	.16	.04	1.08	.279
Takes too much time in clinic	.40	.08	2.46	.014
Poses risks for nulliparous	.87	.19	4.95	.000**
Causes an abortion	.43	.11	3.20	.001**
Is safe for nulliparous	.88	.21	5.90	.000**
Causes PID	.61	.10	2.85	.005*
Encourages unprotected sex	.25	.05	1.50	.134

*p < .005
**p< .001

Table 42

Multiple Linear Regression Analysis Summary for Behavioral Beliefs Weighted by Evaluation of Outcomes Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.523	.274	.264	3.63

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	3189.07	9	354.34	26.89	.000*
Residual	8461.14	642	13.18		
Total	11650.21	651			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
Enhances a woman's contraceptive options weighted by enhancing a woman's contraceptive options is a good result of the IUD	.75	.22	3.81	.000**
Reducing number of unintended pregnancies weighted by reducing the number of unintended pregnancies is a good result of the IUD	.49	.14	2.42	.016
Increases my chance of litigation weighted by increasing by chance of litigation is a bad result of providing the IUD	-.00	-.00	-.03	.978
Takes too much time in clinic weighted by taking too much time in clinic is a bad result of providing the IUD	.20	.09	2.17	.031
Poses risks for nulliparous weighted				

by posing health risks for nulliparous is a bad result of providing the IUD.	.22	.09	2.00	.045
Causes an abortion weighted by causing an abortion is a bad result of providing the IUD.	.03	.02	.35	.725
Is safe for nulliparous weighted by risking the safetly of a nulliparous woman is a bad result of providing the IUD.	.21	.10	2.34	.020
Causes PID weighted by causing PID is a bad result of providing the IUD.	.34	.15	2.93	.003*
Encourages unprotected sex weighted by encouraging unprotected sex is a bad result of providing the IUD	-.10	-.04	-.91	.363

*p < .005
**p< .001

Table 43

Multiple Linear Regression Analysis Summary for Normative Beliefs and Motivation to Comply Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.542	.294	.292	3.53

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	3588.84	2	1794.42	143.99	.000*
Residual	8624.08	692	12.46		
Total	12212.92	694			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
Normative Beliefs	.59	.40	11.23	.000*
Motivation to Comply	.57	.02	6.65	.000*

*p< .001

Table 44

Multiple Linear Regression Analysis Summary for Individual Normative Beliefs Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.530	.281	.276	3.57

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	3310.42	5	662.08	52.02	.000*
Residual	8463.15	665	12.73		
Total	11773.56	670			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
HCPs think I should provide the IUD	.80	.14	2.98	.003*
HCPs think I should not provide the IUD	.15	.02	.57	.572
My professional organizations recommend I should not provide the IUD	.32	.07	2.06	.040
Current medical standards recommend I should provide the IUD	.95	.20	4.80	.000**
In general, most people/groups important to me think I should provide the IUD	1.28	.25	5.28	.000**

Note. HCP = Healthcare provider
*p < .005
**p< .001

Table 45

Multiple Linear Regression Analysis Summary for Individual Motivation to Comply Statements Predicting Behavioral Intention (N = 695)

Model Summary			
R	**R^2**	**Adj. R^2**	**SEE**
.447	.199	.195	3.80

Full Regression Model					
Model	**SS**	**df**	**MS**	**F**	**Sig.**
Regression	2400.03	4	600.01	41.62	.000*
Residual	9631.26	668	14.41		
Total	12031.28	672			

Predictor Variables				
Predictor	***B***	**β**	**t-value**	**Sig.**
I want to comply with HCPs	.83	.14	3.18	.002*
I do not want to comply with HCPs	.35	.05	1.24	.216
I want to comply with professional organization recommendations	.48	.06	1.34	.181
I want to comply with current medical standards	2.73	.32	7.12	.000**

Note. HCP = Healthcare provider
*p < .005
**p< .001

Table 46

Multiple Linear Regression Analysis Summary for Normative Beliefs Weighted by Motivation to Comply Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.528	.278	.274	3.59

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	3253.08	4	813.27	62.99	.000*
Residual	8431.63	653	12.91		
Total	11684.71	657			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
HCPs think I should provide the IUD weighted by I want to comply with HCPs	.49	.18	4.04	.000**
HCPs think I should not provide the IUD weighted by I do not want to comply with HCPs	.15	.05	1.22	.225
My professional organizations recommend I should not provide the IUD weighted by I want to comply with professional organization recommendations	.26	.11	3.11	.002*
Current medical standards recommend I should provide the IUD weighted by I want to comply with current medical standards	.82	.33	8.38	.000**

Note. HCP = Healthcare provider
*p < .005

**p< .001

Table 47

Multiple Linear Regression Analysis Summary for Selected Significant Predictors' Influence on Predicting Behavioral Intention (N = 695)

Model Summary

R	R^2	Adj. R^2	SEE
.686	.470	.458	3.12

Full Regression Model

Model	SS	df	MS	F	Sig.
Regression	5451.90	15	363.46	37.30	.000*
Residual	6139.02	630	9.74		
Total	11590.92	645			

Predictor Variables

Predictor	*B*	β	t-value	Sig.
Behavioral Belief: "Poses health risks for…nulliparous…"	.41	.09	2.17	.030
Behavioral Belief: "(the IUD) is safe for nulliparous…"	.44	.10	2.86	.004*
Behavioral Belief: "(the IUD) causes an abortion…"	.15	.04	.97	.332
Normative Belief: "In general, most groups…think I should provide the IUD"	.54	.10	2.04	.042
Normative Belief: "Current medical standards recommend I should	.55	.11	1.12	.260

provide the IUD"				
Motivation to Comply: "I want to comply with current medical standards"	.78	.09	1.61	.108

Table 47 (*continued*)

Direct Subjective Norms	.45	.07	1.71	.088
Direct Attitudes	.57	.17	4.46	.000**
Behavioral Beliefs Scale	.08	.08	1.37	.204
Normative Beliefs Scale	.09	.06	.96	.336
Motivation to Comply Scale	.14	.06	1.05	.293
Normative Belief "HCPs think I should provide the IUD" weighted by "I want to comply with HCPs"	.07	.02	.47	.637
Normative Belief "Current medical standards recommend I should provide the IUD" weighted by "I want to comply with current medical standards"	-.16	-.06	-.55	.580
Behavioral Belief "(the IUD) enhances a woman's contraceptive options" weighted by "enhancing a woman's contraceptive options is a good result of providing the IUD"	.35	.11	2.90	.004*
Behavioral Belief "(the IUD) causes PID" weighted by "Causing PID is a bad result of providing the IUD"	.12	.05	1.54	.125

Note. HCP = Healthcare provider; PID = Pelvic Inflammatory Disease

*p < .005
**p< .001

Exploration of Open-Ended Responses

A total of 227 responses were given to the open-ended item on the instrument. Two hundred three (203) responses were regarding the IUD, while an additional 24 responses

included criticisms of the instrument, specifically. Through the process of content analysis, several categories emerged from the short-answer responses, including 1) general positive comments, 2) concerns and challenges associated with IUDs, 3) behaviors of IUD insertion, 4) costs/accessibility of IUDs, 5) marketing influence, 6) patient counseling, 7) increased provider training/education, 8) perceived candidates for IUDs, and 9) non-contraceptive benefits of IUDs. Table 48 summarizes the total number of responses that fell under each of the nine categories. Coding sheets complete with all short answer responses are found in Appendixes L and M.

Table 48
Frequencies and Percentages of Qualitative Responses by Category (n = 227)

Category	Frequency (n)	Percentage (%)
General positive comments	70	30.40
Concerns/challenges of IUDs	38	12.77
Behaviors of IUD insertion	31	17.62
Criticisms of instrumentation	24	10.57
Costs/accessibility of IUDs	22	9.69
Patient counseling	18	8.37
Perceived candidates for IUDs	15	6.61
Increased provider training/education	4	1.76
Marketing influence	3	1.32
Non-contraceptive benefits of IUDs	2	0.88

In regards to IUD-specific responses, over 30% were positive comments about the device. Specific comments include those reflecting perceptions on the underutilization of the device, such as, “It’s a great method that is very much underutilized in the U.S.”; “I think IUD’s are a very effective and safe form of birth control that needs to be in the main stream…”; It is a great method and should be used by more women”; “Cost effective, long-term contraceptive underutilized in the U.S., unfortunately”; “ I think it is a wonderfully convenient, safe & effective contraceptive that has been demonized by groups w/a political agenda” ; “IUDs are great!! They need to be more available and encouraged in the US”; “The IUD needs to be accepted and promoted. The myths around the IUD need to be clarified and communicated. The IUD needs to be accessible”; “Underutilized method subject to irrational prejudices”; I think the IUD is an amazing contraceptive option for many women. I am happy that my clinic provides this choice for our patients, and am pleased that it seems to be gaining in popularity each year”; I think this is an underprescribed but quite effective method of contraception. There are still some misconceptions about IUD use among women and these need to be addressed…”; “They are a great, underutilized option for appropriate women”; “As you can probably guess, I love IUD’s and am a strong advocate. I have personally used them most of my contraceptive life. They are very misunderstood and maligned. Some population groups embrace the IUD and others are frightened of it”; “Underused and valuable contraceptive”; IUD’s are a very effective, safe method of contraception and I wish more providers in our country would offer them”; “Great product, needs to be readily available”; “Truly underutilized in USA and subject of much misinformation even among healthcare providers.”

Concerns and challenges associated with IUDs were exemplified by statements regarding everything from the Dalkon Shield, religious influence, side effects and early removal,

nulliparity, and placement issues. Challenges of use due to persistent issues regarding the Dalkon Shield came through the responses. One participant stated “Still have concerns because of past problems with Dalkon Shields…” Another participant stated “I think that there are too many biases against the use of this highly effective method of contraception/family planning. The saga of the 1970s persists, that like the Dalkon shield, the side effects outweigh the benefits. Obviously, this is not true and education should diffuse this misinformation.” Another participant stated that use of IUDs is “still somewhat of an uphill battle trying to change attitudes towards IUD method after the fiasco with Dalkon Shield.”

Religious influence emerged from a couple of responses. “The issue of how the IUD or IUS works does pose problems regarding social and religious considerations.” Another participant shared her past professional experience: “I no longer work for this organization, but up until a month ago, I worked within a hospital system that was run by the Catholic church, and we had a lot of difficulty using IUD for contraception. We were able to do it, but had to code it as "dysmenorrhea" or "menorrhagia" rather than contraception. So, religious beliefs also may play a role.”

Several participants stated concerns regarding side effects of both devices, as well as early removal concerns. Some responses dealt with participants’ preferences of the LNG-IUS over the Cu380A: “I don't like the copper IUD because so many women (22-23%) have them removed due to bleeding/cramping”, “I do prefer IUS over CuT380 because of increased bleeding and cramping--statistically 25% of CuT pts will have it removed within 2-3 years. Mirena has much better outcome in my experience”, and “I prefer the Mirena due to the heavier bleeding with the Paraguard, but still have difficulty getting women to agree to any IUD and many doctors are still more negative about them.” Another participant, however, stated her

concern of Mirena's association with ovarian cysts: "Patients either love it or hate it. Those who want it removed usually do so because of ovarian cysts with mirena." Early removal was also a topic mentioned by a few participants. One participant stated, "Bleeding and pain are the two most common reasons for removal." While another participant stated, "Discomfort is the main reason they seem to be removed before their expiration date." One participant stated, "Many women want them removed soon after insertion because of menstrual irregularities even though they are counseled appropriately. Waste of time and expense are the biggest issues when the client opts removal and is very discouraging for all involved". More specifically, some participants had concern with the success rate in nulliparous women. For example, one participant stated, "I still have concerns about offering the IUD/IUS to nulliparous women and teens. I consider insertion to be more difficult and there could be a greater risk for perforation of the uterus". Similarly, another participant said, "I know that the literature says that iud is ok for nulliparous women but frankly I have my doubts based on personal experience." Another participant stated her opinion about physician intention to provide the IUD based on her experience, "There are still a lot of physicians who will not insert IUD's in nullparous women". Another participant does not provide Mirena to nulliparous women on a regular basis, because "…my understanding is that this is an off label use". Finally, a few participants mentioned their placement concerns. One participant who reported being "new at inserting them" stated her "constant fear is perforation of the uterus". Another participant shared her experience with placement issues: "We have seen quite a few peroration of mirena iud when placed less than 8 weeks post partum...also mirena iud tends have a cumbersome insertion....strings get caught up in inserter when removing..and pull iud down on occasion....." Another participant expressed different concerns: :Best thing since sliced bread except for 2 circumstances: stenotic os in

cervix, unable to locate strings on subsequent exam, which necessitates an ultrasound (my population usually has no insurance coverage).” Another participant had concerns about uterus size in younger or nulliparous women, and how that can affect placement success: “My only concern related to providing IUD's to nulliparous women, particularly young teens, relates to whether or not their uterus is an appropriate size to accommodate the IUD. I struggle with whether to put a them through the pain of sounding their uterus only to find it isn't an adequate size. I would prefer to use ultrasound to measure the uterus, but of course this is not always economically feasible. I am experimenting with the use of endocervical and uterine lidocaine instillation as well as use of cytotec to minimize discomfort and thus mitigate this issue”.

IUD insertion and provision behaviors varied slightly among responses. Some participants reported frequently providing the IUD in their clinics: “I insert IUD’s at least once a week and often more often than that”; “I work in underserved clinic in a large city and I put in IUD’s in woman of all ages”; “I have inserted many IUDs and have no problems whatsoever”; “I offer IUD/IUS as a choice in contraception to almost every woman”; “I regularly provide them to nullips”; “I currently place IUD almost daily”; and “I put in hundreds per year…” The latter participant also has “access to both Paragard and Mirena, they are both wonderful options to be able to provide to clients” Other participants, however, reported their preference of one type of IUD over the other: “Haven’t inserted anything but Mirena the past 10 years”; “I am more likely to recommend Mirena than Paragard, especially to younger patients”; and “I recommend Mirena (IUC) or Implanon post-delivery for particularly breastfeeding women for long term estrogen-free, pill-free, worry-free contraception. I find it extremely effective particularly in this population”. Some participants reported referring patients to trained clinicians for IUD insertion: “I provide IUD services in as much as I can refer pts to another NP trained in inserting IUD

within our organization"; "I refer my patients out to a provider who inserts IUDs. I will counsel and refer but I do not place them myself"; and "I have not inserted an iud in about 25 years. so when I say I would provide one, I would provide it by giving a referral to someone who inserts them frequently". Other participants report working at a clinic that does not "provide IUD's as an option". Moreover, one participant reported the following: "In my facility, the doctors do not encourage me to seek experience with insertion of any IUD. They all have determined that this is a MD procedure, mainly because of reimbursement, litigation, and because of the years of experience they have vs the midlevel providers".

In regards to cost and accessibility of the device, several participants expressed frustration of increasing costs of Mirena: "I am strongly opposed to Mirena increasing their price by double. This makes it inaccessible to the people who need it most!!!"; "I think the Mirena IUD is great. However, the company's recent increase in price (approx 40% increase) I think is taking advantage of people."; "My ONLY complaint about the IUD's is that they need to be more affordable for women. If a woman is uninsured and not on a public program then the 'up front' cost is expensive. Our wholesale price of Mirena's just went up to almost $700 per device, and that is the bulk rate. When we add in for the other costs, an IUD can cost upwards of $1500. That is a pretty big price to pay all at once. Yes, I know if you amortize the cost over 5 years, it is less, but this must be paid all at once"; and "I am unhappy with the recent price increase of the Mirena as it is such a good option for perimenopausal women who need cycle control in addition to other candidates seeking contraceptive benefits only." Other participant view the cost as a potential barrier to its use by low-income or uninsured women: "One issue that is a barrier in our small practice is paying for the IUD up front. What is she changes her mind and we now have this piece and have to swallow the cost"; "IUD should be more affordable. Many uninsured or

underserved, who are the ones who need the most, cannot afford them"; "Not enough Medicaid coverage for IUD/IUS"; "I wish they were more readily available to women without healthcare insurance!"; and "cost is too expensive for many who are uninsured". Other participants expressed frustration with reimbursement for the device: "Biggest obstacle in our small private practice is having to purchase IUD's upfront and then try to get reimbursed. Doc stopped buying last week. I'm now going to have to send patients to planned parenthood. If I could write prescription and have patients get them from the pharmacy and bring back for insertion (like Depo and diaphragm) it would make things a LOT easier for us" and "...IUDs are great. The main reason I don't put them in is I'm losing revenue by providing them. When reimbursement is less than cost, why bother…"

Several participants expressed their recommendations for more patient education: "I think they are good methods but my counseling is customized to my patients needs and life circumstances. Some of these questions are not yes or no. It depends on the person's life circumstances. If I have a 19yo who wants an IUD and is in a monogamous relationship, I will give her the IUD with the understanding that she needs to use condoms if her partner changes or her future fertility is at stake"; "That proper counseling of patients on ALL aspects of the IUD increases compliance with the method. Emphasizing the changes in menstrual bleeding is imperative (based on the evidence I have seen in my practice... that is the most common reason for removal)"; and "My opinion about the IUD is important, but even more important is my patient's opinion. I spend a lot of time helping my patients identify and articulate their values as they decide which method they prefer".

While some participants expressed their perceived need for patient education regarding the IUD, other participants reported the need for increased education and training of healthcare

providers. For example, one participant stated she “would like to see increased education for health professionals regarding use of the IUD, that it does not cause abortion.” Another participant stated “busy clinics are not environmentally great for updating lectures on current use, status, safety and techniques of insertion of IUDs for health care providers, and this causes some providers to not to offer or promote the use of IUDs.”

Several participants expressed who they perceived to be candidates for the IUD. The teenage population, in particular, was one group several participants reported as prospective candidates for the device: “I think they are a great option for sexually active women”; “I think it is an excellent option for the majority of sexually active women of reproductive age (regardless of parity or past STI hx)”; “I actively encourage pregnant teens to consider using IUDs (Mirena in particular) as their post-partum birth control”; “If providers are serious about preventing pregnancy, particularly teenage pregnancy, they should be inserting IUD's in anyone that wants one”; and “Both paragard and mirena can be good contraceptive options for teens and nulliparous women”. In addition several participants expressed the perceived benefits of the IUS for women who suffer from menorrhagia. Further, one participant expressed their use among Alaskan women: “Once convinced, the AK native women I provide care to, seem to love not having to worry about their BCM, once the IUS/IUD is in place. Plus, with no running water in some villages, and the need to not have to change pads/tampons with the use of the Mirena, I think it is a wonderful option for the right woman!” This statement supports others’ perceptions about the non-contraceptive benefits of the IUD: “It also controls menorrhagia and menomenorrhagia and relieves dysmenorrhea and it can prevent and treat Asherman's syndrome. It reduces risk of PID. It does not interfere with lactation” and “Mirena is also used for heavy menses and endometrosis”.

Summary

This chapter provided a thorough presentation of the findings of the study, including descriptive and inferential statistics of demographics, theory of reasoned action (TRA) scales, the knowledge scale, and the open-ended responses. Family wise error rate (FWER) was adjusted for, but results still included many statistically significant findings, including statistically significant positive correlations with every summed scale and individual item except knowledge Question 5. Several multiple linear regressions were run. When behavioral intention was regressed on direct attitudes, direct subjective norms, and knowledge, the first two were statistically significant predictors of behavioral intention, while knowledge was not. Indirect attitude measure of behavioral beliefs showed to also be a statistically significant predictor of behavioral intention, as well as both indirect subjective norm measures. When all previously statistically significant predictor variables were regressed in the same model, however, the only resulting statistically significant predictor variable was direct attitudes.

Qualitative responses were provided, and included 203 that discussed the IUD specifically. An additional 24 response dealt with criticisms of the survey instrument. While these qualitative responses did not serve to answer a research question, they will be further discussed in the next chapter in association with recommendations for future research. The following chapter provides a continued and more in-depth discussion of and conclusions based on the findings, as well as poses recommendations for future research and the health education profession.

CHAPTER 5

SUMMARY, CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

Overview

This chapter provides an in-depth summary of the main points of the study's findings, as well as a detailed discussion of the meaning of the findings and limitations of the study. Finally, recommendations for future research and for the health education profession are discussed.

Purpose of the Study

The purpose of this study was to use the Theory of Reasoned Action to measure behavioral intention of healthcare providers (HCPs) to provide the IUD.

Summary of the Study

Intrauterine devices (IUDs) are one of the oldest forms of birth control in the world. Today, IUDs are used by over 100 million women worldwide, making it the most popular reversible method of birth control (Hatcher, et al, 2007). Approximately 2% of American women, however, choose to use this method of birth control (Nidus Information Systems Incorporated, 2008). Although the method has been deemed extremely safe and effective for various types of women, it is highly underutilized in this country (Hatcher et al, 2007).

According to current literature, potential factors that may influence the frequency of IUD use by American women may be linked to healthcare provider attitudes, beliefs, and perceptions of the device. The theory of reasoned action (TRA) states that behavioral intention is a primary predictor of actual behavior, and a person's intent to perform a behavior is influenced by his or her attitudes and perceptions of subjective and social norms associated with the respective behavior (Sable et al, 2006). Therefore, healthcare practitioners' (HCP) intent to insert an IUD in

most women is influenced by their attitudes about the device as well as their perceptions of how individuals important to them view insertion of the IUD in most women.

A survey based on TRA developed by Sable et al (2006) was used upon permission from the author. After two main phases of revisions, the final instrument for this study included 53 items, including 45 measuring TRA constructs and knowledge, 1 open-ended response item, and 7 demographic items. After piloting the instrument and accessing instrument reliability and validity, the final instrument was administered online to the membership of the National Association of Nurse Practitioners in Women's Health (NPWH). Membership statistics include data for approximately 2,300 members. A total of 695 participants (primarily nurse practitioners and certified nurse midwives) appropriately completed the survey, resulting in approximately a 30% response rate. Descriptive and inferential statistics, such as Pearson Product Moment Correlations and multiple linear regressions, were computed using SPSS 17.0 to answer three research questions for this descriptive, correlational design research study:

1). What level of knowledge do clinical services providers have about the intrauterine device (IUD)?

2). What is the relationship among clinical services providers' knowledge, attitudes, subjective norms, and behavioral intention in regards to providing the intrauterine device (IUD)?

3). How much variation in clinical services providers' behavioral intention to provide the intrauterine device (IUD) can be accounted for by knowledge, attitudes, and social norms?

Pearson product moment correlations assessed the linear relationship(s) between summed scales and individual items on the instrument. Multiple linear regression assessed the level of variance accounted for by TRA scales and the knowledge scale. According to theoretical principles, attitudes and subjective norms are likely to be the most influential predictors of

behavioral intention. Consistent with the TRA tenets, this study found significant associations between TRA constructs and behavioral intention; whereas knowledge, while a significantly correlated variable with behavioral intention, was not a predictor of behavioral intention as measured in multiple regression models.

Conclusions

1) Overall, participants in this study had a relatively moderate level of knowledge regarding IUDs, as the total percentage for the knowledge scale was 80.86% (a B- average).
2) Overall, participants in this study held moderately positive attitudes and beliefs about IUDs.
3) Overall, participants in this study were motivated to comply with their colleagues, professional organization recommendations, and current medical standards.
4) Overall, participants in this study had a moderately strong intention to provide IUDs to most patients.
5) Both direct measures of behavioral intention (direct attitudes and direct subjective norms) had positive correlations significant at the 0.00 level. These findings imply the more positive a participant's attitude toward the IUD, the more likely she will intend to provide the device. Similarly, the more likely a participant is to comply with IUD-based opinions of others important to her professionally, the more likely she is to intend to provide IUDs.
6) Based on multiple regression models, the strongest predictor of behavioral intent to provide the IUD was the direct attitude measure, meaning the more positive participants' attitudes toward IUDs, the more likely she is to intend to provide the device.

7) Based on multiple regression models, the weakest predictor of behavioral intent to provide IUDs was the knowledge measure, meaning a participant's knowledge level of IUDs is not a strong predictor of her intention to provide the device.
8) All independent variables had weak to moderate positive correlations to behavioral intention, meaning the more positive participants' attitudes, beliefs, perceptions of other's beliefs, and motivation to comply, the more likely their possible intent to provide the IUD.
9) Each item on every indirect measure scale (behavioral beliefs, evaluation of outcomes, normative beliefs, motivation to comply) and knowledge significantly correlated to behavioral intention to provide IUDs at minimally a 0.05 level of statistical significance. The only exception was the mechanism of action question under the knowledge scale. Therefore, the more positive a participant's attitudes weighted by their outcomes, the more likely she is to intend to provide IUDs. Likewise, the more likely a participant is to perceive her colleagues as having positive attitudes about IUDs, in addition to her willingness to comply with them, the more likely she is to intend to provide IUDs.

Discussion

The term "statistical significance" has been used throughout this study to describe a relative value for findings. Practical significance, however, is another term used in educational psychology research. According to Kirk (1996), "statistical significance is concerned with whether a research result is due to chance or sampling variability; practical significance is concerned with whether the result is useful in the real world" (p. 746).

Discussion of the relative value of the response rate for this study is needed. According to members of the Board of Directors from the NPWH, their membership is approximately 4,000.

This number initially was used initially in this study as the total number of the population. Demographics obtained from the association, however, only represented 2,388 at most, with some demographic statistics only available for 244 members (State of Practice and Professional Title, respectively). Therefore, using the total population of 4,000, the response rate for this study was approximately 17.4%. Using the highest value from the demographics data, however, response rate increases to approximately 29%. In regards to professional title, this study yielded 610 responses to this demographic item, whereas data held by the membership only account for 244 members. Therefore, this study provided 41% more information about members' professional titles than what was obtained from the association itself.

Lack of available demographic data from the membership may parallel potential reasons for the low response rate for this study. The majority of the participants (566 out of 610, approximately 93%) were either nurse practitioners, certified nurse midwives, or both. These types of clinicians possess very time-consuming work schedules. In addition, the average age of the participants in this study was 48.77, with a minimum of 23 and a maximum of 75. If these data are a reflection of the average age of the general membership, these women also may be balancing family in addition to their hectic professional lives. Such factors, in addition to potential lack of interest in the subject matter of the study, could be related to their likelihood to respond to any survey, whether the purpose is to add to the descriptive statistics of the association or to assist in a non-member's doctoral dissertation.

Sable et al (2006) distributed behavioral intention scores to reflect high intention, medium intention, and low intention groups. The high intention group represented the top 25% of total possible intention scores, the medium intention group represented the middle 50% of total possible intention scores, and the low intention group represented the lower 25% of total

possible intention scores. For this study, the highest possible score for behavioral intention to provide the IUD was +16, while the lowest possible score was -16. Therefore, the high intention group included scores ranged from +9 to +16, medium intention scores ranged from -7 to +8, and low intention score ranged from -16 to -8. The mean score (μ) for all participants' behavioral intention to provide the IUD was 9.91, therefore falling into the lower end of the high behavioral intention group. Thus, it can be concluded that these findings suggest a relatively high intention to provide the IUD among participants in this study. And since all independent variables had positive correlations (statistically significant at $p < .01$, minimally), they all had relatively high mean scores, which are outlined below.

Direct attitude scores were high ($\mu = 5.25$; $\sigma = 1.27$), as the mean fell within the highest 25% of all scores for the scale (88%). The rest of the scales had scores that fell within the middle 50% of all possible scores. These positive direct attitude scores continued to be have the highest significant positive relationship with behavioral intention as well as being the significant predictor of behavioral intention.

Overall, knowledge scores were moderate, with the mean score for the total knowledge scale reflecting approximately 80%. The item receiving the lowest knowledge score was Question 6, which asked whether it was "true" or "false" that the IUD increases a woman's risk for ectopic pregnancy. The mean score was 0.44 (44.0%). Further, total scores were divided nearly in half; approximately 43% answered correctly, and approximately 54% answered incorrectly.

Scores on the true/false item regarding the risk of ectopic pregnancy from IUD use may not accurately reflect the knowledge base of participants in this study. Empirical research on the topic of increased ectopic pregnancy risk from the IUD is almost as equally divided as the

knowledge results from this study. This division may represent the consensus of the topic in the literature. While some case-controlled studies have suggested IUD users have an increased risk of ectopic pregnancy as compared to pregnant controls (Xiong et al, 1995). Many studies not only have found no increased risk for ectopic pregnancy among IUD users, but an increased protection against extrauterine pregnancy among IUD users (Cheng, 2000; Hatcher et al, 2007; Pasquale; 1996). Due to the majority of empirical evidence suggesting no increased risk for ectopic pregnancy with IUD use, the technically correct response to Question 6 was "false". Depending on where participants get their new information, however, their response may have been influenced accordingly. Therefore, this item, at best, likely only measured suggestions from sources of information, and not necessarily reflected their level of knowledge on the subject.

All items on the survey instrument were positively correlated with behavioral intention except knowledge Question 5, regarding the mechanism of action of the IUD. Therefore, 98% of the survey items had positive correlations with the dependent variable at a statistically significance level of at least 0.01. Therefore, it may be suggested that healthcare providers' intention to provide the IUD is not directly related to their knowledge of how the device works to prevent unwanted pregnancy. This finding may imply cognitive-based training and educational programs targeting providers are not as crucial as initiatives focused on attitudes, beliefs, and compliance with colleagues. The remaining 44 of the 45 items, however, had moderate to weak positive correlations, meaning the more favorable participants' attitudes, beliefs, and perceptions of norms, the more likely they are to intend to provide the IUD. The correlational findings in this study parallel Sable et al (2006), as they found direct attitude, direct subjective norms, behavioral beliefs, and normative beliefs all significantly correlated with intention of physicians to provide/educate patients about emergency contraception.

While correlations described the degree of linear relationships between variables, multiple linear regression explored which variables best predicted behavioral intention to provide the IUD. Consistent with current literature on the theory of reasoned action (TRA), the most influential predictor of behavioral intention to provide the IUD was the direct attitude measure. The direct attitude measure consisted of a scale of three, general statements regarding participants' perception of the IUD. The direct attitudes measure had a correlation coefficient of r = .516, which was statistically significant at the p = .000 level. The direct subjective norm measure was also positively correlated with behavioral intention (r = .441, significant at p = .000). This finding may imply that the best way to increase providers' behavioral intention to provide IUDs is by targeting general attitudes about the device. If a provider, in general, thinks IUDs are good and beneficial, he or she is possibly more likely to intend to provide the device.

When behavioral intention was regressed on the three primary scales of direct attitudes, direct subjective norms, and knowledge, the model was statistically significant at predicting the variance in behavioral intention (p = .000; R^2 value = .345). Only direct attitude and direct subjective norm measures, however, were statistically significant predictors of behavioral intention. This finding is consistent with the tenants of the TRA, which suggest knowledge is not a predictor of behavioral intention (Ajzen and Fishbein, 1980). While it was statistically significant in the first regression model, the direct subjective norm measure was not a predictor of behavioral intention when included in a model with all previously statistically significant predictors of intention. When behavioral intention was regressed on all previously statistically significant predictors, the only influential variable predicting behavioral intention was direct attitudes ($t(645) = 4.46$; p = .000).

Regression findings in this study also parallel those of Sable et al (2006), who found attitude and indirect subjective norms predicted physician intention to prescribe emergency contraception. Further, similar to this study, Sable et al (2006) found the direct measure of subjective norms did not predict behavioral intention.

According to the moderate positive correlations, regression coefficients, and qualitative responses, it appears that behavioral intention to provide the IUD is most closely associated with general circumstances. In general, participants in this study are likely to provide the IUD, but there are specific restrictions they may have regarding the type of IUD they may provide or the potential candidate(s) for the device. In other words, they have suggested they take many factors into consideration, many beyond the scope of the TRA constructs, when determining whether or not to provide the IUD. Therefore, this study has limited predictor variables to include TRA constructs and knowledge only, while many other factors appear to be influential in a provider's intent to offer the IUD. Future research could explore other predictors of intention to provide the IUD

Results are limited to reflecting only study participants. Participants of this study included approximately 30% of the National Association of Nurse Practitioners in Women's Health (NPWH) membership. Overall, the population included a fairly homogenous group, with 100% of respondents being female. Therefore, due to the limited variety in participants' gender, results cannot reflect attitudes, beliefs, perception of norms, and knowledge of male healthcare providers able to provide IUDs. It should be noted, however, that the gender dominance represented in this study is reflective of the profession as a whole. In addition, to meet the purpose and answer research questions for this study, participants also shared similar education level, employment setting, and professional titles. The majority of participants were either nurse

practitioners or certified nurse midwives. Therefore, variables measured in this study are specific to individuals with these vocations. And since professionals trained to provide IUDs include other types of providers (such as physicians), it cannot be generalized that all licensed healthcare providers share similar attitudes, beliefs, perception of norms, and knowledge levels as the participants in this study. Moreover, according to TRA literature, variables influencing behavioral intention have been shown to vary between populations (Ajzen and Fishbein, 1980; Glanz et al, 2002). Future studies should include stratified sampling to compare TRA constructs among different types of healthcare providers.

Using TRA in this study was appropriate as it offered a "framework for deciphering individuals' actions by indentifying, measuring, and combining beliefs that are relevant to individuals or groups, allowing us to understand their own reasons that motivate the behavior of interest" (Glanz et al, 2002). Results of this study support principles of the theory by finding direct attitudes, followed by normative beliefs and behavioral beliefs, were the most strongly associated predictor variables with behavioral intention. Knowledge had the weakest relationship, and was a statistically insignificant predictor of behavioral intention.

The Theory of Reasoned Action (TRA), however, is limited in its implications. TRA strives to measure one's intention to perform a behavior, but does not serve as a predictor of *actual* behavior. Therefore, findings of this study pertain only to *intent* to provide the IUD, and not the likelihood of actually providing it. In addition, the magnitude of influence each independent variable had on behavioral intention found in this study may possibly differ in proceeding studies. According to TRA, "relevant behavioral outcomes and referents will be different for different behaviors. Likewise, they may be different for the same behaviors but for different populations. Therefore, future studies of slightly different providers (such as family

physicians or OBGYNs), may show subjective norms to be more influential in predicting behavioral intention, for example.

Instrumentation could have been a limiting factor in this study. Although the instrument had high reliability scores, and was deemed valid by a panel of experts, some participants expressed their confusion with the instrument. In particular, the wording – especially on the evaluation of outcomes scale – seemed to give the participants a perception of difficulty in taking the survey. For example, one participant stated the following, "Second group of questions was very difficult to answer- I can agree that (for example) increased liability theroretically is a bad outcome of iud insertions without believing that it actually does increase my liability to do the procedure- I wasnt sure what you were looking for."

A total of 24 open-ended responses dealt specifically with their opinions over the instrument. The majority of these responses were about the "odd" wording of the instrument. The "odd" wording of double-negative statements, however, is necessary in an instrument testing the theory of reasoned action to "capture the psychology of double negatives, in which a belief that a behavior will *not* result in a negative outcome contributes positively to the person's attitude" (Glanz et al, 2002). Possibly a compromise can occur, however, to make the statements more reader-friendly while staying true to the theoretical tenets of reasoned action and maintaining instrument reliability.

Recommendations for Future Research

1) Future studies should continue on this study's line of inquiry, but revise the survey instrument to make it more user-friendly in its wording. Customize it towards each specific population of healthcare providers, to allow for stratification of a sample. For example, physicians (OB-GYNs, for example) should be included to explore potential

differences in intention to provide IUDs. Using an intact professional association of clinical services providers was effective at answering research questions for this study. Future studies, however, should explore populations beyond memberships. For example, with enough funding, a true random sample of providers working in family planning clinics funded by the federal Title X grant may allow an exploration into behavioral intention to provide the IUD – and other contraceptives – among practitioners who often work with underserved populations. This study borrowed an instrument developed for a previous study (Sable et al, 2006). To be in accordance with the theory of reasoned action (TRA), future studies should develop an instrument based on elicitation interviews to further assess providers' knowledge, attitudes, beliefs, and social norms as determinants of behavioral intention (Glanz et al, 1992; Azjen, 1980). Future studies should go beyond the scope of TRA to explore additional potential predictors of intention to provide the IUD. In addition, clarifications should be made to address some concerns expressed by participants. Future research should develop an instrument for *each* type of IUD. For example, participant 228 stated (it was) "difficult to answer generalized questions about two very different IUDs." Future research could revise separate versions of this instrument to include topic-specific questions regarding Mirena, ParaGard, and other relevant brands of the device. Also, some participants expressed their frustration with the wording of the items. Perhaps future instruments could be developed that are more reader-friends in regards to omitting double negative statements while maintaining validity of the instrument. For instance, a semantic differential scale could be used as opposed to the Likert-type scales in this instrument.

2) Future research should explore ways in which the public health community can better meet women's contraceptive needs. Factors such as the economic status of the United States are affecting family planning wishes. A recent study from the Guttmacher Institute found approximately 50% of the women surveyed wanted to delay childbearing or limit the number of children. Nearly half of these women reported the recession a reason for their desire to limit their families as well as to practice effective contraception (Wind, 2009). Therefore, due to the country's current economy, effective contraception is extremely important to a woman's quality of life and peace of mind.

In addition, women in industrialized countries are delaying when they have their first child, if they have children at all (Proudfoot et al, 2009). Therefore, the desire for effective contraception is becoming increasingly important. Despite the wish for responsible family planning, many women continue to put themselves at risk for unintended pregnancy by not using effective contraception. According to one study approximately 10% of women at-risk for unintended pregnancy reported to not use any form of contraception, and more women using methods with lower typical use rates, such as fertility awareness and barrier methods (Dehlendorf et al, 2010; Moster et al, 2004). In addition, studies have shown low satisfaction rates of women with their current form of birth control. Therefore, future research should explore women's needs – both economic and contraceptive. Such research would benefit the literature by providing insights for potential intervention strategies. Guttmacher Institute CEO and President recognizes the problem women – even middle class women – are facing in wanting to prevent pregnancy while struggling to pay the high costs of pharmaceuticals, including contraception (Wind, 2009).

3) Future research should strive to increase attention toward IUDs . Without sufficient IUD users, research studies will continue to be limited in their exploration of women's attitudes, beliefs, and satisfaction rates. Incentives for IUD use could be a factor in future research studies to promote use of the device. For example, in 2002, an insurance company, Kaiser Permanente, strived to decrease barriers to IUD use by removing copayments for the device (Postlewaite et al, 2007). Eliminating extra costs, in addition to evidence-based clinician and patient education, significantly increased practice patterns and IUD use, respectively (Postlewaite et al, 2007). Grant funding, potentially to Title X-funded agencies, could allow for a free or reduced cost for the device. This incentive may lead to increased IUD usage, especially among low-income, at-risk women in need of an effective, low-maintenance method of contraception.

4) Little is known about adolescent perceptions regarding the IUD (Deans et al, 2009; Godfrey et al, 2010). Future studies should develop and test an instrument based on the theory of reasoned action (TRA) to explore the relationship between knowledge, attitudes, beliefs, norms, and behavioral intention of potential IUD users.

For adolescent women, fear of the IUD, the relatively unknown contraceptive, could be a barrier to its use. In the few studies that have explored adolescent perception of the device, an increase in positive perceptions and potential interest associated with information disseminated by a health care provider was commonly found (Fleming, et al, 2010; Whitaker et al, 2008). Further, in trials exploring the efficacy of both the LNG-IUS and copper-releasing IUC, participants aged 14-18 years perceived both methods favorably (Godfrey et al, 2010). The limited trial studies, however, are lacking in statistical significance (Godfrey et al, 2010). Therefore, more trials testing the efficacy of

the IUD in younger women, and participants' subsequent response to the device, are needed to be conducted for durations of longer than 6 months (Godfrey et al, 2010).

Recommendations for Health Educators

1) Health educators should plan programs at the local, state, and national levels to address individuals at-risk for unintended pregnancy. Collaboration with healthcare providers (HCPs) is necessary to properly reach these groups, as HCPs are influential in contraceptive decision making (Dehlendorf et al, 2010). Health educators should plan, implement, administer, and evaluate a program to raise awareness of the realistic advantages and disadvantages of IUD use for women seeking contraception. This program could target patients at family planning clinics through the development of comprehensive contraceptive brochures family planning practitioners could provide to patients. Advantages of such an initiative would include supplementing the routine family planning office visit procedure with evidence-based educational materials, in turn assisting with the demands of family planning practitioners. While IUD use will continue to be dependent upon licensed, trained professionals for insertion and removal, health educators have the responsibility to offer their respective expertise in program planning, advocacy, social marketing, and pedagogy to increase contraceptive use, in general, and IUD use, specifically. Planning these types of programs, including needs assessment, implementation, administration, and evaluation, fulfill five of the seven Areas of Responsibility for a Certified Health Education Specialist (CHES) (Gilmore et al, 2005).
2) Initiatives should not be limited to targeting potential IUD users. Health educators should plan, implement, and administer programs (CHES responsibility II, III, and V, respectively) tailored to healthcare providers to ensure up-to-date information is being

delivered to patients regarding the often nonoption method of intrauterine contraception. Studies have found potential links between the quality of information given by healthcare providers and contraceptive use (Dehlendorf et al, 2010; RamaRao et al, 2003). Not only is the information important, but how information is delivered is just as vital. Included in this quality care are knowledge of contraindications and special conditions for particular methods, such as the IUD. Studies have shown older providers and family medicine providers are less likely to be up-to-date concerning evidence on the IUD as well as other contraceptives (Dehlendorf et al, 2010). As a result, educational efforts are recommended to bridge gaps in knowledge (Dehlendorf et al, 2010). Approaches to accomplish the goals of increasing the current knowledge of healthcare providers, as well as improving perceptions of the IUD, could include continuing education (CE) opportunities through professional organizations. CE courses should focus on distributing evidence-based medical eligibility criteria, such as the World Health Organization (WHO) guidelines. Directing practice towards a medical standard of providing contraception may alleviate the effect of possible personal perceptions of the IUD held by providers, and ensure patients are getting bias-free contraceptive information.

3) Health educators should develop social marketing campaigns to reach a broad audience of potential IUD users. Health care providers can only offer IUDs to women who are interested in the device. Therefore, if women are unfamiliar with the device, or hold negative misconceptions about the IUD, they are less likely to inquire about it. Therefore, social marketing campaigns must tailor specific messages to women based on the diversity that exists between lifestyle, perceptions, and influences among different groups of women: adolescent women, career women interested in long-term contraception,

women of low SES, women of various ethnic and racial groups, and older women seeking an alternative to sterilization. Referring back to the Boonstra et al (2000) commentary on the "boom or bust phenomenon" of contraceptives, the IUD needs a renewed "boom" to bring it back from the "bust" it has endured for the past several decades. Therefore, social marketing campaigns able to deliver the current evidence-based information to a large audience are required to bring the IUD out of the "bust" phase.

Several factors contribute to the low incidence of contraceptive use among women in the United States including personal preference, lack of access to affordable contraception, and healthcare provider influence (Dehlendorf et al, 2010). Societal restrictions, such as unavailable family planning services, require macro-level initiatives to improve access of safe and effective contraceptives for women of lower socioeconomic status (SES). Disadvantaged women, for example, often have difficulty with continuous method use perhaps due to problems accessing services and information (Guttmacher Institute, 2009). In addition, 40% of at-risk women attributed problems accessing or using methods as grounds for contraceptive nonuse (Guttmacher Institute, 2009). There is a need for utilization of long-term contraception, such as the IUD, as it does not require continuous attention from the patient or provider; and, therefore, could increase the frequency of continuous contraceptive use. Social marketing efforts fulfill the CHES responsibilities VI: Serve as a health education resource person and VII: Communicate and advocate for health and health education. Through the dissemination of health education via social marketing vehicles, health educators are serving as a channel of communication between the medical community and general population.

4) Health educators should advocate for policy to shift from a focus on tertiary care to preventative care within our health care system. A healthcare system with a focus on wellness as opposed to illness would provide better inclusion for contraceptive services, including IUDs, as contraception is a preventative health behavior. Similarly, health educators should advocate for increased Medicaid coverage and eligibility to include family planning services in every state. Currently, 27 states have received approval to extend Medicaid eligibility to include family planning services for individuals who would otherwise not be provided coverage (Guttmacher Institute, 2010). Advocacy, for policy change and the profession, fulfills CHES responsibility VII: Communicate and advocate for health and health education. Revising current policy to provide more compensation for health services among low-income populations exemplifies advocacy efforts in health education.

Summary

The purpose of this study was to explore healthcare providers' intention to provide the IUD using an instrument based off the theory of reasoned action (TRA). According to the findings of this study, the primary predictor of behavioral intention among participants in this study was direct attitude measure, which consisted of a scale including three, generalized questions regarding the device as being "good", "bad", and "beneficial". In general, participants in this study held positive attitudes about IUDs, and are highly likely to provide the device to most female patients. Qualitative responses highlighted some potential reservations participants may have when deciding whether or not to offer the IUD, such as age, parity, and special medial considerations. There still seems to be some hesitation among a few participants regarding parity and the safety of IUDs. In addition, while knowledge was approximately 80%, healthcare

providers could strive to increase theses scores by continuing education. Recommendations include revision of the current survey instrument to clarify some knowledge items, and change the wording of the TRA scale items to survey a more heterogeneous group of healthcare providers to potentially include all levels of providers licensed and trained to offer IUDs. In addition, studies should further explore how minimizing barriers, such as monetary cost, influences behavioral intention of healthcare providers to offer the device, as well as female interest in the device as a potential form of reversible birth control. Further, research should explore perceptions of various female populations, such as adolescents and diverse racial and ethnic groups, to assess knowledge, attitudes, beliefs, and behaviors, in the eventual attempt to devise interventions.

Recommendations for health educators based on this study include carrying out roles and responsibilities of professional certification (CHES), by planning, implementing, administering, and evaluating programs targeting potential providers and users of IUDs. In addition, health educators should create social marketing campaigns to reach audiences with diverse needs.

In general, healthcare providers who participated in this study have relatively positive attitudes and beliefs about the IUD. In addition, according to an article in *Harvard Business Review*, it takes approximately 17 years for research to be translated into practice (Porter et al, 2004). Therefore, with further empirical research, as well as program planning, social marketing, and advocacy efforts of health educators, perhaps the IUD will begin to see a “boom” in the contraceptive industry.

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APPENDIXES

Appendix A

Demographic Data for Membership of National Association of Nurse Practitioners in Women's Health

Employment Setting	Frequency	Percent
Family Planning/Planned Parenthood Clinic	248	25.78
Community/Public Health	111	11.54
Women's Health Specialty Practice	22	2.29
Family Practice	1	0.1
College Health	66	6.86
Hospital	184	19.13
HMO/Prepaid Health	48	4.99
Independent Practice	282	29.31
	962	100
NP Preparation		
Master's Program	936	58.25
Certificate Program	511	31.8
Baccalaureate Program	150	9.33
Independent Learning	10	0.62
	1607	100
Highest Level of Degree		
Diploma Nursing	92	5.49
Associate Degree Nursing	104	6.2
Baccalaureate Degree Nursing	495	29.53
Master's Degree Nursing	865	51.61
Doctorate Degree	120	7.16
	1676	100
Area of NP Preparation		
Women's Health (Ob/Gyn)	1369	75.1
Family	248	13.6
Adult	49	2.69
Pediatrics	7	0.38
Midwifery	76	4.17
Family Planning	74	4.06
	1823	100
State		
AK	15	
AL	28	
AR	17	

AZ	40
CA	165
CO	58
CT	38
DC	6
DE	13
FL	120
GA	75
HI	8
IA	28
ID	14
IL	102
IN	68
KS	13
KY	18
LA	32
MA	93
MD	44
ME	21
MI	73
MN	56
MO	64
MS	5
MT	16
NC	61
MD	12
NE	18
NH	17
NJ	80
NM	30
NV	21
NY	149
OH	80
OK	15
OR	25
PA	140
RI	12
SC	16
SD	9
TN	68
TX	144

UT	23
VA	68
VT	9
WA	71
WI	54
WV	16
WY	6
Canada/Foreign	14
	2388

Titles	
Administrative Director, Cardiac Services and Cardiovascular Surgery	1
Adult Nurse Practitioner	1
Aesthetic Nurse Practitioner	1
Assistant Clinical professor	11
Assistant Professor	7
Assoc. Dean	1
Associate Clinical Professor	1
Associate Professor	6
Captain	1
Certified NP	1
Certified Nurse Midwife	27
Chief Nurse	1
Chief Nurse Executive	1
Clinical Assistant Professor	2
Clinical Instructor	2
Clinical Program Coordinator	1
Clinican	3
Coding Compliance	1
Coordinator	2
Director	3
Director Vaccines	1
Director Women's Health	1
Doctoral Student	1
Downstate Lead Clinician	1
Dr.	1
Editor-in-Chief	1
Executive Director	2
faculty WHNP	1
Family NP	6
Health Science Consultant	1

Instructor	1
Lactation Consultant	2
Major	2
Medical Director	1
Medical Science Liaison	3
ND	1
NP	96
Nurse Practitioner Student	1
Nurse Practitioner/Clinical Director	1
Nurse-Midwife and Psychiatric Nurse Practitioner	1
Nursing Consultant	1
Nursing Instructor	1
OB, GYN, Primary Care NP	2
Owner	1
Physician	1
President	1
Primary Health Care Nurse Practitioner	1
Program Coordinator	1
Program Director	3
Program Manager	2
Provider	1
Public Health Nurse Consultant	1
Regional Nurse Consultant	1
Research Coordinator	1
Site Manager	1
Staff Nurse	3
State Wide Nursing Program Director	1
Training Manager	1
Women Veterans Program Manger	1
Women's Health Care Nurse Practitioner	20
	244

Appendix B

Emergency Contraceptives/Physician Provider Survey

Specialty (please check):

_____Family Practice

_____Adolescent subspecialty

_____Obstetrics/Gynecology

_____Adolescent subspecialty

_____Pediatrics

_____ General

_____Adolescent subspecialty

Board certified? (circle answer) Yes No Pending

If double-board certified, please indicate:

_____Board and _____ Board

Number of Years in Practice _____

What is your age? _____

What is your sex? (circle answer) Male Female

Emergency Contraception (EC) refers to methods of preventing pregnancy after unprotected sexual intercourse. In this survey, EC refers to Preven or PLAN-B, as well as to using the appropriate number of tablets within packages of birth control pills for use following unprotected sexual intercourse.

Some statements that physicians have made about **prescribing** EC follow in the table below. Please indicate how **likely or unlikely** the statement is to be true for you. (Circle the number that most closely describes your response. Please do not skip any items.) **Prescribing emergency contraceptives . . .**		**Extremely Likely**	quite	slightly	neutral	slightly	Quite	**Extremely unlikely**
A1	enhances a woman's reproductive options	+3	+2	+1	0	-1	-2	-3
A2	Discourages consistent use of other contraceptive methods	+3	+2	+1	0	-1	-2	-3
A3	Reduces the number of unintended pregnancies	+3	+2	+1	0	-1	-2	-3

A4	reduces the number of abortions	+3	+2	+1	0	-1	-2	-3
A5	Takes too much time in clinic	+3	+2	+1	0	-1	-2	-3
A6	Is inconvenient for me	+3	+2	+1	0	-1	-2	-3
A7	Encourages unprotected sex	+3	+2	+1	0	-1	-2	-3
A8	Poses health risks for my patients	+3	+2	+1	0	-1	-2	-3
A9	Causes frequent use of EC	+3	+2	+1	0	-1	-2	-3
A10	Causes an abortion for a woman who has conceived	+3	+2	+1	0	-1	-2	-3

In the event that EC becomes available OTC, physicians will still have a role in educating patients about EC. Below are some statements that physicians have made about **educating** sexually active patients of reproductive age about EC. Please indicate how **likely** or **unlikely** the statement is to be true for you if EC becomes available OTC. (**Circle the number** that most closely describes your response. Please do not skip any items.) **Educating patients about emergency contraceptives . . .**		**Extremely Likely**	quite	slightly	neutral	slightly	Quite	**Extremely**
B1	Enhances a woman's reproductive options	+3	+2	+1	0	-1	-2	-3
B2	Discourages consistent use of other contraceptive methods	+3	+2	+1	0	-1	-2	-3
B3	Reduces the number of unintended pregnancies	+3	+2	+1	0	-1	-2	-3
B4	Reduces the number of abortions	+3	+2	+1	0	-1	-2	-3
B5	Takes too much time in clinic	+3	+2	+1	0	-1	-2	-3
B6	Is inconvenient for me	+3	+2	+1	0	-1	-2	-3
B7	Encourages unprotected sex	+3	+2	+1	0	-1	-2	-3
B8	Poses health risks for my patients	+3	+2	+1	0	-1	-2	-3
B9	Causes frequent use of EC	+3	+2	+1	0	-1	-2	-3
B10	Causes an abortion for a woman who has conceived	+3	+2	+1	0	-1	-2	-3

Please indicate whether you think these statements represent good or bad results when **prescribing EC or educating** patients about EC		**Extremely**	quite	slightly	neutral	slightly	quite	**Extreme**
C1	Enhancing a woman's reproductive options is . .	+3	+2	+1	0	-1	-2	-3
C2	Discouraging consistent use of other contraceptive methods is . . .	+3	+2	+1	0	-1	-2	-3
C3	Reducing the number of unintended pregnancies is . . .	+3	+2	+1	0	-1	-2	-3
C4	Reducing the number of abortions is . . .	+3	+2	+1	0	-1	-2	-3
C5	Taking too much time in clinic is . . .	+3	+2	+1	0	-1	-2	-3
C6	Inconvenience in clinic for me is . . .	+3	+2	+1	0	-1	-2	-3
C7	Encouraging unprotected sex is . . .	+3	+2	+1	0	-1	-2	-3
C8	Posing health risks for my patients is . . .	+3	+2	+1	0	-1	-2	-3
C9	Causing frequent use of the method is . . .	+3	+2	+1	0	-1	-2	-3
C10	Causing an abortion for a woman who has conceived is . . .	+3	+2	+1	0	-1	-2	-3

(**Please circle the number** that most nearly describes what you think or how you feel) In general, I think that **prescribing** EC for patients is . . .		**extremely**	quite	slightly	**neither**	slightly	quite	**extremely**	
D1	GOOD	+3	+2	+1	0	-1	-2	-3	BAD
D2	POSITIVE	+3	+2	+1	0	-1	-2	-3	NEGATIVE
D3	BENEFICIAL	+3	+2	+1	0	-1	-2	-3	HARMFUL
In general, I think that **educating** patients about EC is . . .									
E1	GOOD	+3	+2	+1	0	-1	-2	-3	BAD
E2	POSITIVE	+3	+2	+1	0	-1	-2	-3	NEGATIVE
E3	BENEFICIAL	+3	+2	+1	0	-1	-2	-3	HARMFUL

The people and groups listed below may be influential in medical decision-making. Please indicate how you think the following consider my **prescribing** or **educating** patients about EC in your practice. (**Circle the number** that most closely describes your response. Please do not skip any items.)		**Definitely should**	Probably should	Possibly should	**Neutral**	Possibly should	Probably should	**Definitely**
With regard to my **prescribing** EC								
F1	My partners/colleagues think that I . . .	+3	+2	+1	0	-1	-2	-3
F2	Community physicians think that I . . .	+3	+2	+1	0	-1	-2	-3
F3	My professional organization (ACOG/AAFP/AAP) recommends that I . . .	+3	+2	+1	0	-1	-2	-3

F4	Current medical standards recommend that I . . .	+3	+2	+1	0	-1	-2	-3
F5	In general, most people or groups that are important to me think that I . . .	+3	+2	+1	0	-1	-2	-3
With regard to my **educating patients about** EC								
G1	My partners/colleagues think that I . . .	+3	+2	+1	0	-1	-2	-3
G2	Community physicians think that I . . .	+3	+2	+1	0	-1	-2	-3
G3	My professional organization (ACOG/AAFP/AAP) recommends that I . . .	+3	+2	+1	0	-1	-2	-3
G4	Current medical standards recommend that I . . .	+3	+2	+1	0	-1	-2	-3
G5	In general, most people or groups that are important to me think that I . . .	+3	+2	+1	0	-1	-2	-3

Generally speaking, how important is it to you to do what these people/groups want you to do? (**Circle the number** that most closely describes your response. Please do not skip any items.) **I want to comply with . . .**		**Not at all**						**Very Much**
H1	My partners/colleagues	1	2	3	4	5	6	7
H2	Community physicians	1	2	3	4	5	6	7
H3	My professional organization (ACOG/AAFP/AAP)	1	2	3	4	5	6	7
H4	Current medical standards	1	2	3	4	5	6	7

Please circle the number that most nearly describes what you think or how you feel.		**Definitel**	Probably	Possibly	**Neutral**	Possibly	Probably	**Definitel**
I1	In general, with regard to prescribing EC, most of the people or groups important to me think that I . .	+3	+2	+1	0	-1	-2	-3
I2	In general, with regard to educating my sexually active patients of reproductive age about EC, most of the people or groups important to me think that I . . .	+3	+2	+1	0	-1	-2	-3

To what extent do you intend to prescribe emergency contraception to the following women in your practice:		**Not at all**						**Very**
J1	Women who specifically ask for information about EC pills	1	2	3	4	5	6	7
J2	Women who have experienced incest or rape	1	2	3	4	5	6	7
J3	Women who experience a problem with their method, such as condom break	1	2	3	4	5	6	7
J4	Sexually active teens	1	2	3	4	5	6	7
J5	Any woman who has had unprotected sexual intercourse and makes the request	1	2	3	4	5	6	7
J6	My opposition to emergency contraceptives precludes prescribing it	1	2	3	4	5	6	7

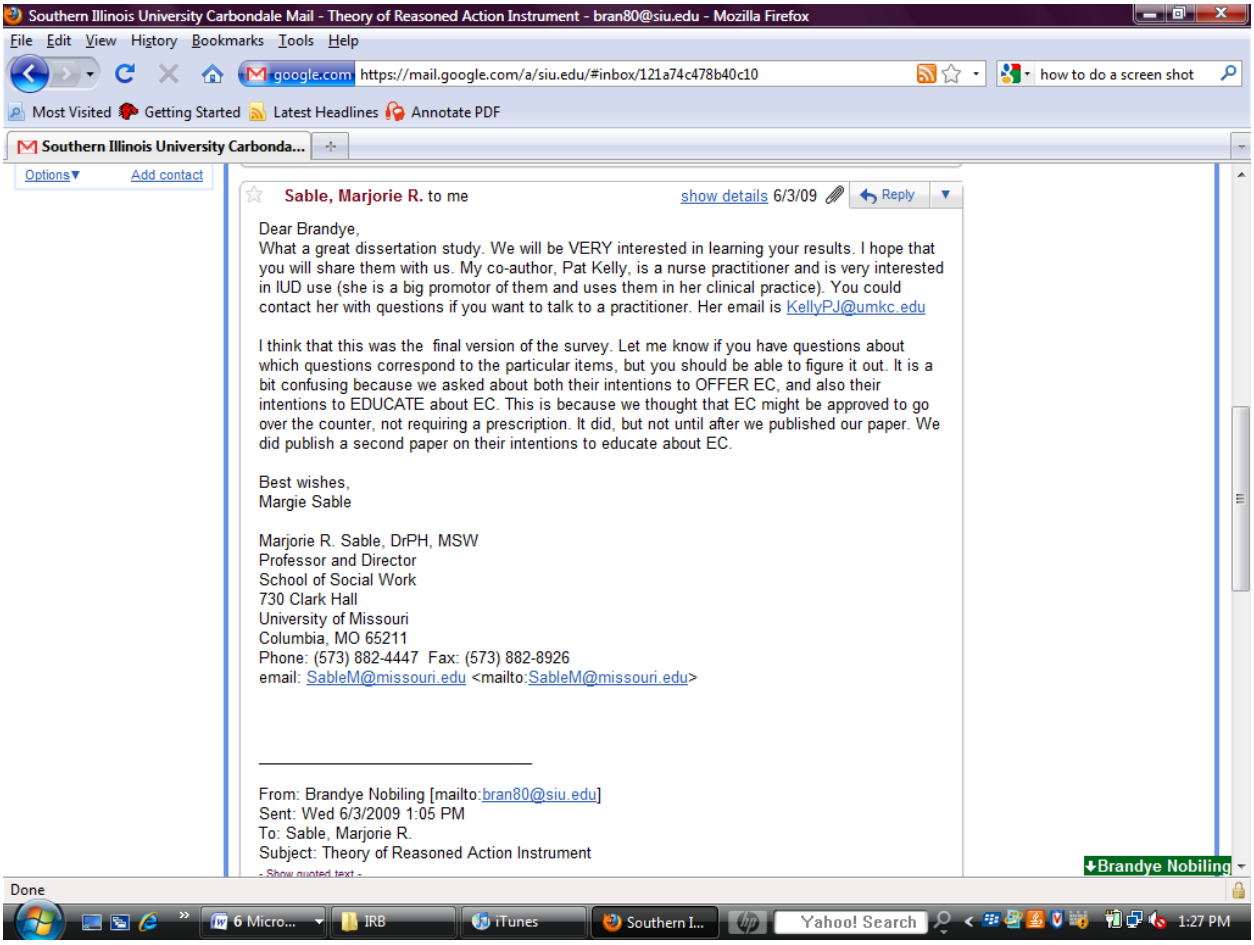
To what extent do you intend to educate the following women in your practice about emergency contraception:		**Not at all**						**Very**
K1	Women who specifically ask for information about EC pills	1	2	3	4	5	6	7
K2	Women who have experienced incest or rape	1	2	3	4	5	6	7
K3	Women who experience a problem with their method, such as condom break	1	2	3	4	5	6	7
K4	Sexually active teens	1	2	3	4	5	6	7
K5	Any woman who has had unprotected sexual intercourse and makes the request	1	2	3	4	5	6	7
K6	My opposition to emergency contraceptives precludes educating about it	1	2	3	4	5	6	7

The following are some knowledge questions about emergency contraceptives. Check the box next to your answer:		
Emergency contraceptive pills are effective when taken within . . . (check one)		
24 hours after intercourse	L2	
48 hours after intercourse	L3	
72 hours after intercourse	L4	
Within five days of intercourse	L5	
I don't know	L6	
If used properly, emergency contraceptive pills work to prevent pregnancy . . . (check one)		
About 25 percent of the time	M1	
About 50 percent of the time	M2	
At least 75 percent of the time	M3	
I don't know	M4	
If a woman takes emergency contraceptive pills and still becomes pregnant, there is at least a 50 percent chance that the baby will be born with a birth defect (check one)		
True	N1	
False	N2	
I don't know	N3	
How serious are the common side effects of the emergency contraceptive pills? (check one)		
Serious	O1	
Moderately serious	O2	
Not serious but uncomfortable (e.g., vomiting, nausea)	O3	
None	O5	
I don't know	O6	
The best theoretical understanding of the mechanism of action for emergency contraceptive pills is: **(check ALL that apply)**		
Delays ovulation	P1	
Prevents fertilization of an egg	P2	
Prevents attachment of a fertilized egg	P3	
Causes expulsion of a fertilized egg	P4	
I don't know	P5	
As part of routine contraceptive counseling, how often do you discuss emergency contraception with your sexually active female patients – always, most of the time, sometimes, or never? (Check one)		
Always	Q1	
Most of the time	Q2	
Sometimes	Q3	

Never	Q4	
How often have you ever prescribed contraceptive pills? (Check one)		
Less than six times	R1	
Between six and 10 times	R2	
More than 10 times	R3	
I have not prescribed it in the last year	R4	
I do not know	R5	
I have never prescribed emergency contraceptive pills	R6	
Have you ever prescribed or offered emergency contraceptive pills prospectively for patients to have on hand, in case they need them? (Check one)		
Yes	S1	
No	S2	
I don't know	S3	
Would you (or do you) in prescribing emergency contraceptive pills (check ALL applicable)		
Require a pregnancy test before prescribing?	T1	
Do a pelvic examination?	T2	
Limit the number of times you prescribe to an individual?	T3	
Discuss the method routinely as part of reproductive health counseling?	T4	

Appendix C

Email Correspondence with Dr. Marjorie Sable Granting Permission to Use Original Instrument



Southern Illinois University Carbondale Mail - Theory of Reasoned Action Instrument - bran80@siu.edu - Mozilla Firefox

File Edit View History Bookmarks Tools Help

https://mail.google.com/a/siu.edu/#inbox/121a74c478b40c10

how to do a screen shot

Most Visited Getting Started Latest Headlines Annotate PDF

Southern Illinois University Carbonda...

Options Add contact

Sable, Marjorie R. to me show details 6/3/09 Reply

Dear Brandye,
What a great dissertation study. We will be VERY interested in learning your results. I hope that you will share them with us. My co-author, Pat Kelly, is a nurse practitioner and is very interested in IUD use (she is a big promotor of them and uses them in her clinical practice). You could contact her with questions if you want to talk to a practitioner. Her email is KellyPJ@umkc.edu

I think that this was the final version of the survey. Let me know if you have questions about which questions correspond to the particular items, but you should be able to figure it out. It is a bit confusing because we asked about both their intentions to OFFER EC, and also their intentions to EDUCATE about EC. This is because we thought that EC might be approved to go over the counter, not requiring a prescription. It did, but not until after we published our paper. We did publish a second paper on their intentions to educate about EC.

Best wishes,
Margie Sable

Marjorie R. Sable, DrPH, MSW
Professor and Director
School of Social Work
730 Clark Hall
University of Missouri
Columbia, MO 65211
Phone: (573) 882-4447 Fax: (573) 882-8926
email: SableM@missouri.edu <mailto:SableM@missouri.edu>

From: Brandye Nobiling [mailto:bran80@siu.edu]
Sent: Wed 6/3/2009 1:05 PM
To: Sable, Marjorie R.
Subject: Theory of Reasoned Action Instrument
- Show quoted text -

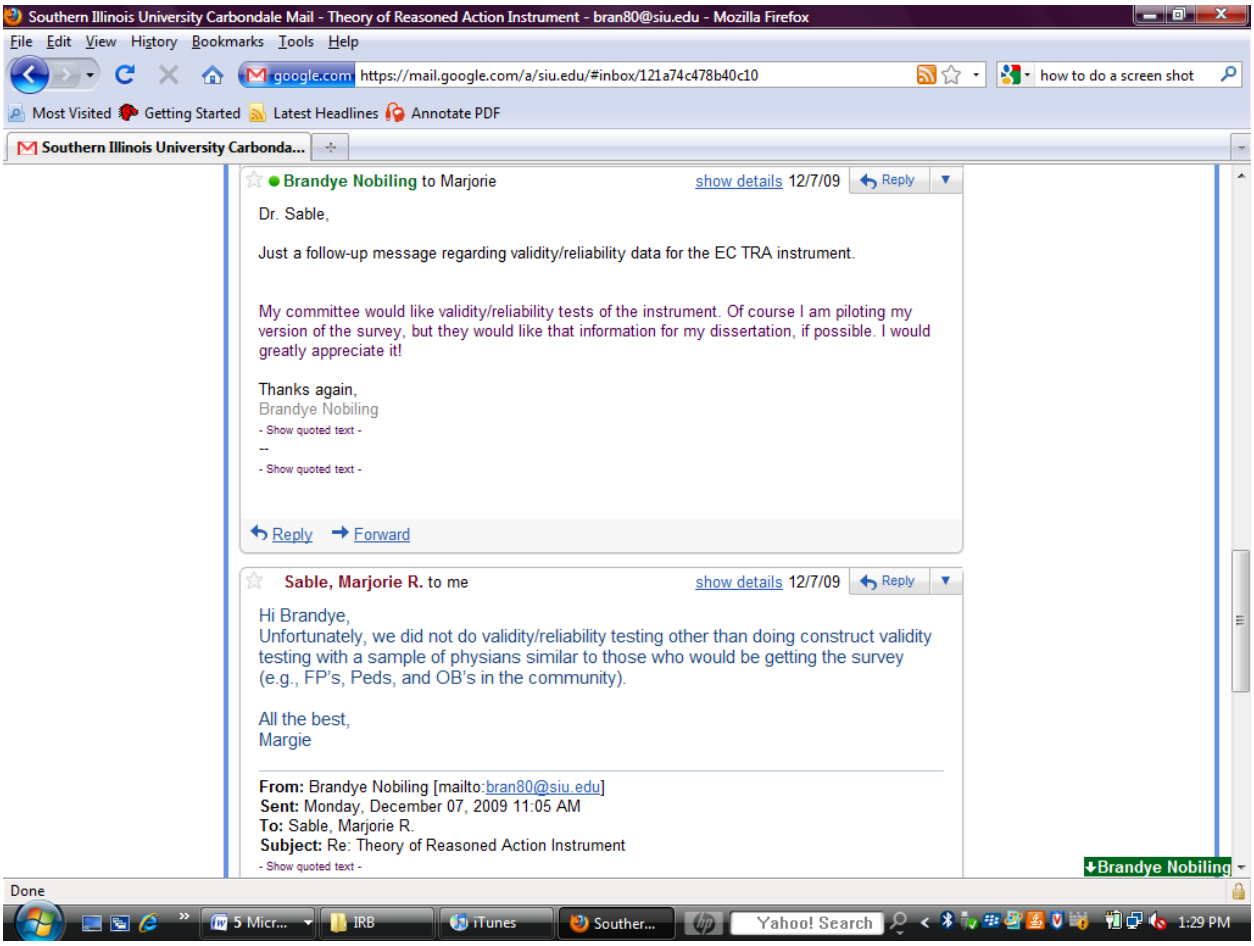
Brandye Nobiling

Done

6 Micro... IRB iTunes Southern I... Yahoo! Search 1:27 PM

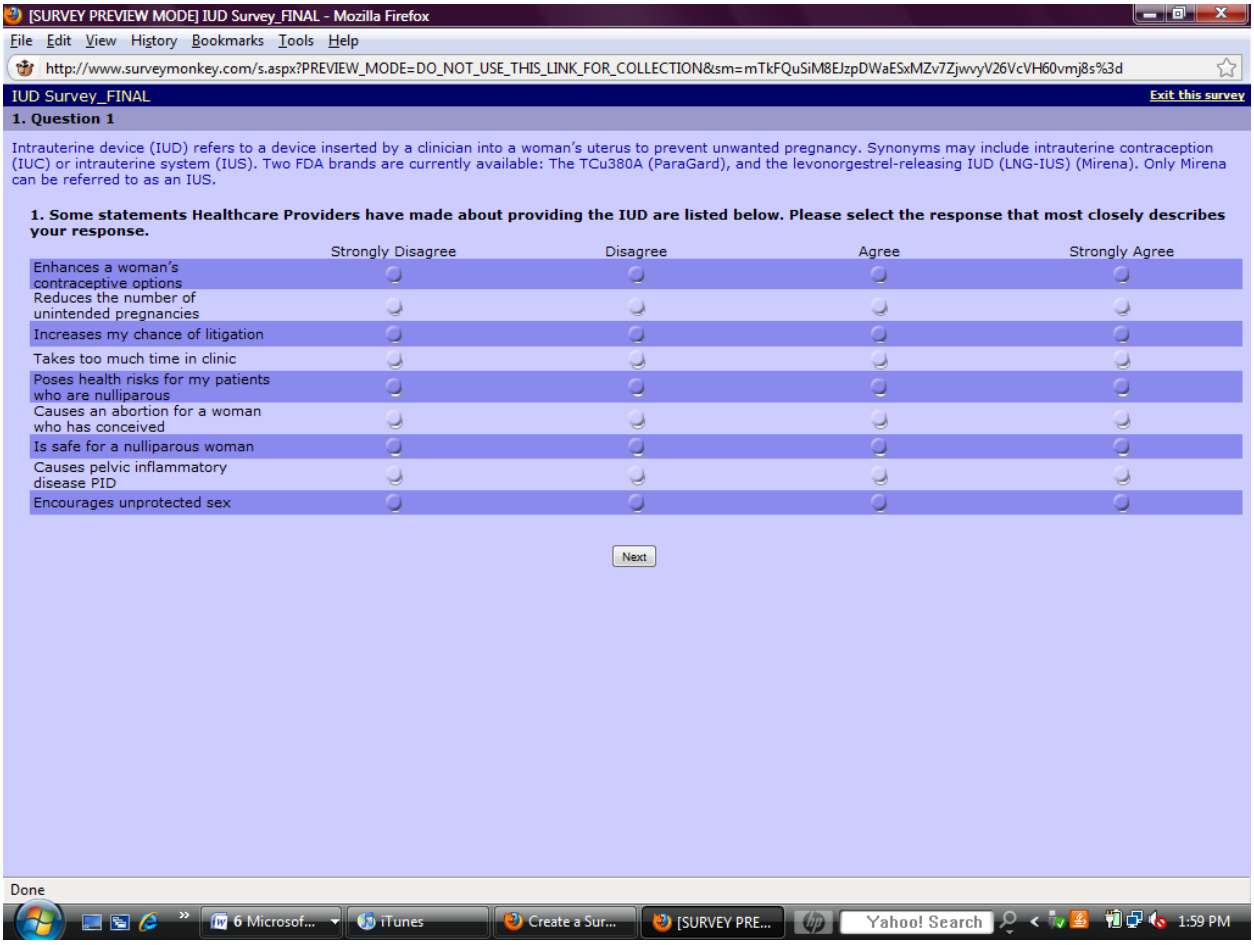
Appendix D

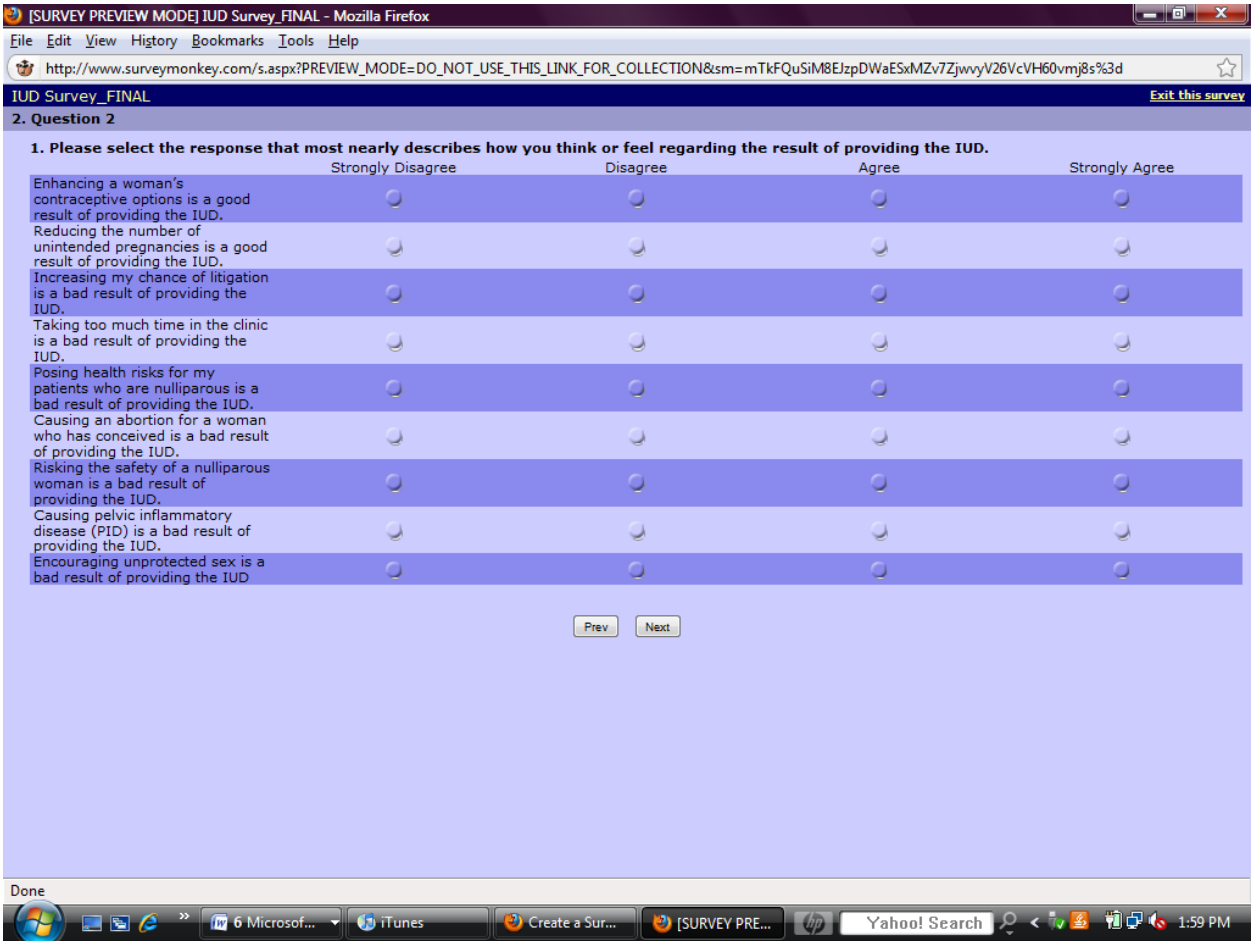
Email Correspondence with Dr. Marjorie Sable Regarding Reliability/Validity Tests on Original Instrument



Appendix E

Final Survey Instrument as Screenshot Views on SurveyMonkey.com




[SURVEY PREVIEW MODE] IUD Survey_FINAL - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&sm=mTkFQuSiM8EJzpDWaESxMZv7ZjwvyV26VcVH60vmj8s%3d
IUD Survey_FINAL
Exit this survey
2. Question 2
1. Please select the response that most nearly describes how you think or feel regarding the result of providing the IUD.
Strongly Disagree
Disagree
Agree
Strongly Agree
Enhancing a woman's contraceptive options is a good result of providing the IUD.
Reducing the number of unintended pregnancies is a good result of providing the IUD.
Increasing my chance of litigation is a bad result of providing the IUD.
Taking too much time in the clinic is a bad result of providing the IUD.
Posing health risks for my patients who are nulliparous is a bad result of providing the IUD.
Causing an abortion for a woman who has conceived is a bad result of providing the IUD.
Risking the safety of a nulliparous woman is a bad result of providing the IUD.
Causing pelvic inflammatory disease (PID) is a bad result of providing the IUD.
Encouraging unprotected sex is a bad result of providing the IUD
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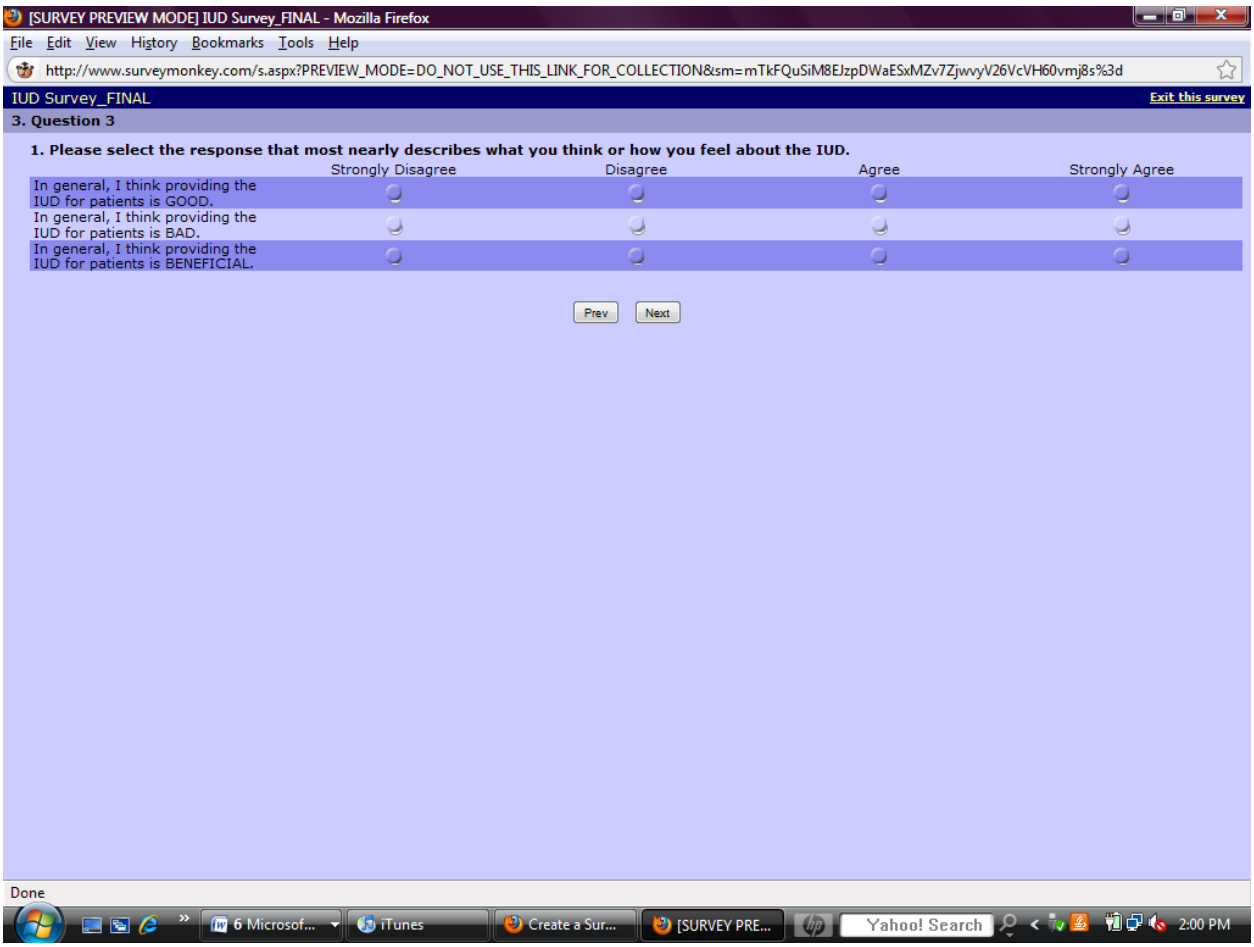
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3. Question 3
1. Please select the response that most nearly describes what you think or how you feel about the IUD.
Strongly Disagree
Disagree
Agree
Strongly Agree
In general, I think providing the IUD for patients is GOOD.
In general, I think providing the IUD for patients is BAD.
In general, I think providing the IUD for patients is BENEFICIAL.
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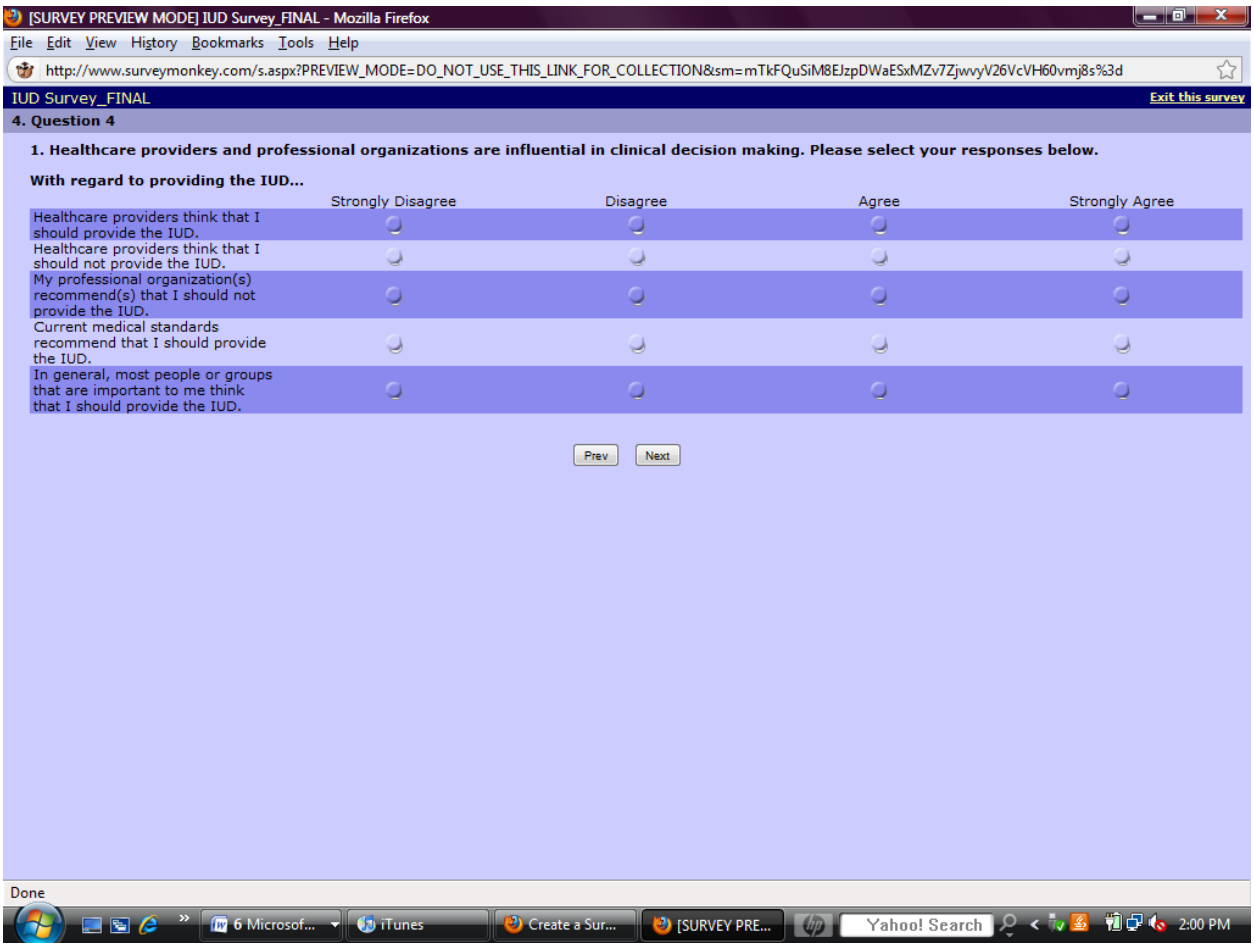
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4. Question 4
1. Healthcare providers and professional organizations are influential in clinical decision making. Please select your responses below.
With regard to providing the IUD...
Strongly Disagree
Disagree
Agree
Strongly Agree
Healthcare providers think that I should provide the IUD.
Healthcare providers think that I should not provide the IUD.
My professional organization(s) recommend(s) that I should not provide the IUD.
Current medical standards recommend that I should provide the IUD.
In general, most people or groups that are important to me think that I should provide the IUD.
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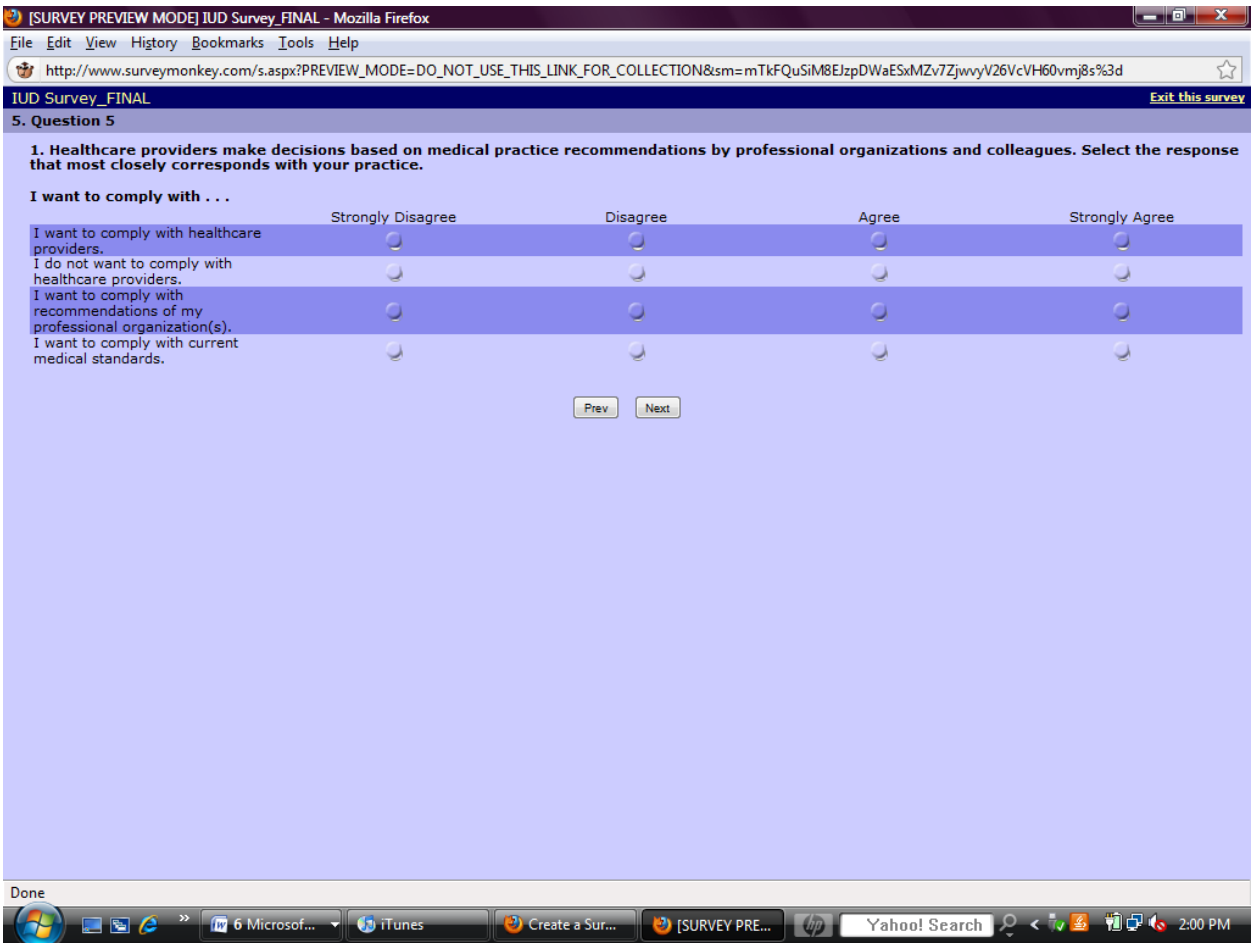
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5. Question 5
1. Healthcare providers make decisions based on medical practice recommendations by professional organizations and colleagues. Select the response that most closely corresponds with your practice.
I want to comply with . . .
Strongly Disagree
Disagree
Agree
Strongly Agree
I want to comply with healthcare providers.
I do not want to comply with healthcare providers.
I want to comply with recommendations of my professional organization(s).
I want to comply with current medical standards.
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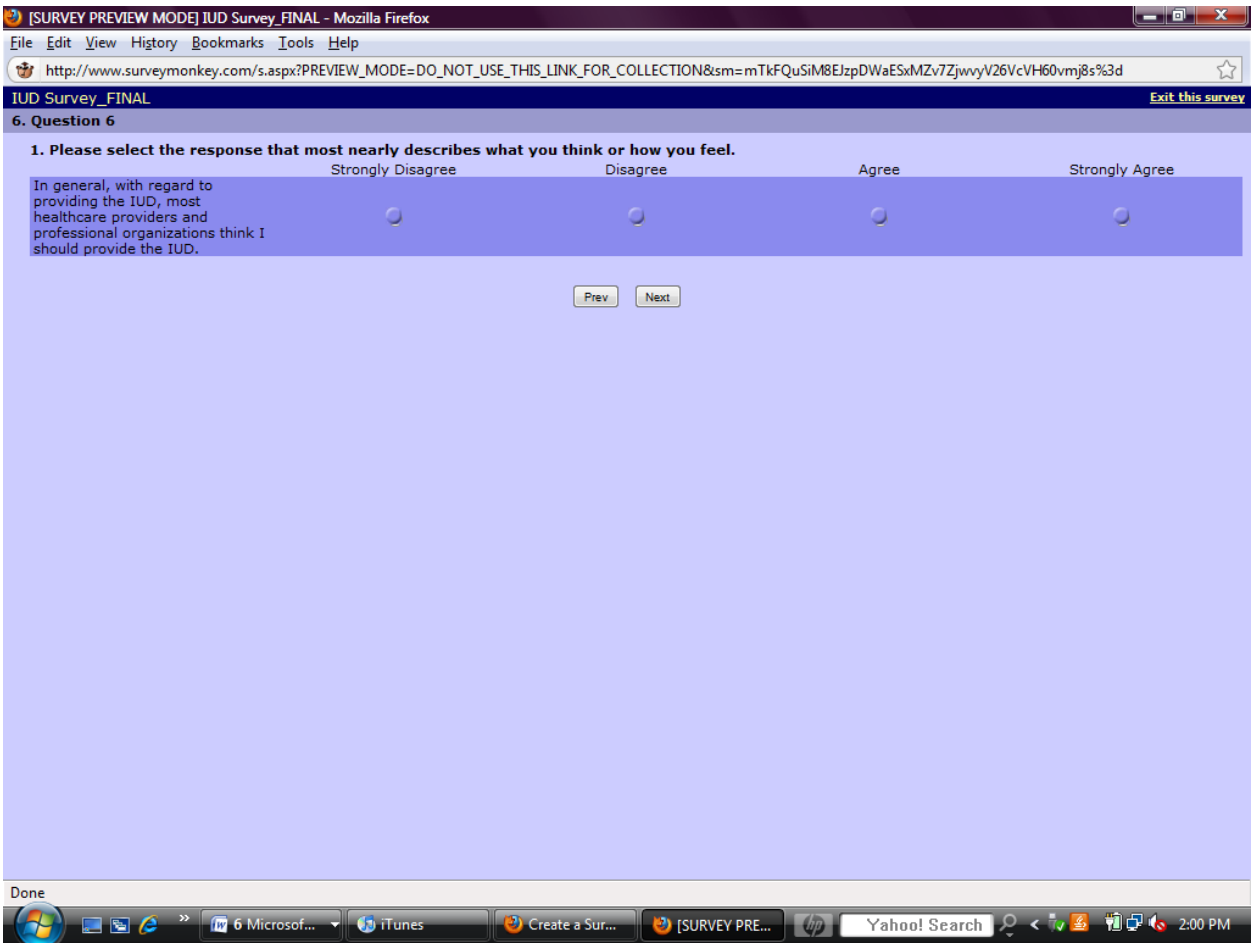
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6. Question 6
1. Please select the response that most nearly describes what you think or how you feel.
Strongly Disagree
Disagree
Agree
Strongly Agree
In general, with regard to providing the IUD, most healthcare providers and professional organizations think I should provide the IUD.
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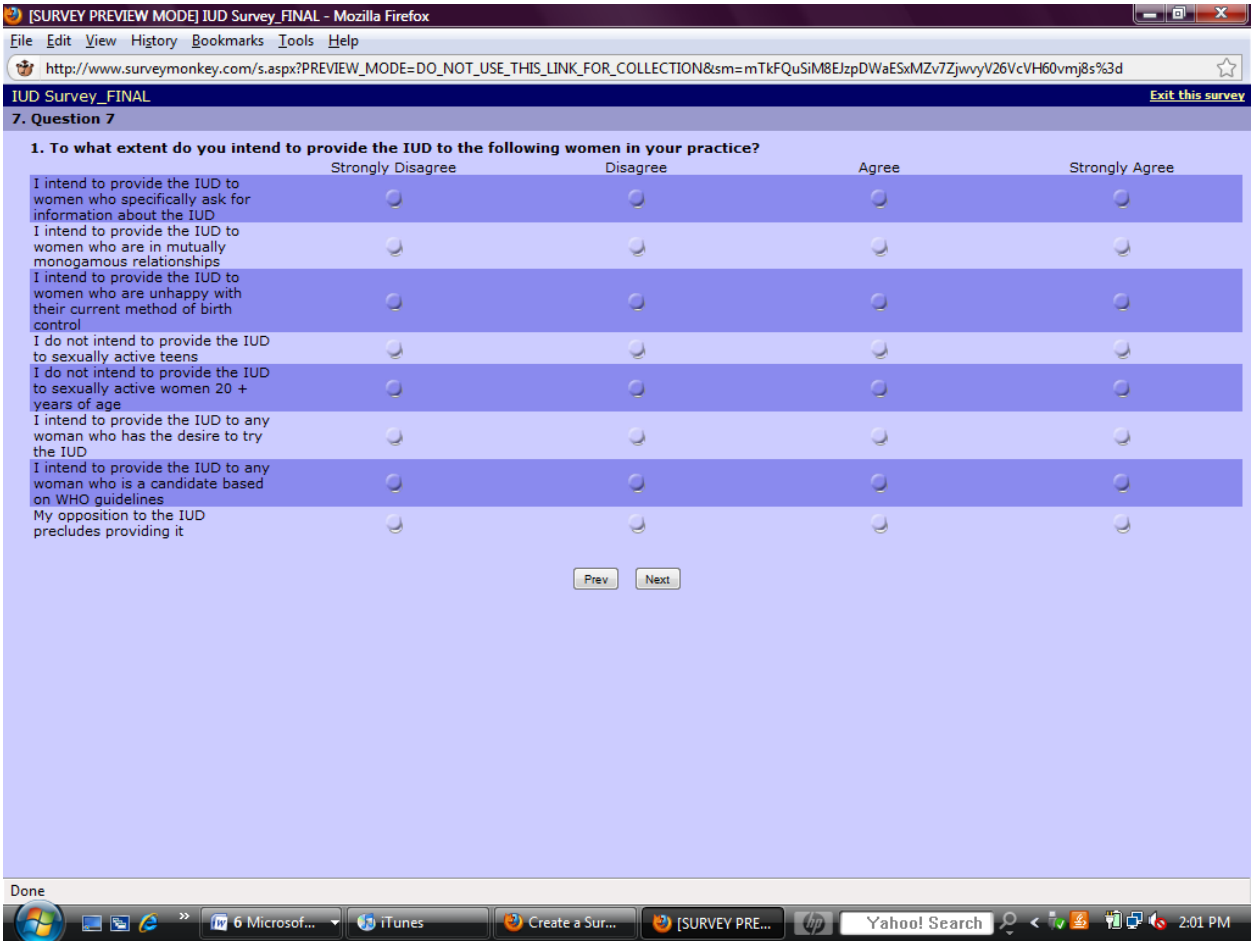
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7. Question 7
1. To what extent do you intend to provide the IUD to the following women in your practice?
Strongly Disagree
Disagree
Agree
Strongly Agree
I intend to provide the IUD to women who specifically ask for information about the IUD
I intend to provide the IUD to women who are in mutually monogamous relationships
I intend to provide the IUD to women who are unhappy with their current method of birth control
I do not intend to provide the IUD to sexually active teens
I do not intend to provide the IUD to sexually active women 20 + years of age
I intend to provide the IUD to any woman who has the desire to try the IUD
I intend to provide the IUD to any woman who is a candidate based on WHO guidelines
My opposition to the IUD precludes providing it
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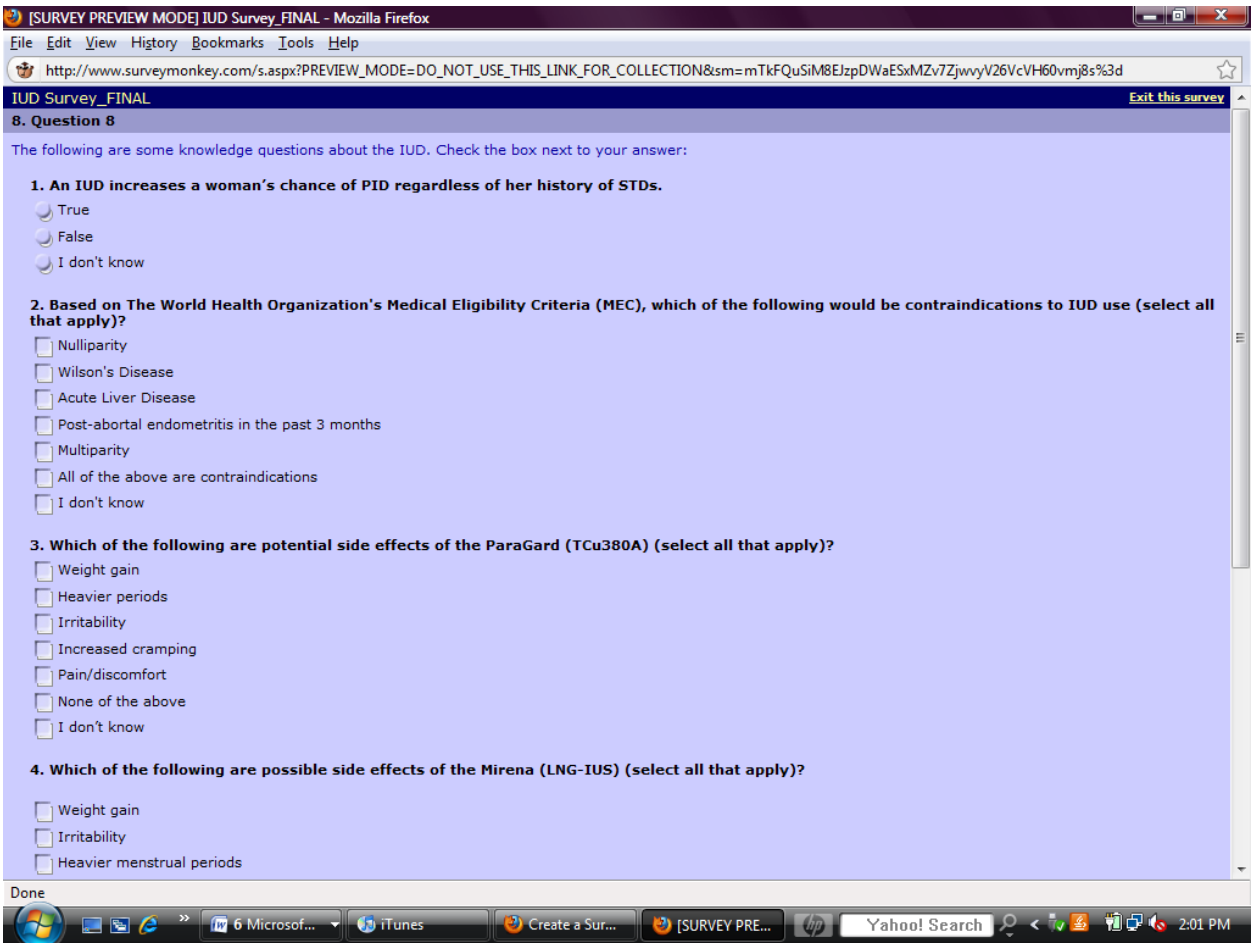
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8. Question 8
The following are some knowledge questions about the IUD. Check the box next to your answer:
1. An IUD increases a woman's chance of PID regardless of her history of STDs.
True
False
I don't know
2. Based on The World Health Organization's Medical Eligibility Criteria (MEC), which of the following would be contraindications to IUD use (select all that apply)?
Nulliparity
Wilson's Disease
Acute Liver Disease
Post-abortal endometritis in the past 3 months
Multiparity
All of the above are contraindications
I don't know
3. Which of the following are potential side effects of the ParaGard (TCu380A) (select all that apply)?
Weight gain
Heavier periods
Irritability
Increased cramping
Pain/discomfort
None of the above
I don't know
4. Which of the following are possible side effects of the Mirena (LNG-IUS) (select all that apply)?
Weight gain
Irritability
Heavier menstrual periods
Done
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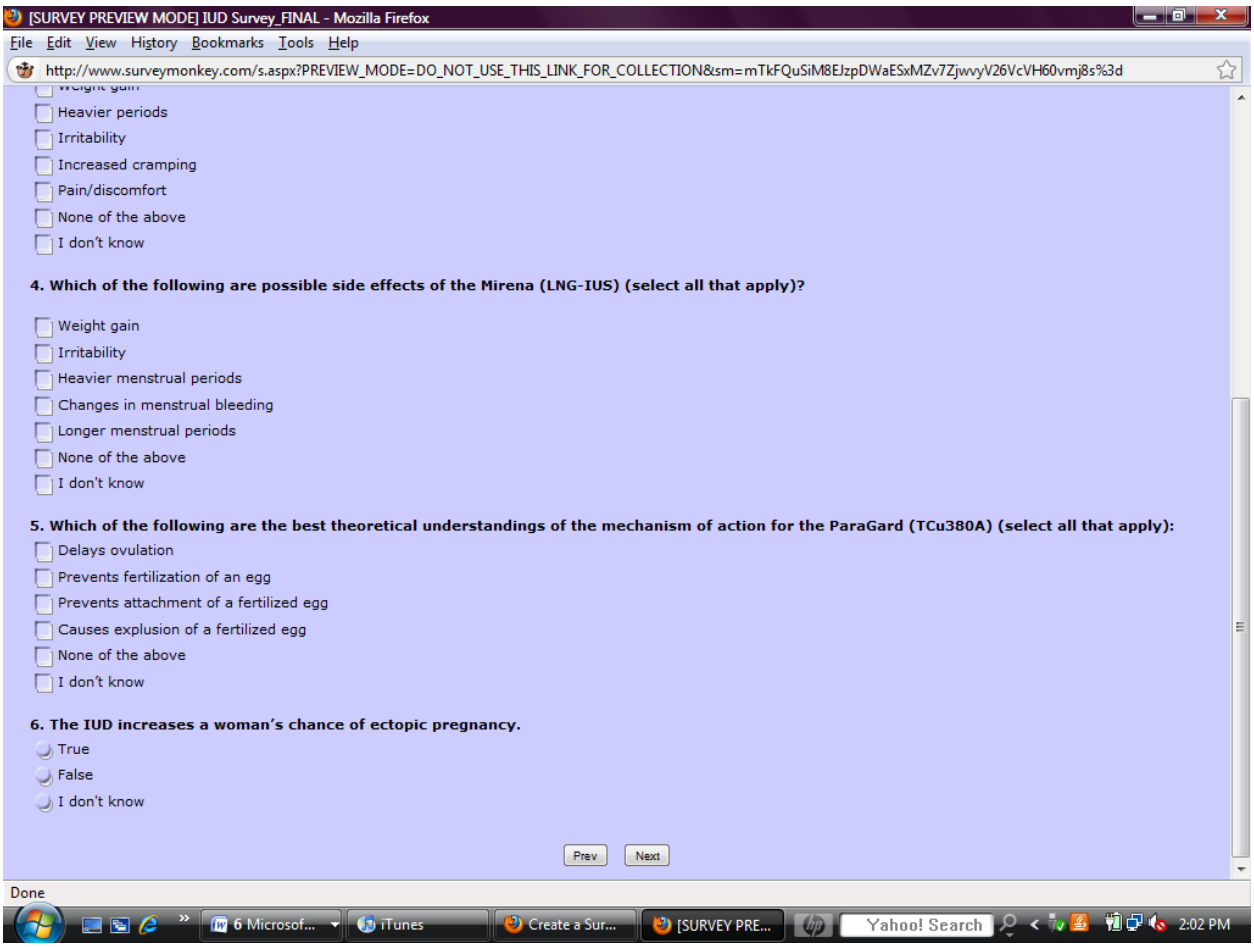
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Heavier periods
Irritability
Increased cramping
Pain/discomfort
None of the above
I don't know
4. Which of the following are possible side effects of the Mirena (LNG-IUS) (select all that apply)?
Weight gain
Irritability
Heavier menstrual periods
Changes in menstrual bleeding
Longer menstrual periods
None of the above
I don't know
5. Which of the following are the best theoretical understandings of the mechanism of action for the ParaGard (TCu380A) (select all that apply):
Delays ovulation
Prevents fertilization of an egg
Prevents attachment of a fertilized egg
Causes explusion of a fertilized egg
None of the above
I don't know
6. The IUD increases a woman's chance of ectopic pregnancy.
True
False
I don't know
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Appendix F

Pilot Study Measures of Central Tendency and Dispersion for Construct Scales

1. Some statements Healthcare Providers have made about providing the IUD are listed below. Please select the response that most closely describes your response.					
	n	**Possible Scores**	**Mean**	**Standard Deviation**	**Variance**
Summed Scale	20-21	-2 - +2	1.80	0.66	0.43
1. Enhances a woman's contraceptive options.	20	-2 - +2	1.80	0.66	0.43
2. Reduces the number of unintended pregnancies.	21	-2 - +2	1.90	0.29	0.09
3. Increases my chance of litigation.	21	-2 - +2	1.33	0.71	0.51
4. Takes too much time in clinic.	21	-2 - +2	1.19	0.66	0.44
5. Poses health risks for my patients who are nulliparous.	21	-2 - +2	1.42	0.90	0.82
6. Causes an abortion for a woman who has conceived.	21	-2 - +2	1.71	0.45	0.20
7. Is safe for a nulliparous woman.	21	-2 - +2	1.71	0.45	0.20
8. Causes pelvic inflammatory disease (PID).	21	-2 - +2	1.57	0.73	0.53
9. Encourages unprotected sex.	21	-2 - +2	1.48	0.73	0.54
2. Please select the response that most nearly describes how you think or feel regarding the result of providing the IUD.					
	n	**Possible Scores**	**Mean**	**Standard Deviation**	**Variance**
Summed Scale	19-20	-2 - +2	1.59	0.54	0.29
1. Enhances a woman's contraceptive options is a good result of providing the IUD.	20	-2 - +2	1.80	0.39	0.15
2. Reducing the number of unintended pregnancies is a	20	-2 - +2	1.80	0.39	0.15

good result of providing the IUD.					
3. Increasing my chance of litigation is a bad result of providing the IUD.	19	-2 - +2	1.32	0.69	0.48
4. Taking too much time in clinic is a bad result of providing the IUD.	19	-2 - +2	1.32	0.69	0.48
5. Posing health risks for my patients who are nulliparous is a bad result of providing the IUD.	19	-2 - +2	1.63	0.46	0.21
6. Causing an abortion for a woman who has conceived is a bad result of providing the IUD.	19	-2 - +2	1.63	0.46	0.21
7. Is safe for a nulliparous woman.	19	-2 - +2	1.58	0.47	0.22
8. Causing pelvic inflammatory disease (PID) is a bad result of providing the IUD.	19	-2 - +2	1.63	0.46	0.21
9. Encouraging unprotected sex is a bad result of providing the IUD.	19	-2 - +2	1.58	0.47	0.22
3. Please select the response that most closely describes what you think or how you feel about the IUD.					
	n	**Possible Scores**	**Mean**	**Standard Deviation**	**Variance**
Summed Scale	20	-2 - +2	1.80	0.39	0.15
1. In general, I think providing the IUD for patients is GOOD.	20	-2 - +2	1.80	0.39	0.15
2. In general, I think providing the IUD for patients is BAD.	20	-2 - +2	1.80	0.39	0.15
3. In general, I think providing the IUD for patients is BENEFICIAL.	20	-2 - +2	1.80	0.39	0.15
4. Healthcare providers and professional organizations are influential in clinical decision making. Please select your responses below.					
	n	**Possible Scores**	**Mean**	**Standard Deviation**	**Variance**
Summed Scale	19-20	-2 - +2	1.41	0.81	0.65

1. Healthcare providers think that I should provide the IUD.	19	-2 - +2	1.47	0.72	0.51
2. Healthcare providers think that I should not provide the IUD.	19	-2 - +2	1.32	1.03	1.05
3. My professional organization(s) recommend(s) that I should not provide the IUD.	20	-2 - +2	1.35	1.04	1.07
5. Current medical standards recommend that I should provide the IUD.	20	-2 - +2	1.40	0.72	0.51
6. In general, most people or groups that are important to me think that I should provide the IUD.	20	-2 - +2	1.50	0.49	0.24
5. Healthcare providers make decisions based on medical practice recommendations by professional organizations and colleagues. Select the response that most closely corresponds with your practice.					
	n	**Possible Scores**	**Mean**	**Standard Deviation**	**Variance**
Summed Scale	18-19	-2 - +2	1.21	0.72	0.52
1. I want to comply with healthcare providers.	18	-2 - +2	0.67	0.69	0.48
2. I do not want to comply with healthcare providers.	18	-2 - +2	1.11	0.61	0.37
3. I want to comply with recommendations of my professional organization(s).	19	-2 - +2	1.31	0.70	0.50
4. I want to comply with current medical standards.	19	-2 - +2	1.68	0.44	0.20
6. Please select the response that most nearly describes what you think or how you feel.					
	n	**Possible Scores**	**Mean**	**Standard Deviation**	**Variance**
1. In general, with regard to providing the IUD, most healthcare providers and professional organizations	19	-2 - +2	1.38	0.45	0.22

think I should provide the IUD.					
7. To what extent do you intend to provide the IUD to the following women in your practice?					
	n	**Possible Scores**	**Mean**	**Standard Deviation**	**Variance**
Summed Scale	17-19	$^{-}2$ - $^{+}2$	1.43	0.77	0.59
1. I intend to provide the IUD to women who specifically ask for information about the IUD.	19	$^{-}2$ - $^{+}2$	1.67	0.44	0.19
2. I intend to provide the IUD to women who are in mutually monogamous relationships.	19	$^{-}2$ - $^{+}2$	1.44	0.88	0.78
3. I intend to provide the IUD to women who are unhappy with their current method of birth control.	19	$^{-}2$ - $^{+}2$	1.56	0.46	0.21
4. I do not intend to provide the IUD to sexually active teens.	17	$^{-}2$ - $^{+}2$	1.18	0.64	0.40
5. I do not intend to provide the IUD to sexually active women 20+ years of age.	19	$^{-}2$ - $^{+}2$	1.61	0.45	0.20
6. I intend to provide the IUD to any woman who has the desire to try the IUD.	19	$^{-}2$ - $^{+}2$	0.50	1.16	1.36
7. I intend to provide the IUD to any woman who is a candidate based on WHO guidelines.	19	$^{-}2$ - $^{+}2$	1.61	0.45	0.20
8. My opposition to the IUD precludes providing it.	19	$^{-}2$ - $^{+}2$	1.89	0.29	0.08

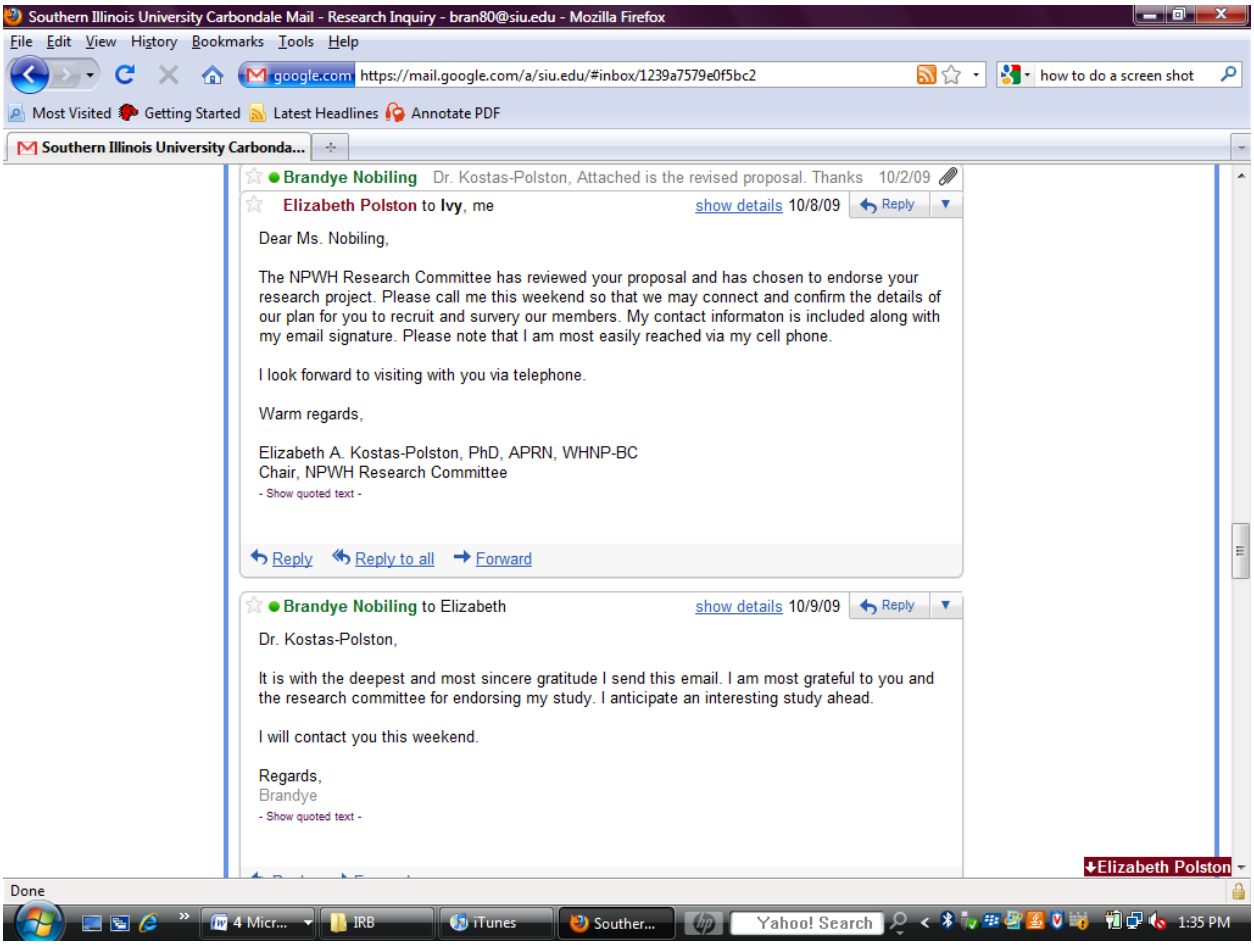
Appendix G

Coding of Qualitative Responses from Pilot Study

Category	Part#	Response
Beliefs about the IUD	7	IUDs are a great method of contraception that are underused in the USA
Critique and feedback about the instrument	2	I love IUDs. My opinions regarding IUDs are not influenced by my colleagues. I would have selected "neither" if this was an option regarding the collaboration questions. What determines how I practice is from evidence based medicine and professional guidelines.
	3	CSPs I have no idea what this stands fo
	4	I found the first 2 questions of this survey confusing. I didn't know what CSP stood for, and the questions seemed redundant. Also in a few cases, it was confused whether to agree or disagree because of the use of negatives
	5	.you need to state what a CSP (1st Q) is, write it out.
	6	many of the questions are poorly written and hard to understand

Appendix H

Email Correspondence with Dr. Elizabeth Kostas-Polston of the National Association of Nurse Practitioners in Women's Health (NPWH) Regarding Endorsement of the Study



Appendix I

Institutional Review Board (IRB) Application and Approval

Appendix J

Email Cover Letter for Actual Study: Plain Text and Screenshot of Online Format

From: Brandye Nobiling

Subject: Research Request

Dear NPWH Member:

I am a health educator and a doctoral candidate in the Department of Health Education at Southern Illinois University Carbondale, requesting your voluntary participation in my dissertation research study.

The purpose of this study is to test the Theory of Reasoned Action by surveying healthcare providers' thoughts regarding intrauterine devices (IUDs). You were selected to participate in this study because of your expertise in the field of women's health. Your responses have the ability to better inform those dedicated to improving the health of others.

Members who complete the survey will be entered to **WIN** a choice of free **conference registration** or a one year, **free membership.** One winner will be randomly selected to win her choice of either complementary registration to the 13th Annual NPWH Premier Women's Healthcare Conference in Palm Desert, California from October 13-16, 2010, or a one year, free membership to NPWH. The winner will randomly be selected from the pool of NPWH membership numbers provided by participants.

Your e-mail address was obtained through membership in NPWH. The survey will take 10 to 15 minutes to complete. All your responses will be kept confidential within reasonable limits. Only people directly involved with this project will have access to the surveys. A blind copy format will be used so that the list of recipients will not appear in the header.

Completion and return of this survey indicate voluntary consent to participate in this study. Questions about this study can be directed to me or to my supervising professor, Dr. Judy C. Drolet, Professor Emeritus, Department of Health Education, SIUC, Carbondale, IL 62901-4632.
Phone (618) 453-2777.

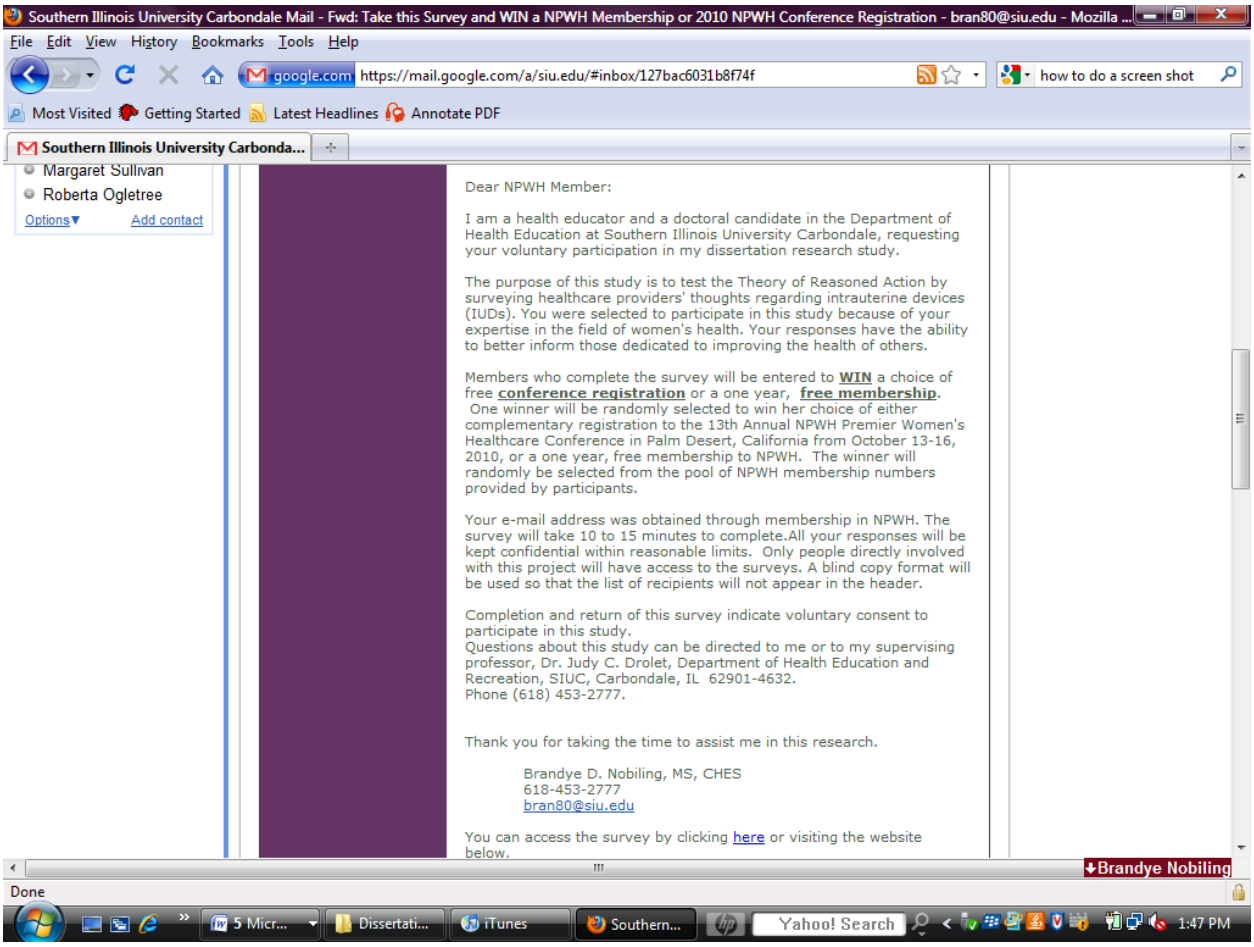
If you do not wish to receive future emails, you may reply with an opt-out message. If you do not respond to this survey or return the opt-out message, you will be contacted again with this request up to 4 times during the next 4 weeks.

Thank you for taking the time to assist me in this research.

Brandye D. Nobiling, MS, CHES

618-453-2777
bran80@siu.edu

This project has been reviewed and approved by the SIUC Human Subjects Committee. Questions concerning your rights as a participant in this research may be addressed to the Committee Chairperson, Office of Research Development and Administration, SIUC, Carbondale, IL 62901-4709. Phone (618) 453-4533. E-mail: siuhsc@siu.edu



Appendix K

Descriptive Statistics for Theory of Reasoned Action Construct Scales (N = 695)

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Behavioral Intention	662	-9.00	16.00	9.91	4.30	18.49
Direct Attitudes	681	-3.00	6.00	5.25	1.27	1.61
Direct Subjective Norms	690	-2.00	2.00	1.44	0.64	0.41
Behavioral Beliefs	678	-4.00	18.00	11.93	4.02	16.16
Evaluation of Outcomes	669	-10.00	18.00	11.17	5.83	33.99
Normative Beliefs	671	-6.00	10.00	6.91	2.90	8.41
Motivation to Comply	673	.00	8.00	5.55	1.76	3.10
Behavioral Beliefs weighted by Evaluation of Outcomes	652	-20.00	36.00	19.12	10.04	100.80
Normative Beliefs weighted by Motivation to Comply	658	-8.00	16.00	8.10	4.92	24.21

Item	SA n(%)**	A n(%)**	D n(%)**	SD n(%)**	Mean	Std. Dev	Variance
Enhances a woman's reproductive options*	6(0.9)	1(0.1)	83(11.9)	604(86.8)	1.84	0.50	0.25
Reduces the number of unintended pregnancies*	6(0.9)	_____	90(12.9)	597(85.8)	1.84	0.49	0.24
Increases my chance of litigation	5(0.7)	131(18.8)	392(56.3)	161(23.1)	0.83	1.02	1.04
Takes too much time in clinic	20(2.9)	31(4.5)	351(50.4)	291(41.8)	1.24	0.90	0.81
Poses health risks for patients who are nulliparous	11(1.6)	56(8.0)	365(52.4)	261(37.5)	1.17	0.90	0.81
Causes an abortion for a woman who has conceived	12(1.7)	96(13.8)	257(36.9)	325(46.7)	1.14	1.08	1.17
Is safe for nulliparous women*	21(3.0)	50(7.2)	314(45.1)	307(44.1)	1.21	0.98	0.96
Causes PID	3(0.4)	25(3.6)	326(46.8)	338(48.6)	1.40	0.71	0.50
Encourages unprotected sex	6(0.9)	63(9.1)	310(44.5)	315(45.3)	1.25	0.91	0.82

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree
*Items were reverse coded
**Percentages not equaling 100 reflect missing data

Item	SA n(%)**	A n(%)**	D n(%)**	SD n(%)**	Mean	Std. Dev	Variance
Enhances a woman's reproductive options…a good result of providing IUD*	_____	2(0.3)	145(20.8)	546(78.4)	1.78	0.43	0.19
Reduces the number of unintended pregnancies…good result of providing IUD*	_____	2(0.3)	116(16.7)	575(82.6)	1.82	0.40	0.16
Increases my chance of litigation…bad result of providing IUD	23(3.3)	139(20.0)	329(47.3)	198(28.4)	0.78	1.16	1.35
Takes too much time in clinic…bad result of providing IUD	11(1.6)	51(7.3)	352(50.6)	277(39.8)	1.21	0.89	0.79
Poses health risks for patients who are nulliparous…bad result of providing IUD	9(1.3)	73(10.5)	343(49.3)	265(38.1)	1.13	0.95	0.90
Causes an abortion for a woman who has conceived…bad result of providing IUD	21(3.0)	93(13.4)	267(38.4)	307(44.1)	1.08	1.12	1.25
Risking safety of nulliparous…bad result of providing IUD	12(1.7)	72(10.3)	322(46.3)	279(40.1)	1.14	0.98	0.93
Causing PID…bad result of providing IUD	15(2.2)	92(13.2)	296(42.5)	284(40.8)	1.08	1.07	1.15
Encouraging unprotected sex….bad result of providing IUD	13(1.9)	91(13.1)	288(41.4)	292(42.0)	1.10	1.06	1.12

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree
*Items were reverse coded
**Percentages not equaling 100 reflect missing data

Item	SD n(%)**	D n(%)**	A n(%)**	SA n(%)**	Mean	Std. Dev	Variance
In general, I think providing the IUD is good	1(0.1)	5(0.7)	146(21.0)	537(77.2)	1.76	0.49	.024
In general, I think providing the IUD is bad*	1(0.1)	3(0.4)	135(19.4)	546(78.4)	1.78	0.46	0.21
In general, I think providing the IUD is beneficial	2(0.3)	4(0.6)	184(26.4)	691(99.3)	1.70	0.53	0.28

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree
*Items were reverse coded
**Percentages not equaling 100 reflect missing data

Item	SD n(%)**	D n(%)**	A n(%)**	SA n(%)**	Mean	Std. Dev	Variance
HCPs think I should provide the IUD	3(0.4)	36(5.2)	333(47.8)	312(44.8)	1.34	0.77	0.59
HCPs think I should not provide the IUD*	1(0.1)	27(3.9)	322(46.3)	336(48.3)	1.41	0.70	0.49
My professional organizations recommend I should provide the IUD*	25(3.6)	23(3.3)	231(33.2)	408(58.6)	1.42	0.94	0.88
Current medical standards recommend I should provide the IUD	12(1.7)	35(5.0)	298(42.8)	346(49.7)	1.35	0.86	0.74
Most people/groups important to me think I should provide the IUD	8(1.1)	30(4.3)	296(42.5)	351(50.4)	1.39	0.80	0.64

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree
Note. HCP = Healthcare provider
*Items were reverse coded
**Percentages not equaling 100 reflect missing data

Item	SD n(%)**	D n(%)**	A n(%)**	SA n(%)**	Mean	Std. Dev	Variance
I want to comply with HCPs	1(0.1)	36(5.2)	462(66.4)	179(25.7)	1.15	0.68	0.46
I do not want to comply with HCPs*	2(0.3)	17(2.4)	411(59.1)	250(35.9)	1.31	0.63	0.40
I want to comply with professional organization recommendations	_____	5(0.7)	355(51.0)	327(47.0)	1.46	0.54	0.29
I want to comply with current medical standards	_____	1(0.1)	254(36.5)	435(62.5)	1.63	0.49	0.24

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree
Note. HCP = Healthcare provider
*Items were reverse coded
**Percentages not equaling 100 reflect missing data

Item	SD n(%)**	D n(%)**	A n(%)**	SA n(%)**	Mean	Std. Dev	Variance
I intend to provide the IUD to women who specifically ask for information	3(0.4)	29(4.20)	274(39.4)	376(54.0)	1.45	.075	.056
I intend to provide the IUD to women in mutually monogamous relationships	6(.9)	24(3.4)	283(40.7)	369(53.0)	1.44	0.75	0.56
I intend to provide the IUD to women unhappy with current birth control method	1(0.1)	28(4.0)	317(45.5)	334(48.0)	1.40	0.71	0.50
I do not intend to provide the IUD to sexually active teens*	32(4.6)	160(23.0)	327(47.0)	161(23.1)	0.63	1.21	1.46
I do not intend to provide the IUD to sexually active women 20+ years of age*	9(1.3)	36(5.2)	344(49.4)	291(41.8)	1.28	0.82	0.67
I intend to provide the IUD to any woman who has the desire to try the IUD	12(1.7)	221(31.8)	274(39.4)	172(24.7)	0.55	1.23	1.51
I intend to provide the IUD to any woman who is a candidate based on WHO guidelines	1(0.1)	22(3.2)	276(39.7)	380(54.6)	1.49	0.68	0.46
My opposition to the IUD precludes providing it*	9(1.3)	16(2.3)	175(25.1)	476(68.4)	1.62	0.73	0.53

Note. SD = strongly disagree; D = disagree; A = agree; SA = strongly agree

*Items were reverse coded

**Percentages not equaling 100 reflect missing data

Appendix L

Qualitative Responses: Instrument Criticisms

CATEGORY	Part#	RESPONSE
Criticisms regarding instrumentation	18	Second group of questions was very difficult to answer- I can agree that (for example) increased liability theroretically is a bad outcome of iud insertions without believing that it actually does increase my liability to do the procedure- I wasnt sure what you were looking for
	27	Clarify questions. As I understand it the IUD does not increase the risk of pregnancy, but if the woman becomes pregnant with the IUD in place she may have increased risk of that pregnancy being ectopic.
	30	The wording in some of these questions was odd. I hope my answers reflect my true feelings.
	38	No, but I thought the questions were a bit difficult to interpret due to the nature of the responses- e.g. ultimately, the potential does arise in any situation where a case may be litigated due to the use of IUD, but the real risk remains very remote. \\
	43	Just FYI- your question #2 wording was very confusing. For example: Increased litigation is a bad result of IUD. Yes, it would be a bad result, but I don't believe my risk if litigation is higher. So, I'm not sure I interpreted the statements correctly.
	45	The paragard is FDA approved for nulliparous women, but the Mirena is not so your questions were difficult to answer regrding nulliparous women
	53	Question 2 was confusing. I am pro IUD, so if my answer is inconsistent with #2, you

		need to consider throwing it out. (Qualitative research, right?)
	55	No, but the survey has questions that have double negatives....making it impossible to know the intent of the question....
	63	Confusing questions that switch from I do to I do not, etc pretty randomly.
	66	Some of the questions are worded in a confusing manner so I am not entirely sure that what I have answered fully and accurately reflects my opinions. There is never one deciding factor in the use of an IUD, and to say that one should provide it or not provide it based on a given criteria limits this surveys true understanding of the complexity of decision making by a provider.
	68	Interesting questions would love to see the results. ~~Nancy ARNP for 31 years~~
	71	Question #2 in the final block could have a couple answers. The Paragard shouldn't be used in women with Wilson's but the Mirena is appropriate. Also with re: to question #6 in same section , IUDs increase the risk of ectopic pregnancies compared to women using hormonal methods but are at no greater risk compared to women using non-hormonal methods i.e., condoms, foam, nfp, etc.
	102	This questionnaire was not very clear--the statements were ambiguous and misleading, thus leading to potential false statements
	110	I found some of your questions confusing. A "no opinion or not sure" option would have been appreciated. This questionnaire doesn't get at the interaction between the clinician and the patients
	143	I do not like how some of the statements

		were presented. For example: the question regarding sexually active teens did not leave room for any parameters. If you have a very mature responsible teen in a monogamous relationship, an IUD might be very appropriate
	161	I think these questions can be confusing in regards to how they are asked.
	179	some of the questions were difficult to answer. For instance Wilson's disease is only applicable to the copper IUD and the ectopic rate is higher if pregnancy occurs but not for users in general. In other words I wasn't sure how to answer at times....
	184	With the questions regarding "pressure" to insert or not insert an IUD from colleges, I would prefere a "N/A" response in place of the options provided.
	201	The ectopic question is poorly worded. Compared to what? Compared to no method, it certainly doesn't increase chance of ectopic (and that is the stat that industry always uses). But compared to other highly effective methods, it does increase the chance of ectopic. Asking the question without specifying is rather meaningless,
	202	About this survey, some of the questions did not differentiate between IUD types, making the choices for answers unclear. It is my feeling that given this, your survey may not accurately reflect the opinions of those taking the survey.
	217	IUD questionare should be given to members who are practicing in these types of settings
	226	Some of these questions are hard to understand.
	228	difficult to answer generalized questions about two very different IUDs.

	232	in question 7 the parts about giving it to women who ask or who are monog. are unclear.

Appendix M

Qualitative Responses: IUD-Specific Responses

CATEGORY	**PART. #**	**RESPONSE**
General positive comments	1	It's a great method that is very much underutilized in the US
	6	So many women have benefitted from the IUD, it is a wonderful choice for women.
	10	IUDs continue to be an excellent option for contraception
	23	I think IUDs are a great method of birth control for many women
	25	I LOVE mine, too!
	26	The IUD is an excellent contraceptive choice for women today!
	28	I think IUD's are a very effective and safe form of birth control that needs to be in the main stream ----
	35	IUD's are an excellent method of birthcontrol for women of any childbearing age.
	44	I think they are extremely useful for women wanting an effective mindless birth control method
	49	Excellent contraceptive choice.
	52	IUDs are my first choice for long term, reversible and effective contraception.
	59	It is a great method and should be used by more women
	62	I am glad that they are making a come back and I have many happy clients
	67	I would encourage NPs who are going to be promoting IUDs to consider having one inserted. When I was in pra thing I have ever done regarding contraception. I could be the spokeperson for how WONDERFUL and IUD is and why every woman should have one! ctice, I STRONGLY encourged IUDs and then after my child had one inserted. It is the BEST
	69	I think the IUD is an underutilized method of contraception in this country...I tell my patients that it is one of the few methods that "no matter what you do, you can't mess it up."
	88	Very effective in preventing pregnancy and has little user error.

	91	Cost effective, long-term contraceptive underutilized in the U.S., unfortunately
	92	Greatest thing since sliced bread!
	95	I am a Mirena IUD user. I strongly recommend it.
	106	They are a great BCM.
	111	I think it is a wonderfully convenient, safe & effective contraceptive that has been demonized by groups w/ a political agenda.
	115	an important option
	116	They are making a come back in my opinion-yay!
	117	The iud is a beautiful contraceptive option for most women and should always be considered when providing counseling to any sexually active female patient
	118	It is a good reliable form of birth control that should be offered to a woman after she is screened for certain risk factors.
	120	IUDs are great!! They need to be more available and encouraged in the US!
	121	IUD is a wonderful contraceptive for long term contraception and quite popular in our clinic.
	123	I think the intorduction of the Mirena IUC has been a wonderful option for women.
	124	Very reliable method
	126	I think IUDs are a good birth control option
	129	It is a very effective method of birth control.
	130	An IUD is a GREAT contraceptive choice in the proper pt.
	132	The IUD needs to be accepted and promoted. The myths around the IUD need to be clarified and communicated. The IUD needs to be accessible
	135	IUDs are a great form of contraception. Women like it because it is low maintenance.
	144	I am a strong believer in both the paragard and the Mirena,
	146	They are a great method of BC
	148	i love the ParaGard
	152	I, personally am a great advocate of the IUD. Both the copper (which I use in nulliparous women) and the Mirena (which I've used since it's release in the US).
	157	Underutilized method subject to irrational prejudices.
	158	It is an excellent choice for any woman who meets the criteria for insertion.
	167	IUDs greatly reduce the risk of unintended pregnancy.
	169	I believe the IUDs are wonderful options for women

		who are interested in contraception.
	170	I personally find the IUD a great contraceptive option for appropriate candidates… I have seen two failures, and both carried their babies to term
	171	I think the IUD is an amazing contraceptive option for many women. I am happy that my clinic provides this choice for our patients, and am pleased that it seems to be gaining in popularity each year.
	172	Love IUDs. Appropriate for most women.
	174	love the IUD as an opion for women!
	176	It's a wonderful option we can provide for our patients!
	177	I think it is great for the woman who meets the criteria for insertion
	180	I think it is an excellent BC choice for the appropriate woman. It is convenient, generally easy to insert , cost effective and well tolerated. Most women who try it really like it.
	181	I think IUDs are an extremely important contraceptive option to offer women.
	182	a uterus should either be pregnant, trying to get pregnant or have an IUD in!
	183	I love doing IUDs
	187	I think this is an underprescribed but quite effective method of contraception. There are still some misconceptions about IUD use among women and these need to be addressed. I find that overwhelmingly, my patients who choose IUD as their birth control method are very satisfied.
	192	They are a great, underutilized option for approrpriate women.
	193	I have found the levonorgestrel IUS to be a great option for our patients and feel that it is gaining popularity and satisfaction among women.
	199	IUD's are my favorite method of birth control. I tell my patients that IUD is the number one method of birth control in Europe and the number one form of birth control in the USA with OB/GYN's and their wives
	203	think IUDs are a great method of contraception.
	206	Should be readily available to women who request this method of contraception.
	208	Mirena also has several noncontraceptive benefits and I often use it for them.
	212	As you can probably guess, I love IUD's and am a strong advocate. I have personally used them most of my contraceptive life. They are very misunderstood and

		maligned. Some population groups embrace the IUD and others are frightened of it.
	214	Underused and valuable contraceptive.
	215	i love it - think its a great method
	216	Great method of birth control for the right client!!
	219	I find women accept it and like the convenience and effectiveness.
	220	IUD's are a very effective, safe method of contraception and I wish more providers in our country would offer them!
	223	IUDs are wonderful! Clinicians who don't provide IUDs are disadvantaging their clients.
	225	Misunderstood, under prescribed.
	226	I like IUD's
	227	Great product, needs to be readily available
	237	Truly underutilized in USA and subject of much misinformation even among healthcare providers
Concerns and challenges associated with IUDs	11	Previous litigation is certainly a real issue & continues to "haunt" one's mind. Nulliparity makes insertion slightly more difficult & could raise litigation if infertility occurs later on. The side effects do not seem any worse or better than other methods. The issue of how the IUD or IUS works does pose problems regarding social and religious considerations.
	12	Still somewhat of an uphill battle trying to change attitudes towards IUD method after the fiasco with Dalkon shield.
	17	Although, in general, risk of PID is not increased in women wearing an IUD, I believe there is a small increased risk of infection immediately following insertion, which is a procedure related risk. Once a week or two has passed following IUD insertion I believe that there is no increased risk of PID in women wearing the Paragard IUD compared to women wearing no IUD, and possibly a slightly lower risk of PID in women wearing the Mirena IUD compared to women wearing no IUD. Because I believe there is a small procedure related risk of PID when IUD's are inserted, I usually prefer nulliparous women try other methods first if they are comfortable doing so and if this does not put them at increased risk of pregnancy.
	20	We have also removed a lot of those IUDs a year or even less after insertion for many of these same women (the majority of women do choose to keep their IUDs, but we have found a far greater number choosing to

		have them removed than we thought). Bleeding and pain are the two most common reasons for removal.
	21	i know that the literature says that iud is ok for nulliparous women but frankly i have my doubts based on personal experience
	22	The NP's in our practice have declined to insert in this group of women, however the MD's will attempt if absolutely no other options are available. The success rate of usage in this group is low sec to side effects not pregnancy and most are expelled or removed before 1 yr. I would prefer marketing not encourage IUD usage for this group of pts or recommend a discussion with a HC provider regarding whether this is a good option for them. We continue to see systemic side effects with the Mirena usage and rarely see a pt use a Mirena for longer than 2 yrs sec to side effects. Most common are mood chgs, wt gain and headaches. We have declined usage of the Mirena in our practice at this time secondary to their inappropriate price increase at a time when many patients don't have insurance and cannot afford an annual exam let alone a bc option their insurance will not completely cover. Shame on them!
	32	I had a ParaGard IUD myself for 1 1/2 years and suffered a ruptured ectopic pregnancy and almost died. Despite this, I think it is a great option for women who do not want hormones and are in a monogamous relationship. I would have second thoughts about inserting an IUD into a sexually teen...unless I knew for certain she would ALWAYS use condoms also - and since we know that doesn't always happen...I don't think I could do it in good conscience.
	40	There are still a lot of physicians who will not insert IUD's in nullparous women.
	58	I don't like the copper IUD because so many women (22-23%) have them removed due to bleeding/cramping
	70	I prefer the Mirena due to the heavier bleeding with the Paraguard, but still have difficulty getting women to agree to any IUD and many doctors are still more negative about them
	78	We seem to remove more Mirna's than we actually put in due to multiple problems: pelvic pain, heavy periods, pelvic infections, BV, yeast, partial expulsion, and "women complaining that they just don't feel like themselves!"

	79	I believe the failure rate of 1/100 women in one year as stated by the manufacturer of Paragard is not correct. Although I like this method and continue to place them for my patients, I have seen a higher failure rate than 1/100 and is not dependent on one particular providers. I work in a teaching hospital with several providers and have seen several pregnancies with paragard iud placed by Staff MD's, residents and NP's
	86	I dont believe the IUD increases ectopics over no method at all. More risk than w/a method which prevents ovulation tho! I heard dr. Piepher (sp?) from St. Louis at Cont. Tech speak on IUDs & was convinced they are for any woman.
	87	Women still have a strong stigma that the iud is bad.
	89	I still have concerns about offering the IUD/IUS to nulliparous women and teens. I consider insertion to be more difficult and there could be a greater risk for perforation of the uterus
	96	choice of contraception is very individualized in a variety of ways that can be more variable in younger women.
	107	Still have concerns because of past problems with Dalkon Shields. Not entirely convinced this is good choice for nullips.
	119	only offer the Mirena since the mech of action is known.
	122	Iuc is a great option. It seems, however, that it is being "pushed" on many clients.
	100	Insertion of an IUC has an increased risk of infection due to the insertion. Otherwise, wearing an IUC does not increase incidence of PID.
	137	Patients either love it or hate it. Those who want it removed usually do so because of ovarian cysts with mirena
	138	I think that there are too many biases against the use of this highly effective method of contraception/family planning. The saga of the 1970s persists that, like the Dalcon shield, the side effects outweigh the benefits. Obviously, this is not true and education should diffuse this misinformation.
	141	Many women want them removed soon after insertion because of menstrual irregularities even though they are counseled appropriately.

		Waste of time and expense are the biggest issues when the client opts removal and is very discouraging for all involved.
	142	I am new at inserting them, and my constant fear is perforation of the uterus.
	146	I have seen teens and nullips have more difficulty with them. Discomfort is the main reason they seem to be removed before thier expiration date.
	157	I do prefer IUS over CuT380 because of increased bleeding and cramping--statistically 25% of CuT pts will have it removed within 2-3 years. Mirena has much better outcome in my experience.
	167	In the rare occasion that pregnancy occurs with an IUD in place it is more likely to be ectopic. But they don't increase a woman's risk of ectopic pregnancy.
	168	My only concern related to providing IUD's to nulliparous women, particularly young teens, relates to whether or not their uterus is an appropriate size to accommodate the IUD. I struggle with whether to put a them through the pain of sounding their uterus only to find it isn't an adequate size. I would prefer to use ultrasound to measure the uterus, but of course this is not always economically feasible. I am experimenting with the use of endocervical and uterine lidocaine instillation as well as use of cytotec to minimize discomfort and thus mitigate this issue.
	173	I do not provide Mirena to nullips on a regular basis as my understanding is that this is an off label use
	189	I am a family nurse practitioner and thus do not feel comfortable in performing this procedure in spite of attending a workshop on this. Think I would only feel comfortable doing this if I had supervision and the ability to be doing this frequently.
	214	There still are many fears about current IUDs related to historical problems with previous IUDs such as the Dalcon shield.
	221	the IUD does not increase risk for ectopic because it significantly reduces the risk for all pregnancy, but in the very small chance of pregnancy with IUD, the chance that it could be an ectopic is higher.
	222	Best thing since sliced bread except for 2 circumstances: stenotic os in cervix, unable to locate strings on subsequent exam, which necessitates an ultrasound (my population usually has no insurance

		coverage).
	229	need to be proficient at this skill, see enough patients to keep your skill level up
	230	I no longer work for this organization, but up until a month ago, I worked within a hospital system that was run by the Catholic church, and we had a lot of difficulty using IUD for contraception. We were able to do it, but had to code it as "dysmenorrhea" or "menorrhagia" rather than contraception. So, religious beliefs also may play a role.
	231	In regards to increased liability, I believe not providing IUD options therefore possibly incrasing risks of pregnancy increases our liability. Managing a pregnancy carries a much greater risk of liability.
	233	My concern about the usefulness of the Mirena is that women who choose IUD's generally are looking to avoid hormones... Also, in my practice I have definitely seen examples of women who get nasty vaginal infections with an IUD in (which sometimes lead to PID), remove it and don't get them anymore, and they recur when a new IUD is inserted. this makes me suspicious of the research that holds them blameless where infections are concerned.
	240	we have seen quite a few peroration of mirena iud when placed less than 8 weeks post partum...also mirena iud tends have a cumbersome insertion....strings get caught up in inserter when removing..and pull iud down on occasion.....
Behaviors of IUD insertion	3	I insert IUD's at least once a week and often more often than that.
	7	I refer my patients out to a provider who inserts IUDs. I will counsel and refer but I do not place them myself.
	8	I am more likely to recommend Mirena than Paragard, especially to younger patients.
	21	ihave not inserted an iud in about 25 years. so when i say i would provide one, i would provide it by giving a referral to someone who inserts them frequently
	24	I put in hundreds per year, I have access to both Paragard and Mirena, they are both wonderful options to be able to provide to clients.
	37	I work in underserved clinic in a large city and I put in IUD's in woman of all ages

	50	I have inserted many IUDs and have no problems whatsoever.
	51	I provide IUD services in as much as I can refer pts to another NP trained in inserting IUD within our organization.
	59	my practice setting does not provide IUD's as an option.
	60	I had an IUD as a nulliperous woman and loved it. I now have a healthy child. I provide the IUD to any woman, any age who meets the recommended guidelines. It's a fantastic option.
	61	I will allow anyone who has given birth to have an IUD even if only 18yo. I will consider it if they have given birth and are under 18 as well.
	74	I prescribe often
	75	My attitude is more pro and more liberal in the selection of the IUC candidate than my protocols allow me to practice. Also, I do not have IUCs available to use on all candidates who desire one.
	87	I like having the option of an iud and use it when ever I can.
	97	I offer IUD/IUS as a choice in contraception to almost every woman
	103	I recommend Mirena (IUC) or Implanon post-delivery for particularly breastfeeding women for long term estrogen-free, pill-free, worry-free contraception. I find it extremely effective particularly in this population.
	105	I regularly provide them to nullips
	126	I put in lots of IUDs in my Women's Health Clinics.
	128	My clinical setting does not offer iuds - pts. are referred to another agency.
	129	I currently place IUD almost daily
	144	I put in hundreds per year at the public health clinic where I work. I have very few women wanting them out for side effects. Overall I feel they are safe and great long term methods of birth control!!!
	160	I like them. I would provide them if I could, but my facility does not offer them. And I would need to be trained in insertion, as I am not.
	170	I place about 2 per week, it has gained popularity in my practice.
	175	Both ParaGard & Mirena are used in the clinic where I practice.
	178	in my facility, the doctors do not encourage me to seek

		experience with insertion of any IUD. They all have determined that this is a MD procedure, mainly because of reimbursement, litagation, and because of the years of experience they have vs the midlevel providers.
	181	I insert them often in my practice
	188	I have been inserting IUD's for 34 years. The Mirena is an awesome IUD appropriate for most women.
	192	I don't do them in our clinic but can assist women to get them within 1-2 weeks.
	209	The Mirena is not FDA approved for nulliparous women, but I will use the paragard for nulliparous women.
	219	Haven't inserted antyhing but Mirena the past 10 years.
	232	…I would give it to them but also to those who are not monog. and offer it to those who don't ask
Costs/accessibility of IUDs	5	Expense often affects women's choices
	14	One issue that is a barrier in our small practice is paying for the IUD up front. What is she changes her mind and we now have this piece and have to swallow the cost.
	57	The local Family Planning clinics in the Virgin Islands do not provide Any iud's. Funding problems are cited as reason.
	58	The Mirena is my favorite, but I deal with a population that frequently has no insurance or eligibility for assistance and it is too expensive.
	65	need better access/ lower cost
	84	IUD should be more affordable. Many uninsured or underserved, who are the ones who need the most, cannot afford them. If IUD were affordable, I believe PCP would be discussing and offering IUD as an additional contraceptive option to every women who qualify.
	85	...IUDs are great. The main reason I don't put them in is I'm losing revenue by providing them. When reimbursement is less than cost, why bother…
	98	Not enough Medicaid coverage for IUD/IUS
	106	I wish that they were not so expensive.
	132	Cost of an IUD need to be explained in long term benefits
	136	I wish they were more readily available to women without healthcare insurance!

	146	Over-all I am happy there is more interest in this method, I just wish the Mirena was less expensive.
	164	Initial cost is always a consideration
	166	I am strongly opposed to Mirena increasing their price by double. This makes it inaccessible to the people who need it most !!!
	186	Biggest obstacle in our small private practice is having to purchase IUD's upfront and then try to get reimbursed. Doc stopped buying last week. I'm now going to have to send patients to planned parenthood. If I could write prescription and have patients get them from the pharmacy and bring back for insertion (like Depo and diaphragm) it would make things a LOT easier for us.
	196	Wish it were less expensive!!
	204	Cost is a signficant factor in offering the IUD
	205	It is a great method, wish insurance coverage was better
	210	I think the Mirena IUD is great. However, the company's recent increase in price (approx 40% increase) I think is taking advantage of people.
	212	My ONLY complaint about the IUD's is that they need to be more affordable for women. If a woman is uninsured and not on a public program then the 'up front' cost is expensive. Our wholesale price of Mirena's just went up to almost $700 per device, and that is the bulk rate. When we add in for the other costs, an IUD can cost upwards of $1500. That is a pretty big price to pay all at once. Yes, I know if you amortize the cost over 5 years, it is less, but this must be paid all at once
	213	I am unhappy with the recent price increase of the Mirena as it is such a good option for perimenopausal women who need cycle control in addition to other candidates seeking contraceptive benefits only.
	227	cost is too expensive for many who are uninsured.
Marketing influence	16	Since the introduction of Mirena (and yes I'm a fan of Mirena) ParaGard has really taken a PR hit. Unknowledgeable clients/young students whom too often get their medical knowledge from ad campaigns often think of the ParaGard as "the bad one" or " the painful one". I find myself working harder to sell Paragard as a viable option &...frankly I have more Mirena premature removals than ParaGard premature removals for pain/bleeding/spotting concerns.

	17	We have seen a huge increase in the number of women asking for IUDs with the direct to consumer advertising that Mirena has done.
	22	Unfortunately, mass media advertisement is implying safety of IUD contraception in nulliparous women
Patient counseling	24	I do careful counseling of the risks and benenfits, taking the history of the client into account to help her decide which IUC is right for her.
	29	The education to stress the importance of a barrier protection is no different than a client using COCs, the ring, or the patch in regard to STI prevention.
	46	I think they are good methods but my councelling is customized to my patients needs and life circumstances. Some of these questions are not not yes or no. It depends on the persons life circumstances. If I have a 19yo who wants an IUD and is in a monogamous relationship, I will give her the IUD with the understanding that she needs to use condoms if her partner changes or her future fertility is at stake.
	47	When women are informed about the risks and benefits of the devices and are given the opportunity to make an informed choice, they tend to be pleased with IUD and IUS options.
	48	I think that thorough pre-insertion counseling is essential. Lately, I feel like I'm removing almost as many as I'm inserting.
	54	The associated changes in bleeding patterns needs to be emphasized prior to insertion of an IUD.
	110	My opinion about the IUD is important, but even more important is my patient's opinion.. I spend a lot of time helping my patients identify and articulate their values as they decide which method they prefer.
	112	i think the IUD is a great form of contraception and should be available to all women who medically qualify if they are properly counselled about it's side effects.
	129	I do think the counseling ,if done properly, take longer the most other methods.
	131	each women needs to be indivdually screen to see if a choice of BC method is truely appropiate for her medical and personal situation
	140	That proper counseling of patients on ALL aspects of the IUD increases compliance with the method. Emphasizing the changes in menstrual bleeding is imperative (based on the evidence I have seen in my

		practice... that is the most common reason for removal).
	145	I believe IUD's are a wonderful option for women, but prescreening is necessary, along with proper education
	150	I generally discuss the IUD with all my patients looking for long term birth control, but in teens where monogamy is more unlikely, I encourage implanon as opposed to the IUD. I tell them condom use is essential if they have an IUD but feel that they do not comply and do not want to put them at increased risk with multiple sex partners and increased risk of STI or PID.
	163	Patient approach to dispel myths about IUD placement.
	187	I always include IUD info in my contraceptive counseling
	200	I am strive to educate all women in our practice at Dr. Emily's in the Bronx about IUD as a birth control option.
	213	When counseling women about their contraceptive options I appreciate that there are mature young nulliparous women who benefit from protection from unplanned pregnancies.
	156	under used, need more patient education
Increased provider training/education	49	More providers should be trained to educate patients and insert the device.
	159	Would like to see increased education for health professionals regarding use of the IUD,that it does not cause abortion.
	185	Busy clinics are not environmentally great for updating lectures on current use, status, safety and techniques of insertion of IUDs for health care providers, and this causes some providers to not to offer or promote the use of IUDs
	237	most health care providers are not aware of current recommendations and guidelines. We need training courses from these companies for new nurse practitioners
Perceived candidates for IUDs	23	and also Mirena is a great option for women with heavy periods - most patients I have had with them, love their IUDs
	29	If a patient is looking for a long term cost effective

		method of contraception and she is an acceptable candidate, I think that the IUD is a great option.
	36	I think they are a great option for sexually active women
	69	It is an excellent option for long-term, highly-effective contraception. I think it is an excellent option for the majority of sexually active women of reproductive age (regardless of parity or past STI hx).
	72	Once convinced, the AK native women I provide care to, seem to love not having to worry about their BCM, once the IUS/IUD is in place. Plus, with no running water in some villages, and the need to not have to change pads/tampons with the use of the Mirena, I think it is a wonderful option for the right woman!
	80	I am a proponent of IUD use in women who are appropriate candidates for use. I actively encourage pregnant teens to consider using IUDs (Mirena in particular) as their post-partum birth control method to reduce closely-spaced unintended pregnancy in a high risk population.
	81	Mirena IUS is very good for our obese pts and helps keep their periods by decreasing menorrhia
	127	I am happy to see the Mirena available to women. We no longer have to say the intrauterine contraception causes heavier bleeding and more cramping during menses. This was a drawback for many who needed a method other than pills. It has also been helpful for women with heavy bleeding and other gynecological problems.
	135	For women who may be done with their childbearing but not 100% sure, it provides wonderful long-term contraception without closing the door completely. The Mirena is also nice for perimenopausal women with episodes of heavy bleeding.
	149	For the appropriate candidate, an IUD is a safe and effective method of birth control for nulliparous and parous woman.
	197	It is a wonderful method of cotrcaption for women who desire spacing pregnancy or not desire for permanent sterilization. I tell my patients it's out of site and out of mind. No worries.
	198	If providers are serious about preventing pregnancy, particularly teenage pregnancy, they should be inserting IUD's in anyone that wants one.
	218	both paragard and mirena can be good contraceptive

		options for teens and nulliparous women
	236	I feel that it is a great contraceptive option for women and esp. the Mirena for women with menorrhagia
	239	Excellent method for all patients!
Non-contraceptive benefits of IUDs	39	It also controls menorrhagia and menomenorrhagia and relieves dysmenorrhea and it can prevent and treat Asherman's syndrome It reduces risk of PID It does not interfere with lacation
	153	Mirena is also used for heavy menses and endometrosis