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Reproductive Healthcare Information-Seeking Behavior in Undeserved Women: An Exploratory Study

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REPRODUCTIVE HEALTHCARE INFORMATION-SEEKING BEHAVIOR IN UNDERSERVED WOMEN: AN EXPLORATORY STUDY

by

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DEDICATION

This work is dedicated to the three men I love the most.

First, this is in memory of my cherished father who believed in me every day.

Second, this is for my precious son who has inspired me since he entered the world in my fourth week of this program.

And, third, for Kurt. All things, really, are for Kurt.

I love you.
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Thank you so much to the members of my committee, Dr. Solomon, Dr. Pearson, and Dr. Tu-Keefner. I am so very grateful for your time, assistance, and counsel through this process. I know that this was an incredible amount of work that you shouldered willingly, and I truly appreciate your efforts.

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Thank you so much to the staff of Care Ring Clinic in Charlotte, NC for allowing me to work with patients at your facility. More specifically, thank you to Carolyn Mullins who truly bore the brunt of my questions and needs.

Finally, thank you to my friend and sometimes proxy-advisor Dr. Heather Moorefield-Lang. Now that this is done maybe we can talk about something else over lunch.
ABSTRACT

This study explores the reproductive health-related information-seeking of low-income women which has been found to be affected by digital divide disparities. Included in this is an assessment of what reproductive health-related information needs they have, which sources they consult most frequently, if they trust the sources that they use, and how their information-seeking interacts with the variables of perceived risk and perceived barriers. While there have been many studies on the end effects of a lack of accurate and accessible reproductive health information little research has been conducted to examine the reproductive healthcare information-seeking patterns of women who live in poverty.

This study employs a previously validated pregnancy information-seeking survey and adapts it to reproductive health. The survey is then piloted twice and revalidated. It is then administered to 70 low-income women in Charlotte, NC. Data analysis includes chi square, ordinal regression analysis, Spearman's rank and percentage. The qualitative section, added to the end, is coded and evaluated for themes.

The findings of this research implicate the significance of information literacy to compel efficient information-seeking for women of low-income regarding their reproductive health.
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CHAPTER I
INTRODUCTION TO THE STUDY

Women’s reproductive health has long been considered both an indicator of population health and a benchmark of progress in a society. It has been a fulcrum of many large-scale public health initiatives including the United Nations’ Millennium Project and the Healthy People program of the United States Department of Health and Human Services (Healthy People 2020, 2016; UN Millennium Project, 2006). Implicit in this is the care of all members of a community, including those living in poverty.

However, in the United States despite decades of attempts by the government and nonprofits to provide accessible, affordable care, there is still a considerable deficit in the reproductive health of poor women. This deficit manifests in many ways that negatively affects both women and their children. Despite the profound amount of literature detailing both the lack and the consequences of the disparity of reproductive healthcare suffered by low-income women, there exists a gap in the research deciphering the root cause.

Research suggests that a digital divide exists and that women of low socioeconomic status are often at a disadvantage by the consequences of this divide (Brodie et al., 2000; Ramanadhan & Viswanath, 2006; Spink & Cole, 2001). One repercussion of this chasm is a lack of adequate information, particularly of accurate
and accessible reproductive health information which has been found to be related to poor reproductive health. The purpose of this study will be to examine the information-seeking patterns, needs, and barriers among low-income women as they pertain to reproductive health. Using a mixed methods approach, I will survey and then conduct interviews with low-income women assessing their information-seeking regarding reproductive healthcare.

The remainder of this chapter discusses the current state of the reproductive health of poor women in the United States including the relative indicators of reproductive health and what barriers they may currently experience in seeking care. For the purposes of this study, low-income will be qualified by a household income below 200% of the Federal poverty level.

STATEMENT OF THE PROBLEM

“Reproductive health” is a narrow term defined by the PubMed database simply as the physical condition of human reproductive systems (PubMed, 2012). Determining what factors affect the condition of the human reproductive system is decidedly more complicated. The World Health Organization [WHO] has determined a list of 17 indicators of reproductive health that are meant to be benchmarks for those monitoring global health and development (World Health Organization [WHO], 2006). While several of these are applicable to the population targeted by this research, such as the prevalence of low birthweight and the perinatal mortality rate (though in the United States the infant mortality rate is used more often), some are less so. For example,
female genital mutilation is extremely rare in the United States and less likely to be a commonly found indicator of population health for this demographic.

The Centers for Disease Control and Prevention [CDC] has also created various lists of factors that affect population-level reproductive health, and the Healthy People program identifies specific indicators. However, for the purposes of this study reproductive health indicators have been borrowed from several sources, including those mentioned here, and have been examined and determined to be the most germane to women living in poverty in the United States. The indicators that have been selected are infant mortality rate, low birthweight, preterm birth rate, maternal mortality rate, the rate of unintended pregnancy, teen birth rates, sexually transmitted diseases, and HIV rates (Callaghan, 2014; CDC, 2016; WHO, 2006). In addition, intimate partner violence, while not conventionally indicated as a determinant of reproductive health, will be used as an indicator in this study due to its repeated appearance in the literature specifically pertaining to healthy pregnancy and low-income women (Campbell et al., 2002; Coker, 2007). Next, each of the reasons for these selected indicators will be validated in turn.

Infant mortality is the death of a child before one year of age (Infant Mortality, 2016). The infant mortality rate is the number of such deaths that occur within 1,000 infants in a specific group, whether that group is characterized by geography, race, economic status, or other demographic factors. Infant mortality rate is often used as a predictor of the health of a population, as factors that affect the health of a population often impact infant health (Infant Mortality, 2016). Economically disadvantaged women
suffer a greatly increased infant mortality rate as compared to their more economically advantaged counterparts (Abdullah et al., 2010; He et al., 2015; Howell et al., 2005; Huynh et al., 2005; Johnson et al., 2006; Olson, 2010; Singh & Siahpush, 2014; Shi et al., 2004). In fact, a study in Pediatrics found that while overall mortality rates for the United States are declining, they are rising among the socioeconomically depressed (Singh & Kogan, 2007). The researchers in this study link this disparity to access to health care services. Another study found that this imbalance is linked to both socioeconomic disadvantage and a lack of health insurance and carries into higher mortality rates throughout childhood (Abdullah et al., 2010).

Low birthweight is one of the strongest predictors of infant survival with an inverse relationship between birthweight and death rates. The lower the infant birthweight the less likely the chances of its survival (WHO, 2006). Low birthweight has been consistently tied to socioeconomic factors in the United States, indicating that women living in poverty have a greater likelihood of giving birth to babies less than 5.5 pounds (Brooks, 1997; Howell et al., 2005; Olson, 2010; Muglia & Katz, 2010; Shi et al., 2004; Wise, 2003).

Preterm birth is the birth of an infant before the 37th week of gestation (CDC, 2016). In the United States preterm birth is the “greatest contributor to infant death,” and the “leading cause of long-term neurological disabilities in children,” (CDC, 2016). One of the causes for this is that pre-pregnancy obesity is increasing among low-income women, which can result in a number of obstetrical complications including cesarean delivery, induced preterm delivery, and as well as infant congenital anomalies (Hinkle et
Other causes of preterm birth relate to maternal age, tobacco and alcohol use, and lack of prenatal care. One of the main determinants of preterm birth is socioeconomic status (CDC, 2016). The preterm birth rate is highest in low-income women (Braveman et al., 2015; Finer & Zolna, 2016; Huynh et al., 2005; Muglia & Katz, 2010; Shapiro-Mendoza & Lackritz, 2012).

Maternal death is the death of a woman while pregnant, or within 42 days of the termination of the pregnancy, from a cause related to the pregnancy (WHO, 2006). While maternal death is not common in the United States, mortality is significantly higher among poor women than their more affluent counterparts (Robinson et al., 2015).

While overall in the United States the rate of unintended pregnancy is on the decline, many studies have found that incidence of unintended pregnancy is higher and even increasing for women of lower socioeconomic status (Finer & Zolna, 2016; Kendall et al., 2005; Robinson et al., 2015). Unintended pregnancy rates for low-income women of all ages are five times what they are for more economically advantaged women (Finer & Zolna, 2011).

Closely related to unintended pregnancy is teen pregnancy. Several studies including one sweeping review of the literature from the past 15 years conclusively found that teen pregnancy rates are considerably higher amongst economically disadvantaged women at both the family and community level (Kearney & Levine, 2012; Kendall et al., 2005; Penman-Aguilar et al., 2013).
There are more than 20 types of sexually transmitted diseases (STDs), (CDC, 2016). These infections range from being treatable with antibiotics to chronic, incurable and potentially deadly. While STDs affect both genders, the health problems that they cause are often more severe for women and may result in serious complications for the fetus when a woman is pregnant (CDC, 2016). In the United States women who live in poverty are significantly more often affected by STDs (Bate et al., 2010; Dean & Fenton, 2010; Robinson et al., 2015; Springer et al., 2010).

Human immunodeficiency virus (HIV) attacks a person’s immune system by destroying the cells that prevent infection. HIV does not have a cure. In the United States, 1.2 million people are living with HIV infection and an estimated 658,507 people with an AIDS diagnosis have died (CDC, 2015). Women living in poverty in the United States are disproportionately affected by HIV/AIDS. HIV prevalence rates in urban poverty areas are found to be inversely related to annual household income. In fact, the national incidence rate of HIV is less than 1 percent in the general population, but 2.4 percent for those living below the poverty line (CDC, 2011; Denning & DiNenno, 2015).

Intimate partner violence (IPV) is considered an indicator of reproductive health for the purposes of this study because it excessively impacts both maternal and neonatal health. Battered women are diagnosed with higher rates of depression and their babies often are low birthweight (Alhusen et al., 2014). IPV can lead to unintended pregnancies, abortions, irregular vaginal bleeding, genital injury, dysmenorrhea, sexually transmitted infections, sexual dysfunction, and miscarriage (Biswas et al., 2015). Women assaulted in pregnancy are twice as likely to have preterm labor (Berenson et
Overall, women who are victims of IPV are more likely to have sexually transmitted diseases and detrimental birth outcomes for both mother and child (Campbell, 2002). Finally, there is a significantly higher incidence of intimate partner violence amongst the socioeconomically disadvantaged (Cunradi et al, 2000; Oldenburg et al., 2014; Tsai, 2013).

Having defined applicable indicators of reproductive health for the target population and having pointed to disparities for each between socioeconomic groups it is now important to determine why these inequalities exist. A large-scale examination of national healthcare quality and disparity reporting has demonstrated that poor people receive worse care, including lesser quality reproductive healthcare, than high-income people for 47 percent of the applicable measures tested, and they had worse access to care than high-income people for 89 percent of the tested access measures (USDHHS, 2011). Many studies have shown that low-income women often do not access reproductive health care even when the desire to exists (Kendall et al., 2005; Robinson et al., 2015). What are the barriers experienced by women of low socioeconomic status in accessing quality care?

Several studies have found that the barriers are structural in nature. For example, in an attempt to understand barriers of access to various reproductive services in some communities, as this care pertained to infant mortality, Cook (1999) and her fellow researchers studied access barriers to prenatal care in low-income inner city women. This study targeted women in a postpartum unit and found that the primary barriers experienced during their pregnancies included the women’s own desire to hide
the fact that they were pregnant, transportation, and clinic-environment issues such as long lines or wait times and nonexistent after-work hours. Another abortion needs-specific study that explored multiple demographics determining that physical access measures such as transportation were a major barrier, but so was a lack of social support (Ostrach & Cheyney, 2014). One extensive research project found that associated cost and lack of healthcare or Medicaid were barriers to access (Dehlendorf et al., 2010), which agrees with another study that found that cost was a primary barrier to contraceptive use for young people who had experienced unwanted pregnancy (Haider et al., 2013).

However, some research suggests that additional barriers lie in the ability of poor women to access information about services available to them, or an inability to determine how to access known services. For example, in a study specifically pertaining to abortion services, it was found that with economically disadvantaged women lack of knowledge of services offered and laws were primary factors in preventing service access (Lara et al., 2015). The finding that lack of knowledge of services was an issue was also found with Breitkoph’s work regarding low-income women accessing Pap testing (Breitkoph et al., 2005). Similarly, one of the aforementioned research projects found lack of knowledge of services to be a major factor in the inability of poor women to receive care, and stated that women of low socioeconomic status were specifically more likely to have provider-centered barriers including issues with communication with healthcare workers (Dehlendorf et al., 2010). This is highly unfortunate, as sufficient health information and advice has been linked to a lessened risk of delivering a low
birthweight infant (Kogan et al., 1994; Sable & Herman, 1997). These former findings were corroborated by a study of the delivery of reproductive healthcare by Federally Qualified Health Centers (Wood et al., 2014), though this study found again that clear communication with healthcare workers was a common barrier to patient understanding and contraceptive implementation. Another study found that communication with healthcare workers was the number one barrier for low-income African American women (Golden & Pomerantz, 2015).

However, beyond these examples there is very little literature on the differences in reproductive healthcare information-seeking between socioeconomic groups. While it is commonly acknowledged that socioeconomically depressed women do not access reproductive healthcare equally as more affluent women, most research is focused on the end effects of this dissimilitude. Despite the literature discussed in this chapter, the knowledge of the root causes that contribute to the disparity of care between economically advantaged and disadvantaged women is hardly complete.

RESEARCH QUESTIONS

The purpose of this study is to examine the information-seeking patterns, needs, and barriers among low-income women as they pertain to the pursuit of reproductive health information. In order to determine this, the following research questions will guide this study:

- What are the reproductive health information needs of low-income women?
Where do low-income women turn to find reproductive health information?

Which information sources are trusted by low-income women?

What are the self-perceived barriers faced by low-income women in reproductive health information-seeking and how do they influence information-seeking?

Does a high perception of self-risk influence low-income women’s information-seeking behavior?

SIGNIFICANCE

While there have been many studies on the end effects of lack of accurate and accessible reproductive health information, little research has been conducted to examine the reproductive health information-seeking patterns of women who live in poverty. A more thorough knowledge of the barriers to reproductive health information as experienced by this population will assist public health workers in understanding how to reach these women in order to best ameliorate these deficits. By determining where the gaps lie in quality information reaching women in need, the research developed in this study has the potential to positively impact the quality of lives of poor women.

LIMITATIONS OF THE STUDY

The population of women studied will be specific to Mecklenburg county within North Carolina. Therefore, the findings of this research may not be generalizable to women in other geographical areas.
Another limitation of this study will be that participation is limited to English speakers. There are certainly low-income women in Mecklenburg county that do not speak English. However, in order to ensure quality and clarity the researcher has opted not to translate the survey. Unfortunately, this limits the participant pool and important findings of non-English speaking populations may be omitted.

Asking for women to volunteer also means that a certain subset of this already specific population will be included. Because reproductive health is a sensitive topic, the women who are willing to participate in this research may already have substantially more self-efficacy and initiative than the average woman of the demographic. Also, it should be assumed that victims of intimate partner violence (IPV) who are less likely to seek help are also likely to decline participation in this sort of research (Coker et al., 2000). This also skews the sample population and has direct impact on the survey questions regarding IPV.

Finally, as with Das (2013) this study will not make a distinction between passive and active information seeking. Many of the survey questions are specific toward active information seeking, though women may receive a considerable amount of reproductive health information passively.

CONCLUSION

In this chapter, I have introduced the issues affecting low-income women and their access to reproductive health information. Included in this explanation is an examination of what reproductive health is and what central indicators are for this
population. I discussed barriers to accessing reproductive healthcare by poor women, stated my research questions, and explained the significance of this study. Finally, I concluded by discussing the limitations of the proposed research. In the next chapter I will review the literature relevant to this research.
CHAPTER II
REVIEW OF THE LITERATURE

This chapter will review the literature relevant to this study. Because of the specificity of the topic it is important to first address health seeking information behavior in general, then tie it directly to women’s reproductive health. There will be a brief initial discussion of the selected assessment instrument to measure reproductive health information-seeking in low-income women in order to preface an examination of the literature of each of the primary constructs addressed by the survey. Finally, literature regarding information poverty theory and its application in research will be addressed.

HEALTH INFORMATION-SEEKING BEHAVIOR

Following a comprehensive review of approximately 100 published articles and five books from 1982 to 2006, Lambert and Loiselle determined that health information-seeking behavior (HISB) is “conceptualized as a means of obtaining the type and amount of information needed to participate in medical decision making” (2007). The authors state that a person's HISB is initially motivated by an information need or a perceived gap between what a person knows and what that person wants to know regarding their health goals (Lambert & Loiselle, 2007). While this explanation seems simple there is a
tremendous breadth of research that has gone into HISB motivations, needs, and outcomes, as well as how individual groups of people engage in HISB. And, this is crucial, because effective HISB can not only increase an individual’s health knowledge (Pasinlioğlu, 2004), it is also associated with an increased use of preventative healthcare services and better outcomes (Moorman & Matulich, 1993; Nicholson, 2005). In pregnancy, specifically, seeking information may increase knowledge, self-care, and health promotion behaviors which ideally contribute to better pregnancy outcomes (Moorman & Matulich, 1993; Nicholson, 2005).

Three of the primary benefits of HISB explored in the literature and also contextualized by Lambert and Loiselle (2007) are HISB as an aid to coping with a health condition, HISB as an aid to increased participation and involvement in medical decision making, and HISB as an antecedent to behavior change. Seeking health-related information has been found to assist with coping in a myriad of ways including increasing patient understanding and evaluation of their condition and as an aid to coping with related stress (Brown et al., 2002; Henman et al., 2002; Huber & Cruz, 2000; Flattery et al., 2005; Lambert & Loiselle, 2007). In terms of the influence of HISB on decision making, a 2006 study of women being treated for breast cancer found that women who were actively involved in deciding their treatment had a significantly higher overall quality of life at follow-up than women who were more passive (Hack et al., 2006). They also had several markers of enhanced quality of life, including higher physical and social functioning and significantly less fatigue. Health information-seeking contributes to the participation in medical decision making in many ways, including
helping individuals evaluate their alternatives (Brown et al., 2002; Huber & Cruz, 2000), and possibly better preparing them to engage in decision making (Brown et al., 2002; Shuyler & Knight, 2003). HISB is a crucial step preceding behavior change (Shuyler & Knight, 2003; Warner & Procaccino, 2004; Yu & Wu, 2005). In empirical studies information-seeking has been found as a determinant of engaging in healthy lifestyle choices (Fahrenwald & Walker, 2003; Yu & Wu, 2005).

Other examples of the benefits of HISB include a study of 3,209 people considered to be nationally representative of the American public in which 71 percent of people who engaged in health information-seeking discussed their search results with their doctor (Murray et al, 2003). This typically was found to result in a positive effect on the physician-patient relationship. Further research found that women who sought health information before a visit to a doctor were five times more likely to mention that information to their physician (Wiltshire et al., 2006). One additional study even found that happier, healthier people are more likely to look online for health information (Cotten & Gupta, 2004).

Despite the benefits of health information-seeking it is far from ubiquitous in the population. Higher health motivation and desire for health seeking does not make up for the disparities caused by socioeconomic status (Moorman & Matulich, 1993). In one of the most cited early works on health information-seeking and the digital divide Brodie (et al., 2000) found that typical digital divide disparities also exist in health information-seeking. That is, there is a substantial gap in health information searching between income levels. This imbalance has not faded with time. In 2001 researchers investigating
the information environment of low-income households in Dallas found that the women who lived there preferred informal sources of information, or people, to formal sources of information, contributing to their own digital disparity (Spink & Cole, 2001). This was contrary to the preferences of both middle and high income women at the time. In 2004 another study agreed that general digital divide characteristics greatly influence where health information is sought (Cotten & Gupta, 2004). This research pointed to income and education as being the most important contributors to whether an individual would look on or offline for information and the quality of information that they would find. In 2006 it was found that both education and income appear to strongly influence information-seeking and non-seeking status among both cancer survivors and the public (Ramanadhan & Viswanath, 2006). Those who the researchers classified as non-seekers had lower income levels than people who choose to seek information regarding health. A 2012 study confirmed that the digital divide was still influencing the medically underserved at a community health clinic (Zach et al., 2012). However, this study did point out that the gap lay not with access, but with ability for this particular population - an important point as in recent years those affected by the digital divide often have physical access but not the knowledge requisite for quality health information-seeking.

**HISB SPECIFIC TO REPRODUCTIVE HEALTH**

Digital divide barriers faced in general health information-seeking are even more substantial when dealing with the sensitive topic of reproductive health. Many studies have found that women, and particularly women of low socioeconomic status, are more
likely to use informal and often less reliable sources of reproductive health information (Aaronson et al., 1988; Anderson et al., 2014; Lewallen, 2004; Singh, 2002; Song et al., 2013; Spink & Cole, 2001). In fact, in a seminal work in the field in which 529 expectant women were asked to identify their major sources of information regarding appropriate choices during pregnancy, income was negatively correlated with relying on family members as a source of information (Aaronson et al., 1988). While women of higher socioeconomic status were more likely to rely on books and formal channels of information, women of lower socioeconomic status turned to family and friends. Aaronson and her fellow researchers also found that women who had previous pregnancies were more likely to rely on themselves as a source of information.

The preference of informal information sources such as family members remains consistent in the years since the Aaronson study. Another study of low-income pregnant women found that the most common way the participants learned about healthy choices during pregnancy were from family members, of which 65 percent were women (Brodie et al., 2000; Ramanadhan & Viswanath, 2006; Spink & Cole, 2001). The mother of the expectant woman was the single most cited source of pregnancy information. Consistent with findings from Aaronson, many women also cited themselves as the primary source of information; 25% of women stated that they “just knew” (Lewallen, 2004). A study in 2013 found that low-income expectant women preferred to talk to health professionals, but instead often turned to family, then partners and friends (Song et al., 2013). In this study perceived informational support was negatively associated with advice from the father of the baby. However, the fathers were still regularly
consulted. One reason for this might be that these women suffered from both a lack of access to the internet and the requisite knowledge and skill to mine its resources (Song et al., 2013).

The unfortunate decision of low-income women to turn to unreliable sources of information is repeated in the literature. As an example, a study of women recruited from family planning clinics in San Francisco were asked about their information sources concerning contraceptives and particularly IUDs (Anderson et al., 2014). The primary sources were female friends and family members. It was also found that the negative, often incorrect information that the women learned was more prevalent and memorable than positive and accurate information. As another example, a study of women living with HPV found that while the participants did prefer more reliable information sources, many turned to past partners as a secondary source of information (Kosenko et al., 2014). One potential reason for the use of unreliable sources of information may lie with a distrust of the medical community by this population (Jesse et al., 2008; Matthews et al., 2002).

Finally, the internet is used as an additional, or sometimes primary, source of reproductive health information. With this source, however, there are divides in use and application between societal groups. Laz and Berenson (2013) found that, compared to white women, African American women and Hispanics are less likely to seek information through the internet on contraception. However, they were more likely to look for information on pregnancy tests and sexually transmitted diseases. In addition, a qualitative study of 58 women of varying income levels suggested that women of low
socioeconomic status are less likely to have the literacy skills to use the internet as a source of fertility information (Bell, 2014). The Kosenko study also found that women looking for HPV information online often described what they found as “scary,” possibly creating an impediment to their searching (Kosenko et al., 2014). A literature review of research on new parent’s information searching online found that the internet overall has been repeatedly demonstrated to be an excellent source of knowledge and support, with considerable differences due to socioeconomic status (Plantin & Daneback, 2009). A large study of 1,000 women of reproductive age found that the internet was their second-choice source of information behind women’s health care providers, but that they rarely sought consultations with providers because of barriers to access (Lundsberg et al., 2014). These women showed demonstrably low knowledge on many of the selected topics on reproductive health.

While recent studies find that the use of the internet as a source of reproductive health information is increasing (Fajiram, 2010; Lundsberg et al., 2014; Lima-Pereira et al, 2012; McMullan, 2006; Sayakhot & Carolan-Olah, 2016), this may not be completely of benefit. Much of the information online is inaccurate and for individuals who wish to learn about their reproductive health it is fundamental to also have high-level information evaluation skills (Benotsch et al., 2004; Cline & Haynes, 2001; Lima-Pereira et al., 2012). This also agrees with a possible barrier brought up by Bell (2014) that half of Americans read at or below the eighth-grade level, but most Web information is written at or above the tenth grade level. Another study of low-income expectant women found low health literacy scores to correlate with a lack of internet information-
seeking regarding reproductive health (Shieh et al., 2009). Regardless, while there is an ever-increasing flow of reproductive health information available online, for many reasons it may not be accessible to women of low socioeconomic status.

INSTRUMENT

The assessment tool selected for this study is a previously validated survey used to assess information-seeking among pregnant women (Das, 2013). This instrument has been adapted to assess reproductive health information needs through a pilot process which will be further explained in the methodology chapter. However, in this chapter it is important to examine literature relevant to the development of the original tool in order to explore applicable research related to the primary constructs of the instrument.

In her dissertation, Das (2013) used the Wilson Model of information-seeking (Wilson, 1997) to study pregnancy-related health information-seeking. She also incorporated the work of Shieh, McDaniel, and Ke (2009) and Shieh, Broome, and Stump (2010) in determining the major topics covered in the survey. In Wilson’s Model information-seeking is “influenced by an individual’s needs and information barriers... it is hypothesized that individuals with high information needs and low barriers will be more likely to seek information” (Das, 2013, P. 27). The Wilson model is built upon the proposition that an information need is a secondary need which arises from a more primary need that is the information’s purpose; a concept that is in agreement with an early conceptual analysis of the literature (Derr, 1983) and fits with the work of Belkin’s
Anomalous States of Knowledge (1980) and Dervin’s Sensemaking (1983). Wilson also proposes that meeting an information need is complicated by various impediments or barriers and that these barriers may arise out of the same context as the initial information need (Wilson, 1997). In a later version of Wilson’s Model self-efficacy and Risk or Reward Theory are added to explain individual variance and motivation to pursue some information needs with more urgency than others (Wilson, 1999). According to Wilson, the perception of risk may motivate the awareness of an information need, while self-efficacy is a determinant of the person’s belief in their ability to engage in seeking information.

The two previously mentioned research teams conducted studies that utilized the Wilson model with low-income pregnant women, and whose work Das (2013) incorporated heavily into the inception of the original instrument. In 2009 Shieh, McDaniel, and Ke applied the aspects of information-seeking and the predictors of needs, barriers, and perceived risk to low-income pregnant women. The team found that both information needs and barriers were significant predictors of information-seeking explaining 26 percent of the variance of the outcome. It was also found that “high information needs and low barriers predicted more frequent information-seeking” (Shieh, McDaniel, & Ke, 2009, p. 364). The study was determined to support Wilson’s model of information behavior agreeing that needs and barriers predict the degree of information-seeking.

Following this work, another research team led by Shieh used the self-efficacy aspect of the updated Wilson model to explore information-seeking of low-income
pregnant women (Shieh, Broome, & Stump, 2010). In this study, in addition to self-efficacy, health literacy and fetal health locus of control were measured against health information-seeking. Self-efficacy was found to be significantly correlated with health information-seeking during pregnancy.

In light of Wilson’s pioneering work and the two studies mentioned above, the original pregnancy-related health information-seeking assessment tool was constructed to measure information-seeking against needs, barriers, perceived risk, and self-efficacy. The revised reproductive health information-seeking assessment tool to be used in this study shares these base constructs. The support in the literature for each will be examined in turn below.

INFORMATION NEEDS

HISB is recognized to be motivated by an information need (Shieh et al., 2010; Warner & Procaccino, 2004). Several studies can be found in the literature to support the role that information needs play in encouraging general health information-seeking. However, there is a dearth of such research specifically pertaining to reproductive health and fewer studies on the reproductive health-related information needs of poor women. The few found in the literature are related below and are primarily dedicated to pregnancy-related information needs.

In a study assessing the information needs of 702 first-time pregnant women, findings suggested that the needs were actually increasing over a measured period of time despite a government program to increase access to information for this target
population (Singh, 2002). Survey data demonstrated that 70 percent of the women wanted to know “a great deal” more about pregnancy, while 100 percent reported having unmet information needs. Singh also found that these information needs were higher amongst the economically disadvantaged and minority ethnic groups. The particular information needs that these women were interested in were choices in maternity services, coping with tiredness, medicines to avoid, mood swings, and maternity pay (Singh, 2002).

In 2005, a study of postpartum women at the time of hospital discharge revealed that in this sample all the women, regardless of socioeconomic status and other demographic variables, reported concern with the same information needs (Sword & Watt, 2005). Breastfeeding and signs of illness in their infants were the most frequently mentioned concerns. However, while the new mothers were in agreement on their highest concerns, poor women were more likely to report unmet informational needs related to 9 of 10 topics compared with women of higher socioeconomic status. There was also a disparity between income groups in information needs four weeks after hospital discharge; women of lower socioeconomic status were more likely to report unmet informational needs once they had left the hospital and begun to adjust to life at home with an infant (Sword & Watt, 2005).

A study that assessed young women’s knowledge of and attitudes toward intrauterine devices (IUDs) found that only 40 percent of young women had even heard of IUDs despite the reported contraception information needs in the population (Whitaker et al., 2008). Pre- and post-assessments determined that the women were
likely to think positively about IUDs after being educated about them. This research determined that demographic and reproductive health history did not predict attitude or knowledge.

Next, in an examination of low-income expectant women in Milwaukee, it was found that the top four information needs reported by participants were government and community resources such as W-2s, housing, WIC, food, and financial assistance (80 percent), jobs in the community (77.5 percent), normal and abnormal symptoms of pregnancy (72.5 percent), and newborn care (70 percent) (Song et al., 2013). This study also found that the sources of information that these women choose were often informal, and most frequently family or the father of the baby. With this population formal sources of information were rarely accessed to fulfill information needs. To clarify this distinction: informal sources of information are personal and spoken, while formal sources of information are written or recorded and tend to be subject to regulation and are impersonal (Kaye, 1995). A conversation with a friend or doctor is an informal source of information while a book, journal, or media broadcast is a formal source of information.

In their previously discussed review of the literature, Lambert and Loiselle (2007) determined that an information need is not sufficient to prompt HISB. Instead, the authors found that research suggests even with such a need personal and situational factors influence what type and how much information is sought. These factors include sociodemographic characteristics, skills, resources, and self-efficacy. While the research of Shieh, McDaniel, and Ke (2009) uncovered a positive correlative relationship between
information needs and seeking, Lambert and Loiselle indicate that there are many
intervening variables.

Regardless, there is a lack in the research focused on reproductive health-related
information needs and their influence on the information-seeking behaviors of low-
income women in the canon of library science research.

PERCEIVED BARRIERS

In 1949, Claude Shannon created a mathematical model of communication that
discussed possible impediments to a message getting through between the transmitter
or source and receiver. This model has been widely used and adapted throughout the
past nearly seven decades and has applicability to this research. Barriers to the receipt
of reproductive health information may be seen in light of Shannon's source–message–
channel–receiver model of communication as a classification scheme (Shannon, 1949).
Of the five possible areas of issue in Shannon’s model, the receiver focus, the source
focus, the message focus, the barrier focus, and the channel focus, it is the barrier focus
that much of the current research into the disparities of reproductive HISB have been
directed.

This vein of research identifies barriers that block the receipt of adequate and
clear information by the receiver, or in this case the low-income woman. Some of these
barriers are external, such as lack of insurance, and some are internal, such as poor
health literacy. As stated by Spink and Cole (2001, p. 61), “when information science
goes outside the library and examines information-seeking for a wide variety of tasks, a
great deal of channel-focused research deals with external barriers that prevent the person being studied from obtaining necessary information through the channel.” Shieh, McDaniel, and Ke (2009) in their previously discussed research utilizing the Wilson model found that while information needs had a positive correlative relationship with information-seeking, barriers had a negative relationship with information-seeking. An examination of the literature produces a number of studies that have focused attention on barriers to health information-seeking, many of which specifically target the population, subject matter, or both that are to be the focus of this research.

One seminal and highly cited work on HISB among African American cancer patients used qualitative methods to explore barriers to medical information seeking and treatment participation (Matthews et al., 2002). The majority of the participants in this study were women of lower socioeconomic status. Socioeconomic factors were found to strongly influence the study participants. The researchers of this study organized their findings according to Green and Kreuter’s PRECEDE model (1991) and found that the predisposing factors of limited knowledge and misinformation about cancer, cancer fear, emotional issues such as fear and stigma associated with seeking emotional support, and concerns about privacy were strong hindrances of cancer-related health information-seeking. The enabling factors of monetary resources and insurance were major factors influencing health information-seeking, as was the predisposing factor of mistrust of the medical community (Matthews et al., 2002). While there are many barriers cited in this study it is fundamental to observe that several of them are highly cultural. For example, distrust of the medical community tends to be
more prevalent with African Americans (Gamble, 1997), as is the stigma associated with seeking emotional support (Thompson et al., 2004). With this study, Matthews and her team made an important contribution to the literature on information-seeking barriers in pointing out that the barriers faced by different groups can be culturally specific. In fact, another example of cultural barriers to information seeking can be found in a study from 2010 in which it was discovered that African American women are less likely to know about a family history of cancer or breast cancer because there is a strong cultural taboo against talking about cancer (Lustria, 2010).

Lack of trust, fear of judgement and stigma, and dissatisfaction with the healthcare system were also the top three barriers to seeking help for low-income women suffering with prenatal depressive symptoms (Jesse et al., 2008). In this study, 21 women were interviewed regarding their barriers to seeking information and care. For issues specific to lack of trust of providers the women cited broken confidentiality, lack of trust in relationships with providers, and lack of provider understanding or rapport. Concerns that emerged regarding their fear of judgement were the attitudes of healthcare providers, feeling like they were the only one experiencing these symptoms, and embarrassment. While the focus groups were of ethnically diverse groups of low-income women, the authors did note that some of the barriers fell along racial lines. For example, lack of trust was cited with nearly all of the African American participants but was not consistent with the Caucasian women. These findings provide further evidence for the culturalization of barriers such as evidenced in the Matthews study.
This trend remains consistent in a 2010 study of poor African American women’s barriers to health information-seeking (Warren et al., 2010). After participating in training workshops on using the internet for health and then focus groups that discussed traditional and internet sources of information for seeking health information, it was found that the women believed that the combination of not having medical insurance and racial stereotypes were perpetuating negative experiences with healthcare workers (Warren et al., 2010). There was a perceived lack of credible care and attention by the women that they tied to their race and socioeconomic status. These perceptions perpetuate the cultural mistrust by this community of the healthcare system. While this study targets African American women specifically, it is a common theme for members of socially disadvantaged groups to feel that they are slighted within the medical setting (Hobson, 2001), causing members of these groups to avoid the healthcare system (Van Houtven et al., 2005).

In a 5-year randomized clinical study of a nurse telephone intervention to reduce preterm birth among low-income pregnant women, data was collected by the clinicians regarding the barriers to care as perceived by the patients (Moore et al., 2004). The most frequent barriers the women encountered concerned impediments with communication. Included in these were conflicting or inaccurate pieces of information given by providers to patients. Barriers to information-seeking are implicit in this observation, and are more direct in the also common complaint of the patient that there was often a failure of a provider to respond to a patient’s request for information. Finally, there was a general feeling among patients that providers were unsympathetic.
or uncaring (Moore et al., 2004). This information is of great significance for the population targeted by this research. It has been long-established that when low-income women do not understand their physicians or do not trust their advice, they are unlikely to ask their healthcare provider questions or admit their lack of understanding (Roter, 1977). This is especially true when the physician does not demonstrate empathy toward the woman. Instead, women of low-incomes are most likely to become silently non-compliant with their doctor’s recommendations (Roter, 1977).

Issues with communication and a reluctance to question doctors is again demonstrated in an examination of participants in the Women, Infants and Children (WIC) program (Heinig et al., 2006). In this study, focus group participants were asked about infant-feeding behaviors and feeding intentions. The majority of the women understood the guidelines that breastfeeding and the delay of solid foods were beneficial, but they ignored them if they felt compliance was not in the best interests of their individual family’s circumstances. Because they assumed that providers would not understand that they would not ask for assistance when facing difficulties, they instead sought information on infant feeding from relatives and other people (Heinig et al., 2006). Heinig’s research found that in the mother’s search for understanding they would turn from healthcare providers to social networks and even strangers in the grocery store for information.

In research conducted in order to determine why low-income women receive fewer than indicated early detection cancer screenings than the majority of women, it was found that among the 187 participants the most common barriers were a lack of
knowledge, the patient's perception of their own good health, and a lack of a clinician's recommendation (Ogedegbe et al., 2005). In terms of information-seeking related to colorectal, cervical, and breast cancer screenings, the data reported from this study demonstrated that the patient’s social networks were barriers to HISB. This is because, as with the WIC study above, low-income women typically seek advice from informal sources such as family and friends first, and sometimes these people would discourage them from seeking further information regarding cancer screening. In some cases persons in the social network would even advise the women that they knew someone who had been harmed by the preventative testing (Ogedegbe et al., 2005). In understanding the information-seeking patterns of low-income women it can also be understood that their social network may operate as a barrier to HISB.

A study that explored perceived barriers to mammography screening encountered by Chinese American women found that their ability to engage in effective health information-seeking was a primary barrier to their care (Yu & Wu, 2005). These women were also found to rely on immediate social networks, though this often was a function of language and literacy barriers. The research team concluded that along with promoting access to breast healthcare, teaching effective HISB was the best way to promote mammography screening utilization (Yu & Wu, 2005).

Low health literacy was also found to be a barrier in a study of pregnant low-income women’s information-seeking and its predictors (Shieh, Mays, McDaniel, & Yu, 2009). The women with lower health literacy were less likely to use the internet to seek healthcare and pregnancy-related information, as well as have more self-efficacy.
barriers than participants with high health literacy. In this study Shieh found that information needs and barriers predicted 26 percent of the seeking outcome. In addition to Shieh, several studies have found health literacy, the volume of health information available on the internet, and the abundance of poor quality information are significant barriers to HISB (Cline & Haynes, 2001; Lee et al., 2014; Metzger, & Flanagan, 2011). Finally, information overload, or the volume of health information available on the internet, has also been found to be a barrier to seeking information and help for survivors of intimate partner violence (Westbrook, 2015).

SELF-EFFICACY

A giant in the field of psychology, Albert Bandura is the creator of Social Learning Theory (Bandura & Walters, 1963) and the examination of self-efficacy as a theoretical construct (Bandura, 1977). Self-efficacy has been described as the foundation of human motivation and action, and defined as the belief of an individual of their own ability to succeed at a goal or specific task (Bandura, 1977). Self-efficacy is recurrent in the literature on information-seeking as the individual’s perception of their own ability to find the information they need is fundamental to a call to action. However, while self-efficacy is perceived as crucial to generalized information-seeking, there once again is a lack of research regarding its specific application to the reproductive health information-seeking of low-income women. A few studies are related below with the hope that the study proposed here will add to the catalogue of quality research.
In Shieh’s (et al., 2010) previously mentioned research with low-income pregnant women, she found that self-efficacy demonstrated significant correlations with health information-seeking. Together with internal fetal health locus of control they accounted for 15 percent of the variance in health information-seeking. This correlates with a study of 231 low-income women who had been recently diagnosed with breast cancer which explored five psychosocial variables including information-seeking, social support, health self-efficacy, participation in healthcare, and the doctor–patient relationship (Lu et al., 2010). Following a 16-week educational intervention it was found that self-efficacy, participation in healthcare, and the doctor-patient relationship were related to greater use of the educational service provided to the women.

Self-efficacy has also been explored in the literature regarding HIV and low-income women. Research conducted with women who were HIV-positive found that they were often the victims of intimate partner violence and had contracted the disease by being unable to exercise control over their sexual choice with their HIV-positive partners (Lichtenstein, 2005). In another study eight years later, it was found that HIV knowledge was the most important predictor of self-efficacy for HIV prevention (Villegas et al., 2013). It was repeated in this study, however, that self-efficacy was greatly diminished by a history of intimate partner violence. Research related to HIV prevention and condom use in low-income women found that higher scores on an assessment of condom self-efficacy significantly improved the odds of being a consistent user (Soler et al., 2000).
Finally, in a study of HIV health information-seeking among African American women, poor early life choices were often linked to a lack of self-efficacy (Davis, 2014). This lack of self-efficacy was demonstrated in a number of ways in the study, but most often resulted in a lack of information seeking and high-risk behavior.

PERCEIVED RISK

As the last construct to be examined, risk perception was added to Wilson’s model (1999) as an explanation of the motivation to pursue some information needs with more urgency than others. For this study, perceived risk is meant to describe a woman’s perception of her own level of risk for an outcome. There are many studies on perceived risk and its influence on HISB in the literature, though their findings on the effects of risk on information-seeking behavior greatly contradict.

Brewer examined risk perceptions and how they affect protective behaviors, which in turn affect further risk perceptions (Brewer et al., 2004). In a study of 745 homeowners in an area with high Lyme disease incidence, the research team found that increased risk perceptions did influence likelihood of getting vaccinated against Lyme’s disease. The vaccination then led to a reduction in risk perception. When the homeowners received the vaccine they no longer believed themselves to be at a heightened risk for Lyme’s disease and therefore engaged in fewer risk-reduction behaviors (Brewer et al., 2004). This model of risk perception agrees with the Wilson model. Other theories that agree that a heightened risk perception should increase preventative action are Protection Motivation Theory (Weinstein, 1993), the Theory of
Reasoned Action (Fishbein, 1967) and the Health Belief Model (Rosenstock, 1974). Following his work with risk perception and the Lyme’s vaccine, Brewer conducted a meta-analysis of 34 studies measuring risk likelihood and adult vaccination behavior (Brewer et al., 2007). He consistently found agreement between heightened risk perception and vaccination uptake.

However, in a comprehensive literature review Sweeny (et al., 2010) determined that risk perception may actually lead to information avoidance in an active or passive way. That is, in order to avert or delay the acquisition of available but potentially unwanted information, a person may actively prevent hearing it or passively simply fail to “take the necessary steps to reveal the content of information.” This agrees with findings from a study on coping mechanisms used by commercial sex workers and their partners when faced with the threat of HIV (Varga, 2001). Participants in this study reported that one reason given for not getting tested for AIDS was recognition that a positive test result would demand a change in behavior. Varga described a purposeful ignorance of HIV status that is in accordance with Sweeny’s findings.

A reason for this risk avoidance may be explained by a study examining the effect of health locus of control using hypertensive outpatients (Nomura et al., 2007). The research team found that the person’s beliefs about their own control over their health determines their information seeking. Individuals with internal control beliefs report a greater preference for active information-seeking. Another study also explored the relationship between risk-avoidance and health information seeking as it applies to cancer worry and perceived risk of cancer (Persoskie et al., 2014). In a nationally
representative sample it was found that 40.4 percent of those under 50 years of age admitted that they avoided visiting their doctor even when they suspected they should. For respondents under 50 years of age perceived risk of cancer decreased their likelihood of seeing a doctor. In those over 50 cancer worry and a perceived risk increased doctor avoidance. The research team concluded that “worry may motivate information-seeking when people expect information to dispel worry and information avoidance when the information is seen as highly likely to confirm one’s fears” (Persoskie et al., 2014, p. 977).

The Persoskie study echoed previous research on risk and information seeking. In an exploration of African-American women at increased risk for breast cancer it was found that participants who declined counseling had significantly less knowledge of breast cancer genetics, but showed demonstrably higher perceived barrier scores (Thompson et al., 2002). In line with the concept of information avoidance, those who did not participate in counseling reported greater anticipation of negative emotional responses. In another study concerning cancer patients’ information needs it was found that avoiding information was a strategy to maintain hope (Friis et al., 2003). Severely ill patients did not seek information on their own, leading to a discrepancy between their expressed attitudes regarding the need for medical information in general and their actual information-seeking behavior.

The previously mentioned Davis (2014) study of urban African American women’s HIV-related health information-seeking behavior also explored the influence of risk perception on information-seeking. Contrary to the above concepts of increased risk
perception resulting in information avoidance the majority of the women in the study perceived themselves at low risk despite engagement in multiple risk factors. Therefore, few women sought information on HIV health information despite heightened risk because of low risk perception (Davis, 2014). This research agrees with a 2007 study of young African American women that found that while there was a recognition of greater collective risk for their community, the women failed to translate that into heightened individual risk (Tucker-Brown, 2007).

APPLICATION TO PRACTICE

INFORMATION POVERTY THEORY

In 1996 Elfreda Chatman wrote a seminal work entitled *The Impoverished Life World of Outsiders* in which she examined the information worlds of poor and of elderly women. In this inquiry Chatman draws upon sociological research and studies the relationship between information insiders and outsiders and their exchanges of “knowledge awareness, acquisition, definition, and use” (Chatman, 1996, p. 194). The insider’s experiences are shaped by their commonalities which define not only their perspective on obtained information, but also what is worthy of acquisition, while outsiders are viewed with suspicion and doubt.

In order to explain this lack of information exchange, Chatman developed the Theory of Information Poverty. This theory has four foundational concepts: deception, risk-taking, secrecy, and situational relevance. Deception is a deliberate attempt “to hide our true condition by giving false... information.” Risk-taking is “an attribute affecting the acceptance or rejection of an innovation.” Secrecy is viewed as having the
purpose of protecting “ourselves from unwanted intrusion.” Situational relevance is defined as consistent with utility, or that it addresses an expressed need (Chatman, 1996, p. 194).

From the four concepts Chatman developed six propositional statements that are meant to guide in examining issues of information-seeking and poverty. These statements in turn distinguish the self-perception, the class distinction, the self-protective behaviors, the mistrust of outsiders, and the risk-taking decisions of the information-poor and also the perceived relevance of new knowledge in response to their everyday problems and concerns. The statements are meant as a theoretical framework to “describe an impoverished information world” (Chatman, 1996, p. 197). For Chatman “people are information poor when they perceive a dearth of information resources that speak to their world view, are suspicious of information from outsiders, and engage in deception to maintain a sense of control over their everyday lives” (Lingel, 2013, p. 11).

Following her work with elderly and poor women Chatman choose to study inmates in a maximum security prison (Chatman, 1999). In her work entitled *A Theory of Life in the Round*, Chatman explores the information worlds of the incarcerated. Chatman focused on understanding information behavior through the social factors that influence that behavior. She determined that context is the determining factor of one’s perspective on information and therefore that context shapes the individual’s use or non-use of information. Because members of small worlds are concerned with their survival within that world they choose to ignore outside information instead seeking
information useful within the small world (Chatman, 1999). While the remainder of the discussion of theory will be primarily concerned with Chatman’s Information Poverty Theory, the concepts from Chatman’s 1999 work are also relevant to this study.

Since its inception in 1996 Information Poverty Theory has been well vetted in the literature. In an exploratory survey of the information use environments of African American gatekeepers in an inner-city neighborhood it was found that there was a mismatch between the community’s needs and the availability of professional services (Agada, 1999). Reflective of Information Poverty Theory was a preference in the communities for information from within their own subculture. In accordance with the previous discussion on preferred information sources, the gatekeepers chosen in those communities may have been because informal, interpersonal sources were preferred due to lack of trust of the credibility of outside or formal sources. The information gatekeepers in those neighborhoods were typically slightly better educated or earned slightly more than average resident. Also in agreement with Chatman’s theory was that the most common unmet information needs were a lack of awareness of or access to existing information or resources (Agada, 1999).

Sligo and Jameson (2000) used the theory of information poverty to explore perceived barriers among New Zealand Pacific women to the use of cervical screening. This population was identified as a group of insiders as they defined themselves as different and the norms and mores of the insider group closely conditioned what information was deemed relevant and acceptable. While these researchers found the applicability of the theory to be relevant to the information exchange of this
community, other researchers have found that Information Poverty Theory does not fit the groups they examine.

For example, while researching the information worlds of the homeless Information Poverty Theory was used to explain resource sharing (Hersberger, 2002). Accurate applicability of the theory was determined to be supply-sharing based upon status, however Hersberger found that instead the determining factor was supply. This was determined to be contrary to Chatman’s theory. The research subjects also failed to see themselves as information-poor, which is a fundamental construct of Information Poverty Theory (Chatman, 1996).

In a 2003 examination of homosexual youth information poverty was found to explain several aspects of their information behavior (Hamer, 2003). Specifically, the information behavior of the young homosexual people in the study matched Chatman’s propositions of seeing themselves as devoid of resources, not trusting others' ability to provide information leading to self-protective behaviors of secrecy and deception, and not risking exposing an information need out of fear of the negative consequences. “The experience of information poverty by the participants in this study is related to their heterosexual group membership, and their maintaining a heterosexual identity demands the concealment of information-seeking” (Hamer, 2003, p. 85).

In Spink and Cole’s (2001) research into the information-seeking channels used by African American low-income households, they also emphasized the isolation of the deprived community as the cause for their information poverty. This was found particularly as at the level of everyday life information-seeking, for which the authors
hypothesize that the population being studied was raised in an environment where information was processed in a group, and therefore they prefer to receive news and information from family members (Spink & Cole, 2001). This cultural influence of the African American community on the information behavior of its members has been mentioned repeatedly in the literature. In a 2006 review of digital divide research over the previous 15 years, Yu mentions the informational connections wrought of the cultural differences between disadvantaged communities and mainstream society (Yu, 2006). One reason that the information emanating from the wider society seldom finds its way into the small world, according to Yu (p. 234), is that it often comes in “middle-class oriented content and packaging.”

This may be why information poverty research repeatedly finds insider groups with a distrust of outsiders sufficient to hamper access to human information sources (Hayter, 2007). While some of these communities are cloistered, such as Chatman’s nursing home residents and incarcerated women, many are a disadvantaged small world with a lower social status within a wider community. In a study of people living in a housing project in the UK, it was found that this lower social status and low literacy levels were sufficient barriers to effectively restrict information-seeking about issues that could bring the risk of becoming expelled from the larger community (Hayter, 2007). Similar findings were also the case with personal information and help networks of people with HIV/AIDS in rural Canadian communities. Because of the stigmatization of the disease, the author utilized Information Poverty Theory to explain the behavior of people within these networks (Veinot, 2009). They disclosed their illness selectively,
thus constraining the size and composition of their networks. Similar stigmatization and a similar small world within a larger society has also been applied to the victims of IPV (Westbrook, 2015). The “small-world phenomenon” was also used to describe the low health information-seeking of the traditionally medically underserved at an urban community health clinic (Zach et al., 2012). Finally, Sabelli (2012) applied Chatman’s theory to institutional mediators such as doctors and social workers as informational intermediaries (Sabelli, 2012). Sabelli found that social mediators could bridge the gap into the small worlds of young women in vulnerable contexts in which people are the preferred sources of information. It was determined that mediators can become insiders, become close to the young women, or be the information gatekeepers (Sabelli, 2012).

In an application of Information Poverty Theory to 73 information poor of various social statuses and occupations, Yu (2010) examines how to define information equality and to investigate how the “information poor” characterize these constructs. Yu found that the information poor are “first disadvantaged by limited freedom and/or opportunities in claiming society’s vast and rapidly increasing information resources into their own information resource bases; then by the constraint of their information practices in developing their information resource bases and obtaining information utilities from these resources; and furthermore by impoverished information assets to empower themselves in normal and problematic situations” (Yu, 2010, p. 906). Yu also found that when the information poor needed information they would return to sources that they had used before and ignore others; physical access to a resource did not make
it likely to be used. Finally, the information poor’s lack of social capital limited the range of resources that were available to them, resulting in the usage of sources that were less likely to yield fruitful results (Yu, 2010).

In a study of the extreme body modification community, Lingel (2013) reports that individuals experience a state of information poverty by self-monitoring in order to maintain group boundaries and avoid the consequences of displaying research of stigmatized information. The researcher determines that information poverty is not always a state driven by economic and social factors, but can also be caused by unfulfilled information needs in an otherwise information-rich existence (Lingel, 2013). These findings correlate closely with the above Hamer study of information-seeking and homosexual youth in which young gay people self-monitor in order to avoid potentially negative consequences exposing an information need related to their hidden sexuality (Hamer, 2003).

As with the Hamer study, a 2014 examination of the use of online groups by people in situations of information poverty found that discussion forums provide an outlet for them to express their information needs and concerns (Hasler et al., 2014). A qualitative content analysis of 200 posts from across internet groups demonstrated sensitive topics that often are subject to social stigma. The most popular were regarding health conditions, resources, pregnancy, and sex (Hasler et al., 2014).

In accordance with the avoidance of stigma apparent in Hasler, an application of Information Poverty Theory to the behavior of first-time mothers found that fear of judgement can influence information-seeking behavior (Loudon et al., 2016). The
researchers also found that the social norms of the group determined the women’s acceptance of new information, a typical small world behavior. These factors determined which sources the mothers would use and why, even when certain sources are commonly considered useful, they are not utilized by this group.

Finally, in a conceptual analysis of the literature Savolainen (2016) explored barriers to information seeking and defined small world barriers as socio-cultural. In agreement with this are the concepts of distrust of outsiders as information sources, avoidance of risk taking, and fear of being judged and expelled from a small-world community.

CONCLUSION

Chapter two demonstrated that reproductive health information seeking is a complex issue involving many facets and potential barriers. When applied to the target population of this study, reproductive health information seeking also can be influenced by a myriad of community or cultural constructs and small world factors. Information Poverty Theory may potentially provide a theoretical framework to understand the reproductive health information seeking behavior of low-income women. Next, chapter three will discuss the methodology used in this study.
CHAPTER III

METHODOLOGY

This chapter begins with an explanation of the mixed methods approach that will be used in this study. The participants, sample size, and the setting are presented. Next, the data collection procedures are described in detail, including the generation of the survey instrument and interview questions and the data analysis methodologies to be applied.

RATIONALE

The purpose of this study will be to examine the information-seeking patterns, needs, and barriers among low-income women as they pertain to reproductive health. As stated in chapter one, the research questions are as follows:

- What are the reproductive health information needs of low-income women?
- Where do low-income women turn to find reproductive health information?
- Which information sources are trusted by low-income women?
- What are the self-perceived barriers faced by low-income women in reproductive health information-seeking and how do they influence information-seeking?
- Does a high perception of self-risk influence low-income women’s information-seeking behavior?
In order to best answer these questions this study uses a mixed methods approach to exploring the reproductive health information seeking needs of low-income women. While the literature described in chapter two details many qualitative and quantitative studies related to this topic, few examples of mixed methods approaches can be found. Creswell described the mixed methods approach as:

An approach to research in the social, behavioral, and health sciences in which the investigator gathers both quantitative (close-ended) and qualitative (open-ended) data, integrates the two, and then draws interpretations based on the combined strengths of both sets of data to understand research problems (2015, p. 3).

He described the combination of these sets of data as able to more completely address the complexity of research questions in the social sciences and provide more insight than either method could alone (Creswell, 2013). This methodology will provide richer and more meaningful insight than previous studies that simply utilized quantitative or qualitative data to explore the reproductive health information seeking behaviors of low-income women. It will allow for both the quantitative research benefits of efficiently analyzing data that can be used to draw conclusions generalizable to a greater number of people, and will also capture the voices and insights of the women being studied, as is a great benefit of qualitative research (Creswell, 2015). In exploring reproductive health information needs it is crucial to be able to quantify the results in order to accurately apply them to the greatest benefit of a larger population. However, due to the inherently sensitive nature of this subject matter it is equally
important to understand the women’s experiences in context and from their own viewpoint.

This study will be conducted using a convergent parallel design. In this method quantitative and qualitative data collection are conducted simultaneously. Analysis on both types of data are done independently during the same phase and the results are then merged and compared. The benefit of the convergent parallel design for this study is that data collection can occur simultaneously and the interpretation and analysis of both data sets can be examined for agreement, contradictions, or incongruent findings (Creswell, 2013).

SETTING, PARTICIPANTS, AND SAMPLE SIZE

This research was conducted at a low-cost health clinic in North Carolina that serves low- and no-income women. Care Ring clinic in Charlotte, North Carolina is a non-profit that provides preventative health services to both the uninsured and underinsured. The patients that seek care through their Physicians Reach Out program are required to have a household income at or below 200 percent of the federal poverty level.

Participants for this study were recruited from the women using the clinic following the best practices recommended by the clinic director. Because of the requirements to utilize the services of the clinic, it can be assumed that women recruited at this site are of low-income. In order to stratify the population studied, this inquiry focused on young adult women, an age group classified as 18 to 29 year-olds by
the American Psychological Association (Guide to the Fields in APA Database Records, 2016). This grouping is also reflected in the CDC’s stratifications of age categories (Mathews and Hamilton, 2016). At the request of the clinic director, recruitment and survey administration took place over the phone. Once a woman agreed to participate the survey was conducted immediately. In order to maintain anonymity no identifying information was collected from the women with the exception of mailing information written down directly onto an envelope that was used only to mail them ten dollars as remuneration for their participation.

Following a power analysis, it was determined that the minimum sample size necessary to maintain the validity of the proposed quantitative data analysis for this study is 58. In order to ensure a fully sufficient sample, recruitment continued until 70 women had taken the survey.

QUANTITATIVE DATA COLLECTION

The purpose of the quantitative data collection was to collect numerical data generalizable to a larger population. This took place by gathering data through using a survey. As mentioned in chapter two, the assessment tool selected for this study is a previously validated survey used to assess information-seeking among pregnant women (Das, 2013). This instrument was adapted to assess reproductive health information needs through the pilot process explained below.
PILOTING THE SURVEY

For her 2013 dissertation, Das created a survey meant to determine the information-seeking needs and behaviors of pregnant women. The survey was composed of sections written to gauge pregnancy knowledge, information needs, perceived barriers, self-efficacy, perceived risk, direct experience, information seeking, and a few demographic questions.

Initially the assessment tool used by Das (2013) was adapted minimally for this study in order to have language appropriate to the entirety of reproductive health and not only pregnancy. The sections questioning the participants’ pregnancy knowledge and direct experience were also removed, and the demographic questions were expanded upon to reflect further potential variables found in the literature. Following these changes and upon receiving permission from the University of South Carolina’s Institutional Review Board, this assessment tool was piloted with 20 adult women at a free health clinic in Matthews, North Carolina. The health clinic requirements state that patients have to have a household income at or below 200 percent of the federal poverty level, making these women an ideal reflection of the participants to be recruited for the subsequent research.

Through the process of pretesting the questionnaire it became clear that the language in several sections, and particularly the perceived barriers section, was not clear. The women often asked to have the perceived barriers questions repeated several times or explained. Taking under advisement recommendations from the women, the
perceived barriers section was rewritten for clarity. A help-text was also added to the
beginning of the section to further explain the content.

The first information-seeking section was also confusing and repetitive. The
participants were asked first to rank their likelihood of utilizing specific information
sources on a Likert scale, then asked to rank the order in which they would go to these
sources, and then asked to rate how much they trusted each source, again on a Likert
scale. The first ranking seemed unnecessary and made the second redundant, and
therefore was removed from the final draft.

The analysis run on the survey responses also showed that the self-efficacy
section was not meaningful. The questions in this section were worded in such a way as
to be very similar and difficult to decipher quickly from each other. For example, the
question “How confident are you that you could get family planning advice or
information if you needed it?” was immediately followed with, “How confident are you
that you could get sexual health advice or information if you needed it?” This section
tended to be quickly answered with exactly the same responses by each woman. It was
found that many of the responses for this section were contradicted by responses made
elsewhere in the survey. In order to correct this, the final version of the assessment tool
uses more specific, targeted language.

In her pretesting of the questionnaire, Das (2013) found that the perceived risk
section made women uncomfortable unless it was generalized to the larger population.
However, in the pilot phase of this research it was discovered that women didn’t
understand or wish to generalize the risk of the larger population and preferred to
answer to their perception of their own risk. Because of this, in the final iteration of the survey the perceived risk section directly asks for an assessment of personal risk. This data will also be more meaningful answering the research question, *does a high perception of self-risk influence low-income women’s information-seeking behavior?*

The second information-seeking section of Das’s survey also did not yield meaningful information. The women that participated in the pilot tended to simply answer quickly and without deciphering the difference between the questions. This may have been because it was at the end of the survey, but it seemed instead as though it was because, as with the self-efficacy section, the questions were worded in such a way as to be very similar and difficult to decipher quickly from each other. Because of this, the information-seeking questions on the final survey were changed to determine types of information most likely to be sought instead of asking about the method by which they would be sought. The language in the questions is also more specific. The new questions are also more likely to produce relevant data on the fourth research question, *what are the self-perceived barriers faced by low-income women in reproductive healthcare information-seeking and how do they influence information-seeking?*

Finally, each section had descriptive text added to the beginning in order to clarify the content for the participants.

In order to re-validate the survey following these alterations, it was examined by a reproductive health expert, an information science expert, and a statistician. All three experts recommended changes to the survey, and all of the changes were made. Most of these alterations were with the language in the survey. However, the statistician
made changes to the number of some Likert scale items in order to be able to run effective data analysis later.

The final iteration of the survey was once again piloted with five women. This time the language in all sections was found to be clear and the questions were determined to be meaningful and appropriate. No changes were made following the second pilot. The final version of the assessment tool is provided in appendix A.

DATA ANALYSIS - QUANTITATIVE

Using the software Microsoft Excel (2013) and the Statistical Package for Social Science (SPSS) Version 23, the data analysis for the quantitative phase included simple descriptive and inferential statistics. Descriptive statistics included ranking and percentage. Inferential statistics included Spearman’s rank, ordinal regression analysis, and the chi square test for independence. The variables produced by the survey were categorical and ordinal.

Spearman’s rank was used to determine if there is a relationship between the variables. Spearman’s rank is “a nonparametric technique for evaluating the degree of linear association or correlation between two independent variables” (Gautheir, 2001, p. 359). In order to test for correlation, the level of significance was set at \( p \leq 0.05 \), which guarantees a high level of accuracy for statistical analysis conducted with sample sizes under \( n=100 \) (Zar, 1979).

The proportional odds model applied regression analysis to ordinal categories so that it “can be thought of as continuous intervals on some continuous scale”
Ordinal regression analysis allowed multiple independent variables to be compared to a single dependent variable and conditional probabilities applied to their relationships including multiple explanatory factors or covariates. In this analysis the relevant significance level for model fit and goodness of fit was also set to $p \leq .05$, with the expectation that model fit would be significant and goodness of fit would not. Results were examined not only for significance, but also with regards to their Nagelkerke $R^2$ coefficient, which is “the proportion of variance 'explained' by the regression model” (Nagelkerke, 1991, p. 691).

Finally, the chi square test for independence was used because it compares the observed frequencies of data with frequencies that may be observed by chance (Agresti, 1996). This test asks, “is the outcome in one variable related to the outcome in some other variable?” (Steinburg, 2011, p. 382). Variables used in chi-square are nominal or ordinal. The significance was set to $p \leq .05$. If $p > .05$, it was concluded that there was no relationship between the variables. If a relationship was found between the variables, the Cramer’s V statistic was used to determine the strength of the relationship (Rea and Parker, 2014). The table below illustrates the interpretation of Cramer’s V.

Table 3.1
Interpretation of Cramer’s V

<table>
<thead>
<tr>
<th>Measure</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>No association</td>
</tr>
<tr>
<td>.01-.09</td>
<td>Negligible association</td>
</tr>
<tr>
<td>.10-.29</td>
<td>Low association</td>
</tr>
<tr>
<td>.30-.59</td>
<td>Moderate association</td>
</tr>
<tr>
<td>.60-.74</td>
<td>Strong association</td>
</tr>
<tr>
<td>.75-.99</td>
<td>Very strong</td>
</tr>
</tbody>
</table>
For this research, information seeking and self-efficacy were used as individual dependent variables, and each was compared to the independent variables of information needs, perceived barriers, and perceived risk.

QUALITATIVE DATA COLLECTION

Elfreda Chatman stated that, “The process of understanding begins with research that looks at their social environment and that defines information from their perspective” (1996, p. 205). The qualitative data collection was conducted with the aim of creating descriptive data that provides deeper insight into the reproductive health information seeking of low-income women. The procedure determined to be the best method for this data collection is described below.

PROCEDURES AND QUESTIONS

Because qualitative research “focuses on discovering new or unique perspectives on an issue and creating deeper understandings of a topic,” it has been determined an appropriate methodology for this inquiry (Crabtree & Miller, 1999; Lindberg et al., 2006, p. 77). In order to answer the research questions at hand, several qualitative studies assessing health information needs were drawn upon (Chuang et al., 2012; Cleland et al., 2001; Golden, 2014; Hodgson et al., 2013; Lindberg et al., 2006; Ward & Heidrich, 2009). In these relevant studies, semi-structured interview, unstructured interview, and
focus group models were used with the subjects in order to achieve empathy and understanding of the reality of the study participant.

Because of the scale of this study, semi-structured interviews were determined to be the best method to attain the highest quality of information. In order to get as many women to participate as possible the interview questions were added onto the survey instrument. The purpose in this was to have the same participants for both sets of data, therefore ensuring that the qualitative data could inform upon the quantitative data. At the end of the survey women were asked if they would be willing to continue and answer a few open-ended questions. This gave participants who didn’t want to continue an opportunity to opt-out, and helped to guarantee that those who continued would still be interested in doing so.

The interview questions for this study were determined by an examination of the literature with the goals of this research in mind. The first iteration of questions was based upon a previously validated model in which men were asked about how they access reproductive healthcare (Lindberg et al., 2006), but they were adapted for women and information seeking. After the initial list of questions was created they were submitted to my committee for review. Having received their feedback, I applied their recommendations. Listed below are the final interview questions developed by evaluating the literature and with the assistance of my committee:

- In your own words, what are your current information needs when it comes to your own reproductive health?
Next, I would like you to please think of any time that you needed to know something really important about your own reproductive health. What process did you go through to learn about it? What I mean by this is, where did you go for information at first, then to learn more, and did you have to keep looking for a while to learn what you needed?

In the last example, what were things that kept you from looking for what you needed to know? How did you overcome them?

DATA ANALYSIS

The above questions were asked to each woman in a semi-structured interview after the survey was conducted. Notes were transcribed of the women’s responses. Those notes were entered into the qualitative data software analysis program Nvivo 10. This data was evaluated and coded as recurrent regularities and patterns emerge through open coding (Merriam, 2009). These patterns became categories and themes that were coded and used to group the data into supporting evidence. They were also grouped by axial coding into appropriate themes, and potentially into properties, to be determined by the quantitative data analysis and terminology found in the review of the literature. These categories were congruent with the research questions and goals of the study and were exhaustive and mutually exclusive (Merriam, 2009). The descriptive data that emerged from this process was then examined in an effort to find patterns that answered the research questions.
CONCLUSION

In this chapter I have discussed the mixed methods convergent parallel design that I implemented. I have outlined the methodology including the participants, setting, data collection and analysis for this study. In this explanation, I discussed the process of piloting the original assessment tool, altering it, and re-piloting it following a validation process with experts in related fields.
CHAPTER IV

RESULTS

This chapter will discuss the results of the study. First, general information from the demographic section will be provided. Then, relevant findings to each research question will be discussed in turn.

Table 4.1 summarizes the social and demographic information that characterizes the women who participated in this study. Directly following this, table 4.2 summarizes the same information from the subset that participated in the qualitative data collection.

Table 4.1
Demographic data on those responding to the quantitative questions

<table>
<thead>
<tr>
<th>Variables</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
</tr>
<tr>
<td>18-19</td>
<td>8 (11.4)</td>
</tr>
<tr>
<td>20-24</td>
<td>23 (32.8)</td>
</tr>
<tr>
<td>25-29</td>
<td>39 (55.7)</td>
</tr>
<tr>
<td><strong>Education</strong>*</td>
<td></td>
</tr>
<tr>
<td>Some High School</td>
<td>1 (1.4)</td>
</tr>
<tr>
<td>High school diploma/GED</td>
<td>20 (28.5)</td>
</tr>
<tr>
<td>Some college</td>
<td>14 (20)</td>
</tr>
<tr>
<td>Associates degree</td>
<td>12 (17.1)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>17 (24.2)</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>3 (4.2)</td>
</tr>
<tr>
<td>Professional degree</td>
<td>2 (2.8)</td>
</tr>
</tbody>
</table>
### Employment Status**

<table>
<thead>
<tr>
<th>Status</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed full time</td>
<td>39</td>
<td>(55.7)</td>
</tr>
<tr>
<td>Employed part time</td>
<td>11</td>
<td>(15.7)</td>
</tr>
<tr>
<td>Not employed</td>
<td>18</td>
<td>(25.7)</td>
</tr>
</tbody>
</table>

### Race

<table>
<thead>
<tr>
<th>Race</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>3</td>
<td>(4.2)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>32</td>
<td>(45.7)</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>1</td>
<td>(1.4)</td>
</tr>
<tr>
<td>White</td>
<td>16</td>
<td>(22.8)</td>
</tr>
<tr>
<td>Hispanic or Latina</td>
<td>17</td>
<td>(24.2)</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>(1.4)</td>
</tr>
</tbody>
</table>

### Children*

<table>
<thead>
<tr>
<th>Number of Children</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>51</td>
<td>(72.8)</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>(14.2)</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>(8.5)</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>(2.8)</td>
</tr>
</tbody>
</table>

### Marital Status*

<table>
<thead>
<tr>
<th>Status</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>10</td>
<td>(14.2)</td>
</tr>
<tr>
<td>Divorced</td>
<td>5</td>
<td>(7.1)</td>
</tr>
<tr>
<td>Separated</td>
<td>1</td>
<td>(1.4)</td>
</tr>
<tr>
<td>Never married</td>
<td>53</td>
<td>(75.7)</td>
</tr>
</tbody>
</table>

*one woman did not answer
**two women did not answer

---

**Table 4.2**

Demographic data on those responding to the qualitative questions

<table>
<thead>
<tr>
<th>Variables</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>18-19</td>
<td>3 (10)</td>
</tr>
<tr>
<td>20-24</td>
<td>15 (50)</td>
</tr>
<tr>
<td>25-29</td>
<td>12 (40)</td>
</tr>
</tbody>
</table>
### Education

<table>
<thead>
<tr>
<th>Education</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some High School</td>
<td>0 (0)</td>
</tr>
<tr>
<td>High school diploma/GED</td>
<td>8 (26.7)</td>
</tr>
<tr>
<td>Some college</td>
<td>7 (23.3)</td>
</tr>
<tr>
<td>Associates degree</td>
<td>5 (16.7)</td>
</tr>
<tr>
<td>Bachelor’s degree</td>
<td>7 (23.3)</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>2 (6.7)</td>
</tr>
<tr>
<td>Professional degree</td>
<td>1 (3.3)</td>
</tr>
</tbody>
</table>

### Employment Status

<table>
<thead>
<tr>
<th>Employment Status</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed full time</td>
<td>16 (53.3)</td>
</tr>
<tr>
<td>Employed part time</td>
<td>6 (20)</td>
</tr>
<tr>
<td>Not employed</td>
<td>8 (26.7)</td>
</tr>
</tbody>
</table>

### Race

<table>
<thead>
<tr>
<th>Race</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>2 (6.7)</td>
</tr>
<tr>
<td>Black or African American</td>
<td>15 (50)</td>
</tr>
<tr>
<td>White</td>
<td>7 (23.3)</td>
</tr>
<tr>
<td>Hispanic or Latina</td>
<td>6 (20)</td>
</tr>
</tbody>
</table>

### Children

<table>
<thead>
<tr>
<th>Children</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25 (83.3)</td>
</tr>
<tr>
<td>1</td>
<td>2 (6.7)</td>
</tr>
<tr>
<td>2</td>
<td>3 (10)</td>
</tr>
</tbody>
</table>

### Marital Status

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Count (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Never married</td>
<td>27 (90)</td>
</tr>
</tbody>
</table>

**RESEARCH QUESTION 1**

The first research question is *what are the reproductive health information needs of low-income women?* In order to determine what information study participants needed most the rating of each woman was added up for a total ranking by all participants of each listed information need. The results are in table 4.3.
Table 4.3
*Information needs added among all participants*

<table>
<thead>
<tr>
<th>Information Need</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Labor and delivery</td>
<td>270</td>
</tr>
<tr>
<td>How to have a healthy child</td>
<td>264</td>
</tr>
<tr>
<td>Complications during pregnancy</td>
<td>264</td>
</tr>
<tr>
<td>How to have a healthy pregnancy</td>
<td>251</td>
</tr>
<tr>
<td>Sexually transmitted diseases</td>
<td>184</td>
</tr>
<tr>
<td>HIV</td>
<td>182</td>
</tr>
<tr>
<td>Domestic violence</td>
<td>181</td>
</tr>
<tr>
<td>Birth control</td>
<td>180</td>
</tr>
<tr>
<td>How to get pregnant</td>
<td>171</td>
</tr>
<tr>
<td>How to prevent pregnancy</td>
<td>162</td>
</tr>
<tr>
<td>Abortion</td>
<td>144</td>
</tr>
</tbody>
</table>

According to the study participants the most needed information concerning reproductive health is information on childbirth, pregnancy, and how to have a healthy child. Information needs concerning pregnancy and motherhood scored substantially higher than the next categories of information on sexually transmitted diseases and HIV. Of least interest was information on getting or preventing pregnancy or abortion. This was not because women didn’t wish to prevent pregnancy; when asked why they didn’t need certain pieces of information 36 participants stated that they already knew enough about that topic. Also, when asked about abortion, many women stated that they would not need that information because they would not opt to have an abortion should they have an unplanned pregnancy.

Closely related to information needs is information seeking. By totaling the columns of information that women reported that they are most likely to seek in the next year information on how to have a healthy pregnancy had the highest ranking of
218. Abortion, scoring 119, was the lowest ranked topic on which women would seek information in the next year. Both of these are in agreement with the most and least ranked reproductive health information needs. However, information seeking about birth control was higher than information seeking regarding sexually transmitted diseases, which is not in agreement with the rankings given in the information seeking section. In both sections, information about domestic violence was less needed than information about sexually transmitted diseases, but more so than information about abortion.

Thirty of the seventy participants responded to the qualitative questions at the end of the survey. The first question asked in your own words, what are your current information needs when it comes to your own reproductive health? The goal of this question was to ensure that the data collection was including any informational needs that the population might have. However, of the participants that continued to the qualitative section, 16 stated that they did not have any reproductive health information needs. Of these participants, most stated that they already knew all the information that they needed. Statements ranged from, “Not much. I have a lot of information. I know about most of these things,” to “I really don’t need any information because I could just get it from the internet or clinic,” and “I already talked to a doctor.” Another woman stated that she had already “taken a class on it.” Most women simply said that they, “already knew everything,” or “already know enough.”

Just as conferring with an unreliable source and acting upon its counsel is problematic, it is equally so when this source is oneself. This idea of oneself as the
primary source of information is something that is found in the literature and is most commonly discussed with women experiencing subsequent pregnancies (Aaronson et al., 1988; Lewallen, 2004). The findings of this study are unique in that the women that stated that they already know all of the information that they needed were referring to a myriad of reproductive health issues. In a woman of this age group stating that she has collected all of the reproductive health information that she needs, she is ignoring that the reproductive health needs of women are constantly changing to adjust for the effects of age and lifestyle. To state that one does not need any more information on this topic shows a significant lack of understanding on both the importance and the breadth of this knowledge.

The qualitative findings correspond with results from the Likert scale section that assessed information needs. When a woman would state that she did not need information on the topics she would be asked why that was her response. During the course of administering the quantitative survey 36 of the 70 women stated that they did not need more information on reproductive health because they already knew everything that they needed.

Of the 14 participants that did state they needed more information in response to the qualitative section, 5 wanted information on birth control, 6 on pregnancy, 2 on domestic violence, 2 on STDs, and 3 women were interested in learning about healthy living in general.
RESEARCH QUESTION 2

The second research question is *where do low-income women turn to find reproductive healthcare information?* The analysis for this is compiled into the simple frequency table (4.4) below. The section on the left is the original counts for which information source women would turn to first, second, and third. In order to better understand these numbers a hierarchy was applied to each of them and then they were totaled in the section on the right. The ranking used here is a simplified version of the analytic hierarchy process (Saaty, 1977). The original counts for the information sources that were used first were multiplied by three. The original counts for the information sources that were used second were multiplied by two. The original counts for the information sources that were used third were multiplied by one. This allows the order in which each source was accessed to have numerical rank. The totals for the first, second, and third columns were compiled for each source and listed in the fourth column. This provides a weighted rank for each of the sources.

*Table 4.4*

*Information sources ranked according to preference*

<table>
<thead>
<tr>
<th>Information Source</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>Total</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partner or Spouse</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td></td>
<td>12</td>
<td>4</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Mother</td>
<td>10</td>
<td>17</td>
<td>10</td>
<td></td>
<td>30</td>
<td>34</td>
<td>10</td>
<td>74</td>
</tr>
<tr>
<td>Father</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td></td>
<td>0</td>
<td>6</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Other Female Relative</td>
<td>2</td>
<td>4</td>
<td>8</td>
<td></td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Other Male Relative</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Female Friend</td>
<td>3</td>
<td>16</td>
<td>4</td>
<td></td>
<td>9</td>
<td>32</td>
<td>4</td>
<td>45</td>
</tr>
</tbody>
</table>
Having compiled this information, it can be seen that the highest scoring sources for reproductive health information are doctor \((r=115)\), the internet \((r=85)\), and mother \((r=74)\). These sources scored substantially higher than any of the other sources. For example, while female friend was marginally higher \((r=45)\) than the other lower-scoring sources \((r=0, 0, 1, 7, 19, 26)\), female friend is only 61 percent as highly ranked as the lowest ranked of the top three, mother \((r=74)\), and 39 percent as high as the source with the highest ranking, doctor \((r=115)\). Because of this sizeable difference the answer to the above research question is that women prefer to turn to their doctor, the internet, and their mother for reproductive health information.

The qualitative data agrees with these findings. The second question asked that the women describe an experience they had in which they engaged in reproductive health-related information seeking. The women each discussed an experience in which they needed crucial information and how they went about finding it.

Of the 30 women that proceeded to answer the qualitative section, 28 responded to this question. Two women abstained stating that they couldn’t think of an experience. When their responses were coded and grouped, specific paths were shown that were remarkably similar to the ones laid out in the quantitative data.
Slightly more than half of the women described a two-step process of information seeking (n=16). Eight of them described one step and four of them described three steps. Of the women that described only one step, each of them stated that they went to the doctor with the exception of one who went to a clinic and one who looked at the internet and found what she needed. “Before I had to get a pap smear. So, I went online and to YouTube to find out what that was.” Of the respondents that stated that they went only to a doctor, they seemed to have a general idea of what they needed. “I had an issue with my birth control and I went to a gynecologist.” Another woman stated, “I had a bacterial infection. I contacted my doctor.”

Of the women who went through a two-step process, four consulted a female relative then went to the doctor. Six searched for information on the internet and then sought medical care. One woman said, “I needed information on abortion. First I looked online to find basic information. Then I made an appointment when I had a doctor.” Another woman stated, “I went on the internet to do research, then went to the doctor. I was having female problems.”

The two most utilized information sources were the internet (n=15) and the doctor (n=20). The internet was slightly preferred as the first source of information (n=10) followed by doctor (n=9). Female relative was next (n=5) as the first consulted source and most referred to overall (n=8). Other sources that were listed were less common and included female friends (n=4), health clinics (n=2), teacher (n=1), pamphlets (n=1), and the emergency room (n=1). All sources that were described in the
Qualitative data were also listed in the quantitative data with the exception of the emergency room and health pamphlets.

Finally, mother, which was the third most popular source in the quantitative data was only cited twice in the qualitative descriptions. Both times it was in descriptions of when the participant was much younger. “When I was a teenager I was in sex ed and didn’t understand. They didn't give enough information. So, I talked to my mom and my teacher. Then I looked at stuff online.” Another woman said, “I asked about the process of getting and being pregnant. First I asked my mom, then my sister, then went to the internet.”

In summary, in examining the quantitative data, doctor, internet, and mother are the most popular information sources. The qualitative data substantiates doctor and internet though not mother.

RESEARCH QUESTION 3

The third research question is Which information sources are trusted by low-income women? This research question is answered by a simple compiling of the section that asks How much do you trust each of the following sources for information about reproductive health? Participants were asked to rank each source with Likert scale responses of 1 through 4. A response of 1 corresponded with the least amount of trust while a response of 4 corresponded with the most. Adding up the numbers for each source from all the participants provides a simple scaling of how much each is trusted by
this population. Table 4.5 shows the sources with numerical rank in order from most to least trusted.

Table 4.5
Information sources ranked according to trust

<table>
<thead>
<tr>
<th>Source</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor</td>
<td>272</td>
</tr>
<tr>
<td>Health Clinic</td>
<td>264</td>
</tr>
<tr>
<td>Health Department</td>
<td>253</td>
</tr>
<tr>
<td>Mother</td>
<td>232</td>
</tr>
<tr>
<td>Female Friend</td>
<td>207</td>
</tr>
<tr>
<td>Other Female Relative</td>
<td>202</td>
</tr>
<tr>
<td>Partner or Spouse</td>
<td>192</td>
</tr>
<tr>
<td>Internet</td>
<td>183</td>
</tr>
<tr>
<td>Father</td>
<td>134</td>
</tr>
<tr>
<td>Television</td>
<td>134</td>
</tr>
<tr>
<td>Male Friend</td>
<td>125</td>
</tr>
<tr>
<td>Other Male Relative</td>
<td>116</td>
</tr>
</tbody>
</table>

According to these findings the answer to the question most trusted sources of information are doctors, health clinics, and health departments. Mothers, female friends, and relatives are the next three most trusted sources. After this is partner or spouse, followed by the internet. Even though internet was the second most preferred source, it falls to the eighth most trusted. This shows a clear preference for professional clinicians, then female personal sources.

RESEARCH QUESTION 4

The fourth research question is What are the self-perceived barriers faced by low-income women in reproductive healthcare information-seeking and how do they
influence information-seeking? In order to answer research question four, the simple ranking system employed in research question three was used with the perceived barriers section followed by inferential statistics.

First participants were asked to rank each potential barrier according to Likert scale responses of 1 through 5. A response of 1 indicated that this barrier did not apply to them at all, while a ranking of 5 indicates that the barrier is perceived as most substantial for the participant. The numbers for each potential barrier were once again totaled from all of the participants in order to provide a simple rank of how much each is considered an impediment by this population. Table 4.6 shows the potential barriers ranked in order from most to least substantial.

Table 4.6
Rankings of perceived barriers

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>You don’t have health insurance.</td>
<td>195</td>
</tr>
<tr>
<td>You already know all of the information that you need.</td>
<td>176</td>
</tr>
<tr>
<td>You can’t afford to go to the clinic.</td>
<td>169</td>
</tr>
<tr>
<td>You have to wait too long to see the doctor.</td>
<td>167</td>
</tr>
<tr>
<td>You feel shy asking for information.</td>
<td>165</td>
</tr>
<tr>
<td>It is too difficult to get an appointment.</td>
<td>151</td>
</tr>
<tr>
<td>You find getting too much information stressful.</td>
<td>142</td>
</tr>
<tr>
<td>You have too many other things to do instead.</td>
<td>141</td>
</tr>
<tr>
<td>You are scared of asking for information.</td>
<td>137</td>
</tr>
<tr>
<td>You don’t want to go to the health department or doctor alone.</td>
<td>128</td>
</tr>
<tr>
<td>It is too difficult to get to the health department or doctor.</td>
<td>120</td>
</tr>
<tr>
<td>You don’t know where to go.</td>
<td>120</td>
</tr>
<tr>
<td>You have to take care of childcare needs instead.</td>
<td>111</td>
</tr>
<tr>
<td>The health staff or front desk staff attitude is negative.</td>
<td>103</td>
</tr>
<tr>
<td>The doctor’s attitude is negative.</td>
<td>98</td>
</tr>
</tbody>
</table>
The answer to the first part of the research question, *what are the self-perceived barriers faced by low-income women in reproductive healthcare information-seeking?* is a lack of health insurance, already knowing the information that they need, not being able to afford to see the doctor, having to wait too long, and feeling shy asking for information. These barriers were rated the highest among all of the barriers listed. The absolute minimum score that a potential barrier could have that would have been 70. Given that every barrier listed scored higher than this, each of them was considered to be at least a minor impediment to a portion of the participants. However, the top five listed above scored substantially higher than the remaining 11 with a jump of two between the third, fourth, and fifth most highly ranked barriers, and a jump of 14 between the fifth and sixth barrier.

The third qualitative question asked the participants what barriers they had encountered related to their information seeking experience described previously. Twenty-eight of the women answered this question. The most common answer was the they had not experienced any barriers (n=15). “No, because I have the internet at home.” and “None. It’s the internet age.”

Following this, five of the women stated that they were scared, nervous, or shy in searching for needed reproductive health information. For example, “I was scared of asking something too personal,” and “I was young and scared.” “First, I was shy. I had heard people say that it was bad and I didn't want people thinking that I was having sex.”
Three women stated that it was difficult to get an appointment to speak to a doctor. “It’s tough scheduling an appointment. I had to wait a week with a bacterial infection” said one, while another stated simply, “...the time spent at the health department. It takes all day.” One cited cost, one cited paperwork, one cited information overload, one said that the doctor lacked knowledge, and one said that she wasn’t sure about how to find reliable information on the internet.

For this question the qualitative data simply wasn’t very rich. Women seemed to be eager to finish answering questions. However, for the answers that were received they agreed with the findings of the quantitative data that being scared or shy to ask for information and difficulty getting an appointment were substantial barriers.

To next determine how perceived barriers influenced information seeking inferential statistics were applied. First, Spearman’s rank was applied to search for correlation. The individual categories of perceived barriers and information seeking were added between all participants to give a total score to each and Spearman’s rank was conducted to determine if there was correlation between these two categories. The r value for the Spearman’s rank between the total sum of information seeking for each category and the total sum of perceived barriers for each potential barrier was r=.15. This demonstrates that there is no correlation between these two variables.

Next, each Spearman’s rank was conducted between each individual perceived barrier and information seeking category. Not a single instance of correlation was found between any of the variables. Because there is a demonstrated relationship between information seeking and information needs, Spearman’s rank was also conducted
between each of the variables of information needs and perceived barriers. All $r$ values indicated that there is no correlation between any of these variables.

At this point ordinal regression analysis was conducted to determine if a relationship could be established between the dependent variable of information seeking against the independent variables of information needs and perceived barriers. Once again, the total score was found for each variable by adding the individual rankings of all participants for each individual category. Ordinal regression analysis demonstrated no significant relationship between the totals of information seeking against information needs and perceived barriers.

In accordance with the process conducted for Spearman’s rank, ordinal regression analysis was conducted for each individual category of information seeking, perceived barriers, and information needs. Some significant results were found and are listed with $p$ and $R^2$ values in table 4.7 below. All results listed below were found to have significance of model fit, non-significant goodness of fit, and non-significant results for the test of parallel lines. All or nearly all factors were found to be significant. For this table information seeking, information needs, and perceived barriers will have the following abbreviations: IS, IN, and PB.
Table 4.7

Ordinal regression results

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable 1</th>
<th>Independent variable 2</th>
<th>p</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS: healthy pregnancy</td>
<td>IN: healthy pregnancy</td>
<td>PB: Don't know where to go</td>
<td>0.001</td>
<td>0.349</td>
</tr>
<tr>
<td>IS: healthy pregnancy</td>
<td>IN: healthy pregnancy</td>
<td>PB: Negative staff attitude</td>
<td>0.005</td>
<td>0.301</td>
</tr>
<tr>
<td>IS: healthy pregnancy</td>
<td>IN: healthy child</td>
<td>PB: Don't know where to go</td>
<td>0.000</td>
<td>0.359</td>
</tr>
<tr>
<td>IS: healthy pregnancy</td>
<td>IN: healthy child</td>
<td>PB: Negative staff attitude</td>
<td>0.001</td>
<td>0.316</td>
</tr>
<tr>
<td>IS: healthy pregnancy</td>
<td>IN: LD</td>
<td>PB: Too much information is stressful</td>
<td>0.005</td>
<td>0.289</td>
</tr>
<tr>
<td>IS: healthy pregnancy</td>
<td>IN: healthy pregnancy</td>
<td>PB: No insurance</td>
<td>0.005</td>
<td>0.289</td>
</tr>
</tbody>
</table>

With each of these results, the dependent variable of information seeking decreased as the independent variables increased. The amount to which the regression model explains this change is displayed by the Nagelkerke $R^2$ coefficient in the last column. As an example, the data analysis shows that women who reported high information needs regarding having a healthy child and stated a higher perception of the barrier of not knowing where to go for that information also reported decreased information seeking on how to have a healthy child as the perception of that barrier was heightened. The amount to which this behavior could be explained by the regression model was 35.9 percent. Another example is that women who reported high information needs concerning labor and delivery but a high perception of the barrier of finding too much information stressful also reported decreased information seeking as this barrier increased at a rate that could be explained by the regression model at 28.9 percent.
Once again, the results in this phase of analysis that demonstrated significance regarding reproductive health needs were entirely concerned with how to have a healthy pregnancy and a healthy child. None of the results with reference to pregnancy prevention, STD prevention, abortion, or domestic violence demonstrated any statistical significance.

To attempt to further clarify definitive answers for research question four, the chi square test for independence was conducted to compare the observed frequencies of data with frequencies that may be observed by chance (Agresti, 1996). Analysis was conducted for the total score of each variable by adding the individual rankings of all participants for each individual category, as was done previously for Spearman’s rank and ordinal regression analysis. Next, analysis was conducted for each individual category of information seeking and perceived barriers. All significant results that were found are listed in table 4.8 below. Included with the variables are the chi-square statistic ($\chi^2$), the degrees of freedom (df), the $p$ value, and Cramer’s $V$. In this table information seeking and perceived barriers will have the following abbreviations: IS and PB.

Table 4.8
Chi square results for information seeking and perceived barriers

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>$\chi^2$</th>
<th>df</th>
<th>$p$</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS: Abortion</td>
<td>PB: Doctor’s attitude is negative</td>
<td>29.669</td>
<td>16</td>
<td>0.020</td>
<td>0.328</td>
</tr>
<tr>
<td>IS: Abortion</td>
<td>PB: Don’t want to go to the doctor alone</td>
<td>36.565</td>
<td>16</td>
<td>0.002</td>
<td>0.364</td>
</tr>
<tr>
<td>IS: Abortion</td>
<td>PB: Partner doesn’t want you asking for information</td>
<td>28.836</td>
<td>12</td>
<td>0.004</td>
<td>0.373</td>
</tr>
<tr>
<td>IS: Abortion</td>
<td>PB: Scared to ask for information</td>
<td>34.305</td>
<td>16</td>
<td>0.005</td>
<td>0.353</td>
</tr>
</tbody>
</table>
The data analysis listed above states that there are significant statistical relationships between the dependent variable of information-seeking related to abortion and the perceived barriers of a negative attitude from the doctor or staff, not wanting to go to the doctor alone, being scared or shy asking for information, not knowing where to go, and having a partner that doesn’t want you to ask for information. All relationships were found to have a moderate association.

The dependent variable of information seeking in reference to domestic violence had a statistically significant relationship with the independent variables of perceived
barriers of not wanting to go to the doctor alone, finding it too difficult to get to the doctor, being too scared and too shy to ask for information, and not knowing where to go. These relationships were also all found to have moderate association.

The dependent variable of information seeking about having a healthy pregnancy had a statistically significant relationship with the perceived barriers of not wanting to go to the doctor alone and not knowing where to go. These relationships had moderate associations.

The dependent variable of information seeking regarding birth control had statistically significant relationships with the perceived barriers of a negative attitude from the doctor and not being able to afford going to the doctor. Again, these relationships had moderate associations.

Finally, the dependent variable of information seeking about protection from STDs had a statistically significant relationship with the independent variables of perceived barriers of being too shy to ask for information, finding it too difficult to get an appointment, not having insurance, negative attitude of the staff, and not knowing where to go. These relationships were all found to have moderate association.

In summary, the answer to the question of What are the self-perceived barriers faced by low-income women in reproductive healthcare information-seeking and how do they influence information-seeking? is answered in many ways by the data. The most significant barriers as described by the subjects are lack of health insurance, already knowing the information that they need, not being able to afford to see the doctor, having to wait too long, and feeling shy asking for information. However, the answer to
how perceived barriers influence information seeking is unsurprisingly complex and dependent on the type information sought.

If the subject is seeking information on safe motherhood issues such as having a healthy pregnancy, labor and delivery, or having a healthy child, then the most likely barriers to arise are not knowing where to go, encountering a negative staff attitude at medical facilities, not having insurance, not wanting to go to the doctor alone, and the stress of receiving too much information. Information seeking about the prevention of STDs is most likely to be negatively impacted by the barriers of feeling too shy to ask for information, potential negative attitudes from doctors and staff, difficulty getting an appointment, not having insurance, and not knowing where to go. Birth control information seeking is potentially interrupted by not being able to afford the doctor or fear of the doctor’s attitude being negative. Information seeking on obtaining abortion care can be complicated by many of the potential barriers examined including being too shy or too scared to ask for information, a partner or spouse not wanting the woman to ask for information, potential negative attitudes from doctors and staff, not wanting to go alone, and not knowing where to go. Finally, information seeking regarding protection from domestic violence interacts negatively against the barriers of difficulty in getting to medical facilities, not wanting to go alone, being too scared or shy to ask for information, and not knowing where to go.
RESEARCH QUESTION 5

The fifth and final research question is *Does a high perception of self-risk influence low-income women’s information-seeking behavior?* In order to best answer this question the statistical procedures of Spearman’s rank, ordinal regression analysis, and chi square were employed. First, information seeking was compared to perception of risk as observed in the collected data. Spearman’s rank was run against every category of both variables. There were no instances of correlation between any of the variables of information seeking and perceived risk. Ordinal regression analysis also did not produce any statistically significant results.

The results of the chi square analysis of information seeking and perceived risk are in table 4.9 below. Information seeking is abbreviated IS and perceived risk is abbreviated PR.

*Table 4.9*  
*Chi square results for information seeking and perceived risk*

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Independent variable</th>
<th>$X^2$</th>
<th>df</th>
<th>p</th>
<th>Cramer's V</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS: Abortion</td>
<td>PR: Total perception of risk</td>
<td>122.474</td>
<td>84</td>
<td>0.004</td>
<td>0.666</td>
</tr>
<tr>
<td>IS: Domestic violence</td>
<td>PR: Domestic violence</td>
<td>32.327</td>
<td>12</td>
<td>0.001</td>
<td>0.398</td>
</tr>
<tr>
<td>IS: Healthy pregnancy</td>
<td>PR: Unintended pregnancy</td>
<td>43.114</td>
<td>16</td>
<td>0.000</td>
<td>0.395</td>
</tr>
</tbody>
</table>

There is a statistically significant relationship between information seeking about abortion and a total perception of risk. This relationship has a strong association.

Information seeking about domestic violence has a statistically significant relationship
with potential risk of domestic violence at a moderate association. Finally, information seeking concerning healthy pregnancy information was found to have a statistically significant relationship with perceived risk of unintended pregnancy at a moderate relationship.

To further examine the role that perceived risk has in information seeking the dependent variable of self-efficacy was examined next. As explained in the review of the literature, Wilson’s Model self-efficacy and Risk or Reward Theory are used to explain individual variance and motivation to pursue some information needs with more urgency than others (Wilson, 1999). According to Wilson, the perception of risk may motivate the awareness of an information need, while self-efficacy is a determinant of the person’s belief in their ability to engage in seeking information. Therefore, an examination of the interaction of self-efficacy and perceived risk may help to further explain the role that risk perception plays in information seeking.

To examine Wilson’s work with respect to this study, each individual variable of self-efficacy was compared to each of perceived risk and information needs using the statistical procedures of Spearman’s rank and ordinal regression analysis. There were no instances of correlation between any of the variables of information seeking and perceived risk. Ordinal regression analysis was conducted using self-efficacy as the dependent variable and perceived risk, information needs, and information seeking as independent variables. This also did not produce any statistically significant results. It was concluded that for this participant group self-efficacy was not found to influence information seeking and perceived risk as Wilson’s research suggests.
To answer the question of *Does a high perception of self-risk influence low-income women’s information-seeking behavior?* with respect to the results of this study, it does not seem to. The majority of the analysis conducted found no significant relationships between variables. The exceptions to this are the three relationships found by chi square data analysis concerning information seeking on abortion, domestic violence, and having an healthy pregnancy.

This chapter first presented the demographic information about the participants, then answered each of the research questions in turn. The results from the quantitative and qualitative data for each question were presented. Next, these findings and their significance will be discussed in chapter five.
CHAPTER V

SUMMARY, IMPLICATIONS AND FUTURE RESEARCH

This study was conducted to examine the information-seeking patterns, needs, and barriers among low-income women as they pertain to reproductive health. In order to best determine what has been uncovered by this endeavor, it is crucial to state what was known first. This final chapter will summarize the breadth of relative knowledge currently found in the literature. Following this, the contributions of this work will be discussed. In conclusion, areas for further research will be suggested.

The end effects of poor reproductive health in people of poverty have been explored at length. Populations of low socioeconomic status are burdened with excessively adverse outcomes related to infant mortality (Abdullah et al., 2010; He et al., 2015; Singh & Kogan, 2007), preterm birth (Braveman et al., 2015; Finer & Zolna), infants born of low-birthweight (Muglia & Katz, 2010), maternal death (Robinson et al., 2015), unintended pregnancy (Finer & Zolna, 2011), STDs (Robinson et al., 2015), HIV (CDC, 2011), and IPV (Oldenburg et al., 2014; Tsai, 2013). The inordinate affliction of these reproductive health-related issues onto this population is likely to cause the disproportionate suffering of women of low-income.

The reasons for this have been found to be multifarious. It is evidenced in the literature that low-income populations receive poorer care and less of it than more
affluent groups (Kendall et al., 2005; Robinson et al., 2015; USDHHS, 2011). Current research determines that this happens for one of two types of reasons: either that these disparities are structural in nature such as barriers of transportation, clinic access, hours, and cost (Dehlendorf et al., 2010; Haider et al., 2013; Ostrach & Cheyney, 2014), or that they speak to the ability of the poor woman to access information or determine how to utilize the services available to her (Breitkoph et al., 2005; Lara et al., 2015). In addition, women may have difficulty communicating with healthcare workers (Golden & Pomerantz, 2015; Wood et al., 2014). It is acknowledged in current studies that this population's informational needs are not satisfied, and that they may have difficulty accessing care even when the desire to exists (Kendall et al., 2005; Robinson et al., 2015).

There is a wealth of studies that pertain to HISB and the target population. Primarily of note concerning these findings is the preference for informal information sources (Spink & Cole, 2001), that general digital divide characteristics greatly influence where health information is sought (Cotten & Gupta, 2004), and that both education and income greatly influence information-seeking (Ramanadhan & Viswanath, 2006). Regarding reproductive health information-seeking, there is a preference for less reliable, personal sources of information in the target population, with family members being a highly cited first choice (Aaronson et al., 1988; Anderson et al., 2014; Lewallen, 2004; Singh, 2002; Song et al., 2013; Spink & Cole, 2001). While some women stated that they would prefer to talk to health professionals, they still turned first to family and friends. Many women of this population expressed distrust of medical professionals
(Jesse et al., 2008; Matthews et al., 2002). The internet is a highly consulted source of information even though women of low socioeconomic status are less likely to have the literacy skills to use the internet as a source of reproductive health information (Bell, 2014) and that there is a great difference in information-seeking ability between socioeconomic groups (Plantin & Daneback, 2009).

However, that is where the research largely stops. What is described above is actually very little research into the reproductive health-related informational needs and behaviors of women of low socioeconomic status. At this chasm is where the results from this study fit. In conducting this study, the goal was to decipher what information low-income women need, how they look for this information, and the interaction of perceived barriers and risk with information-seeking. Further, each of these inquiries was made of the actual target population in order to answer these questions from their perspective. The purpose in this was to be able to inform future researchers and public health practitioners what women from this population stated their needs are, not make inferences for them.

As related by the participants of this study, 46 percent of their expressed reproductive health-related information needs pertain to safe pregnancy and motherhood. This number was found by adding up the total Likert ratings of each informational need between all the women, then calculating the percentage of the pregnancy-related information needs from the total. Next, each of the four individual pregnancy-related needs constituted for 11 to 12 percent of the informational needs expressed. Following this are informational needs related to prevention of pregnancy,
STDs, IPV, and HIV which each equaled approximately 8 percent for a compiled 36 percent of the total expressed need by this population. Abortion information was the least needed at only six percent. This adds to the current breadth of knowledge of the reproductive health-related information needs of this population by, first, providing a specific list agreed upon by the women of this study. And, second, this list compares several different areas of reproductive health to each other.

In the literature the few available studies that addressed women’s informational needs at all only examined them within the scope of specific topical areas within reproductive health. Examples of this are the studies by Singh (2002) and Song (Song et al., 2013) which both evaluated the information needs of women relative to their pregnancies. Sword and Watt (2005) examined the informational needs of women in a postpartum unit. The Whitaker study explored young women’s informational needs related to IUDs (Whitaker et al., 2008). However, there have been no studies that looked at prescriptive indicators of reproductive health for this population then determined a relevant list of information needs that countered them.

The process used in this research was that of approaching the reproductive health deficits of low-income women by assessing their greatest areas of disparity, using these to create a list of informational areas that most specifically addressed these deficits, and then asking women what information they need most while comparing all of these areas of reproductive health. In this methodology this study is unique. So is the scope of the topical areas being contrasted against each other. Whereas previous work contrasted needs related to topical areas (Singh, 2002; Song et al., 2013; Sword & Watt,
the juxtaposition of all of these types of information needs against each other makes clear what information women of this population are most concerned with obtaining. For the subjects of this study, that turned out to be information on how to have a safe pregnancy and healthy baby.

This knowledge is of value given that information and public health workers are often likely to approach women in general settings such as clinics or schools, and not settings in which the primary informational needs of the subject would be implicitly clear. For example, a socioeconomically disadvantaged 26-year-old unmarried woman entering a clinic and asking to make an appointment with a gynecologist may be there to learn information about any of the aforementioned topics. However, given the results of this research it is more likely that she is looking for information about how to have a child than get birth control or seek abortion care. Clinical workers must be prepared to interact positively when encountered with these informational needs. This is incredibly important, not only because this study found that these are the most highly ranked information needs for this population, but also because in this research it was uncovered that fear of negative interactions with clinicians is one of the biggest impediments to information-seeking for these women. There is a prevalent attitude against low-income women having children (Belle Doucet, 2003). It is particularly because of this negative sentiment and the target population’s fear of reprisal that clinicians must be prepared to address these information needs in a positive, thoughtful, helpful manner.
Next, in seeking to understand how the target population looks for reproductive health information, the women that participated in this study seemed to be in agreement about which sources they utilized and which they trusted most. Unfortunately, these were not consistently the same. While doctor, the internet, and mother were the most highly-consulted sources, they did not all make the list of most trusted. Mother ranked significantly lower than the top tier of health clinicians on the scale of how much each source was trusted. This is consistent with findings in the literature that women of this population are likely to go to female friends and family first (Aaronson et al., 1988; Anderson et al., 2014), even when they acknowledge that these are not the most reliable sources (Song et al., 2013).

The internet fell substantially lower. While it was the second most consulted information source, it was the eighth most trusted source. In the interviews, many of the women expressed concern regarding their ability to acquire quality information searching online. The most common concerns stated were with their ability to be able to tell what information was credible and what wasn’t. For example, one woman stated that she knew there was a lot of “bad” information out there, but didn’t know how to determine the ‘good’ from the ‘bad.’ The subjects were all aware of credibility issues with online sources, but not how to navigate them.

The literature provides information that paints this as a reasonable concern. In order to be an effective consumer of online health information unusually high information-evaluation skills are required (Lima-Pereira et al., 2012). Recall that one study reported that women found HPV information online “scary” (Kosenko et al.,
The average reading level for people of low-socioeconomic status in the US is below 8th grade, while most quality online health information is written at a 10th grade level or above (Bell, 2014). A woman of this population that is uncertain of her ability to discern quality online reproductive health resources is stating a completely valid concern.

What are the implications of this finding? First, the internet is one of the most likely sources that a woman of low-income will use for reproductive health information. Second, statistically she is unlikely to be able to efficiently find usable information to her benefit. This means that current reproductive health informational resources on the internet are too complex to help this population. Therefore, one of the best ways to reach them may be through the creation of usable online resources that are targeted towards groups with lower literacy levels. If approximately 50 percent of respondents to this study report accessing the internet as one of the first two sources that they would use, this must certainly be an opportunity for public health workers to create a library of practical, targeted informational resources at an appropriate reading level to reach this population.

Further, it falls to information professionals to assist this population in learning how to search for already existing appropriate materials. As are many of the barriers to be discussed in this conclusion, a lack of ability to search for and find information online is an issue of information literacy and that of health literacy. This is where information professionals have a vital role. Currently the findings in the literature are that unusually
high information-evaluation skills are required to find quality health information on the internet (Lima-Pereira et al., 2012).

From the findings of this research the target population clearly is attempting to seek information online. Creating instructional tools to help women search may be an effective step to assist them. Improving information literacy instruction, in K-12 classrooms, colleges, or through adult education, is likely one of the most substantial long-term methods by which to reduce the informational deficits of this group. Teaching low-income women how to effectively search for quality information that they can use may be the most effective way to satisfy their informational needs related to reproductive health and all other areas of personal improvement and well-being.

In the qualitative findings, the subjects most frequently described a two-step information-seeking process. First the women would consult one source, then another. The most popular path was the internet then the doctor. Next was a female personal source, such as a friend, then a clinician. Most often the first source consulted was not a highly trusted source of information. This again agrees with findings in the literature that stated that women are most likely to use female personal sources (Aaronson et al., 1988; Anderson et al., 2014; Lewallen, 2004; Singh, 2002; Song et al., 2013; Spink & Cole, 2001), and those that report an increased level of internet usage (Lundsberg et al., 2014; Lima-Pereira et al, 2012; Sayakhot & Carolan-Olah, 2016). However, it details a process of information-seeking that is not currently described. Because mother, the internet, and female friend are so highly ranked on the list of primary sources consulted,
this indicates that women routinely reach out to information sources first that they admit they do not trust in their reproductive health-related information seeking.

This is a concerning path. If it is the preference of these women is to consult a friend first, what happens when the friend provides her with wrong information? Or, what if in consulting the internet she ends up on a site with errors? False information regarding reproductive health may compel a woman to forgo care or take incorrect preventative action; paths that may lead to dire consequences due to the potentially serious nature of reproductive health issues. As mentioned previously, this is first and foremost an issue of information literacy. Women must be taught to be efficient consumers of information, and an inherent piece of this is learning about the quality of sources.

Next, this is significant information because while the participants of this study did seem inclined to contact healthcare clinicians, that is not indicative of the habits of this population (Ayanian et al., 2000; Frost, 2013). The fact that this study was conducted in a clinic for low-income people likely influenced the results by providing a group of participants more inclined to seek professional care than their counterparts not currently in contact with clinicians. Women examined in this study were almost certainly more likely to report experiences in which they contacted a doctor for care because they were called to participate from a list of women that had been seen by the clinic in the past year. Given the findings in the literature, it is certainly plausible that women not currently under the care of a clinic from this socioeconomic group would
presumably not be as likely to reach out to a doctor (Brodie et al., 2000; Ramanadhan & Viswanath, 2006; Spink & Cole, 2001).

In assessing the process that low-income women go through to seek reproductive health information, the findings of this study agree with the literature that women have a preference for informal and personal sources (Heinig et al., 2006; Spink & Cole, 2001). However, the subjects of this research also had a preference for professional clinicians which is not consistently found in other studies. The two-step information-seeking process that has been illuminated by this research in which women most often seek personal or informal sources first and clinicians second, is not currently described in the literature. Neither is the trust assigned to the sources consulted in this approach. In fact, studies may instead detail a simple one-step process or an unending multi-step process for health information-seeking (Spink & Cole, 2001; Shieh et al., 2009). The findings of this study have provided new information in describing the path that socioeconomically disadvantaged women take to find reproductive health information and how these women feel about the sources that they use.

What do women in this population describe as barriers to the reproductive health information-seeking process? There is a wealth of literature on the potential barriers that may impede information-seeking for this population, but none specific to reproductive health with the exception of a few studies on barriers to pregnancy and motherhood information-seeking (Heinig et al., 2006; Jesse et al., 2008; Matthews et al., 2002; Moore et al., 2004; Shieh et al., 2009). Of these, however, the majority of barriers tend to be either concerning financial impediments or communication barriers. The
subjects of this study also ranked these as potential barriers, but the analysis paints a more complex picture.

The results derived from this data are that a lack of health insurance, already knowing the information that they need, not being able to afford to see the doctor, having to wait too long, and feeling shy asking for information were the barriers that were ranked the highest by the subjects for general information-seeking. However, while the participants ranked these barriers the most substantial roadblocks to information-seeking, it must be noted that they did not necessarily show statistical relevance when compared with seeking through analytical methods. Instead, while not having health insurance was ranked as the greatest barrier to seeking information, this response only showed statistical relevance in interacting with one area of information seeking. Further, as a general sense of heightened barriers rose there was also no statistically relevant interaction with information seeking.

Instead, the primary findings of this study are that these barriers are different for each specific information need. Women with a generalized heightened sense of barriers in this study did not have statistically significant differences that demonstrated lessened seeking either on specific topics or overall. Instead, information-seeking decreases when relevant barriers are applied to specific information needs. This finding agrees with the results from the Shieh study that found that with heightened information needs on a specific topic and lower, relevant barriers information-seeking increased Shieh et al., 2009). However, it expands this knowledge to other areas of reproductive health information than only the topical area of pregnancy-related information-seeking. For
example, being too shy or too scared to ask for information was a barrier for information-seeking related to protection from domestic violence, while a negative staff attitude was a significant barrier for information-seeking related to both abortion and STD information-seeking. Not being able to afford to go to the doctor was listed as one of the major barriers to information-seeking regarding birth control.

The quantitative data analysis found the greatest number of statistically significant results with increased barriers concerning pregnancy-related information needs. These provided results in both ordinal regression analysis and chi square. This indicates that the information that women stated they need most is also that which they find most difficult to obtain. The highest barriers to pregnancy-related information seeking are not knowing where to go, fear of encountering a negative staff attitude, the stress of too much information, not wanting to go to the doctor alone, and not having insurance. Not knowing where to go and the fear of the stress of too much information are both issues of information literacy. Fear of encountering a negative staff attitude is an impediment of communication closely linked with information literacy and commonly found with women of low socioeconomic status. In the literature, results can be found that this group has reactions to medical professionals that range from issues of understanding to actual mistrust of physicians (Dehlendorf et al., 2010; Golden & Pomerantz, 2015; Hobson, 2001; et al., 2002). It has also been found that when met with such barriers, low-income women have a tendency to become silently non-compliant with their doctor’s recommendations (Roter, 1977). While the participants in
this study displayed no such mistrust of doctors, apprehension of communication 
impediments with physicians and clinical staff was common and significant. 

Some of the barriers that are most likely to impede types of information-seeking 
are frequently, though never universally, cited across categories of information needs. 
For example, not knowing where to go was one of the most common impediments to 
specific topics of information-seeking. This is particularly interesting because the 
women being interviewed were already under the care of the health clinic. Being too 
shy to ask for information was also a common barrier across types of information needs, 
as was the fear of poor staff or physician attitudes. However, the most common barriers 
found by the chi square and ordinal data analysis were not the same ones that were 
ranked as most substantial by the women themselves, with the exception of being too 
shy to ask for information. 

This information is valuable in two ways. First, it provides specific barriers that 
may be examined and hopefully overcome by public health workers. Second, it suggests 
that an examination of general barriers to reproductive health-related information- 
seeking is not the best practice for aiding this population. Instead, an exploration of the 
barriers that conflict with information-seeking about specific information needs is the 
best way to discern what low-income women see as impediments to accessing 
information to manage or improve their reproductive health. If a public health worker is 
interested in promoting abortion care to low-income women, that person must take the 
time to research what barriers lie in place that prevent women from seeking 
information about abortions. It cannot be assumed that information and care is not
sought because of a lack of insurance, since women ranked that as such a substantial general barrier. Instead, research must be conducted to determine what would prevent information-seeking specific to abortion care. As it turns out, for the subjects of this study, lack of insurance was not a statistically significant reason for women to forgo information-seeking regarding abortion. Instead, women do not look for information on abortions due to fear of the doctor and staff attitude, their partner not wanting them to, being too shy or scared to ask for information, and not knowing where to go. Each of these barriers are those of communication and information literacy.

As another example, this research has uncovered that among this population their most significant informational needs are related to safe pregnancy and motherhood. Assuming that the top three ranked barriers of a lack of health insurance, already knowing the information that they need, and not being able to afford to see the doctor were the most likely impediments to seeking information for this population would not be fruitful, as the most significant topical results were instead those of not knowing where to go and fear of a negative staff attitude. For clinicians or public health workers wishing to reach women to assist them with these needs, informational interventions on where to obtain care would be a first step. Next would be creating and disseminating staff training on best practices to make this population feel welcome, comfortable and heard in clinical environments.

The important caveat of these results is that the barriers for information-seeking for low-income women can neither be assumed or generalized. A woman that needs HIV information is not forgoing looking for it for the same reason as another woman who
does not look for information on escaping IPV. The reasons for these behaviors are nuanced and specific to each need. The implication of this for those that wish to meet the reproductive health informational needs of this population is that each individual topic must be handled separately; there is no single cure-all that will break down barriers and allow the free-flow of vital information. Instead, it is up to those concerned with the health of low-income women, whether they are clinicians, public health workers, social workers, or information scientists, to appreciate the complexity of the interactions between barriers and information-seeking and to redress them using systematic, ordered, and appropriate methods.

As a last word on this topic, the barrier of “already knowing” must be addressed. At some point in their responses to the quantitative and qualitative data collection 36 of out the 70 women interviewed stated that they already knew all the information that they needed and did not need to look for more. This is also a barrier of information literacy and a rather serious one, as this response implies that the acquisition of reproductive health information is finite. As discussed previously, to state that one does not need any more information on this topic shows a significant lack of understanding on both the importance and the breadth of this knowledge. Once again, this is an area that should be a focus of informational efforts on the target population. Improving the information literacy of low-income women may be a substantial way to address their reproductive health.

In fact, while this research has uncovered new insights into the barriers that negatively impact reproductive health information-seeking, one of the most important
lessons is that information literacy seems to be at the heart of each issue. Yes, women expressed concern over cost and clinical hours. However, the most substantial issues of not using quality, reliable, and trustworthy sources, not knowing where to go for information, being too shy or scared to ask for information, and being afraid of communicating with clinical staff are all topics that quality information literacy educational efforts could address. In fact, many of the structural impediments such as cost and scheduling could also be addressed through informational efforts, as there are clinics that provide ways to overcome these through sliding-scales and weekend hours, but women apparently are not accessing that information.

While there are many implications in these findings to assist the work of public health workers, clinicians, and social workers, the most significant work to be done may be for information professionals. Women of low-income need to be taught better information literacy and evaluation skills. With increased ability to seek and use information effectively, along with heightened confidence in their ability to communicate with health professionals, these findings suggest that this population would likely have substantially lower barriers to accessing information requisite to improving reproductive health.

The final area of inquiry to be addressed is that of the relationship between information-seeking and a self-perception of risk. In the literature the relationship between a self-perception of risk and motivation to seek information is conflicting. Brewer (et al., 2004) found that heightened perception of self-risk motivated seeking care. Agreement is found with theory in public health including the Theory of Reasoned
Action (Fishbein, 1967) and the Health Belief Model (Rosenstock, 1974). But, other studies have found different results. Nomura’s work suggests that a perception of control over one’s health is a greater predictor of information-seeking (Nomura et al., 2007). Yet another attributed age or likelihood of the severity of health issues to information-seeking variance (Persoskie et al., 2014). To add to the conflicting nature of these findings, the independent variable of counseling also was found to have an impact on information-seeking and risk perception.

The results of this study report no significant statistical interactions between the perception of personal risk and information-seeking. That means that a heightened perception of self-risk neither increases, decreases, or substantially alters information-seeking behavior in any way for this group of women. Because of the inconsistent nature of the motivation of risk perception in the literature, this research simply adds to this catalogue of knowledge, and implores further research to better describe these relationships.

In the second chapter of this work it was suggested that Information Poverty Theory may potentially provide a theoretical framework by which to understand the reproductive health information-seeking behavior of low-income women. Information Poverty Theory relies upon an insider versus outsider perspective of information exchange in which insider’s experiences are shaped by their commonalities (Chatman, 1996). There was no evidence to support that the subjects of this study had an insider perspective, or that they viewed outsiders with mistrust. While there were many reported concerns with communication barriers and potentially negative attitudes of
clinical staff, they did materialize as actual voiced distrust of perceived outsiders. This is a significant piece of this theory, and without the presence of this perspective the applicability of this theory is weakened.

The four foundational concepts of the theory are deception, risk-taking, secrecy, and situational relevance (Chatman, 1996). There was no stated attempt by any subject to deceive others of her situation. Neither was there the appearance that women were afraid to take risks in seeking information or care, with the exception of those that reported impediments of being shy or scared to look for information. While many of the women stated that they felt this way, this alone does not support Information Poverty Theory. The women may have been engaging in secrecy with the interviewer, but they seemed very forthright and did not appear to be doing so. Women also often seemed to express barriers such as not knowing where to go to get information that they need. The inherent belief in this statement is that they do need information, not that they are discarding it as lacking relevance—therefore dismissing the fourth construct.

The conclusion that is drawn from this work is that based upon the data there is little support for the applicability of Information Poverty Theory to the reproductive health information-seeking behaviors of low-income women. Chatman believed that the information poor perceive that there is little information that speaks to their world view and are suspicious of information from outsiders. Information Poverty Theory relies upon a distrust of outsiders. There is simply no evidence that the women that were studied felt this way or had an insider/outsider perspective. It is fully possible that the subjects of this study were engaging in self-protective behaviors and have these
perspectives. However, it is not present in the data, which is what must be trusted in drawing conclusions from this work.

What can be found from this endeavor is a significant contribution to the knowledge of the reproductive health information-seeking behaviors, needs, and barriers of low-income women. The data laid out in this work paint a more complete picture of the informational needs of this population and how to address them. By understanding what information these women need, how they are looking for it, and what barriers exist to them obtaining it, interventions to address the reproductive health of low-income women can be better focused and more assured of success.

Finally, while the data presented in this work does provide more insight on the reproductive health information-seeking of this population, this study was not perfect. There were some flaws in the survey instrument and implementation, even after pilot testing, that may have influenced the results. First, the self-efficacy section seemed ineffective. Women tended to answer it quickly and without thought, either ranking everything as a one or a five. Similarly, the qualitative section did not receive the requisite consideration that would have been ideal. This likely was because, even with being given the option to opt out, women were tired of answering questions. Instead of giving thoughtful, descriptive responses, women tended to answer quickly and with only short responses. While the data from this section is valid, it is not as robust as was hoped.

The perceived risk section was daunting to the participants. Women seemed uncomfortable assigning themselves at a heightened risk for ill outcomes even if
statistically these things are true. This section was a challenge for Das (2013), also, because her participants felt the same way. In her research, Das asked women their perception of their own risk for her pilot. She found that they were uncomfortable with this wording and changed it to their belief of the amount of risk for a woman in the general population. Because of this, in this study during the pilot phase the women were asked to rate the risk to a woman in the general population. However, the participants in the pilot phase found this confusing and agreed that self-perception of risk would be clearer. This alteration was made for the second plot and the final iteration of the survey. However, when it was implemented in the study many of the women seemed discomforted by it or confused and hesitant to answer. Because of this experience and Das’s experience, continued exploration into how best to phrase and deliver inquiries into women’s perception of their own risk is advised.

Despite these pitfalls, this study clarifies the needs of this population, and provides direction for public health workers, clinicians, and information professionals to assist this population with focused educational efforts and further research. Suggestions for some of the latter are listed below.

RECOMMENDATIONS FOR FUTURE RESEARCH

This study is a beginning into determining the reproductive health information needs of low-income women. Further research into what these needs are is clearly needed. This population suffers ill outcomes related to many indicators of sound reproductive health and traditionally fails to access adequate health services. An
examination into why this is must continue until the barriers to equitable care are eliminated.

One such suggestion for further research would be to survey women of this population that are not currently in the care of a health clinic. The participants of this study had all been seen by clinicians within the last year. However, many socioeconomic disadvantaged women fail to access health care. Focusing this inquiry onto those who have not secured clinical care would provide more information on the barriers that this population faces. Such research could be conducted by reaching out to similar populations in community settings that are not medical centers such as libraries, churches, or foodbanks. The subjects of this study had far fewer children than the average for the population, and so an interesting comparison might be mothers of children in childcare centers in impoverished areas. In aggregating data taken from women from a great number of different sources a clearer picture could be drawn of the informational behaviors of this population.

Next, this study examined the information needs of a population from a single urban center. Due to the outreach of different public health programs, these needs may be different geographically. Likewise, the informational needs of urban low-income women are likely to be different than those of rural low-income women. Further research into different geographical areas and types of communities would paint a more detailed picture of what the informational needs are of low-income women. This is an area in which community aid workers could play a vital role providing outreach and mediating contact with disadvantaged populations.
It is also apparent that women of this group often consult information sources that they do not consider completely reliable. The women clearly stated great distrust of information found on the internet, yet continue to consult it. The information sources of mother and female friend also had high rankings relative to other sources, but were not considered with requisite levels of trust. Speculation into why this is may be ease of access. Women reported that they did not know where to go to acquire information and care, and that cost and lack of insurance were impediments to access. The internet and female personal sources are readily, freely available to most women.

In order to address this significant problem, several areas of further research are proposed: First is to continue to study how to make women of this socioeconomic class aware of the services available to them. Next is to break down the barriers that obstruct access. So many times women in this study said that they were unaware of where to go for information and care. This is particularly significant given that these women were current clinical patients. It is likely that the knowledge gap for women not currently undergoing care is much greater. Why is it that women of this group are unaware of the low and no-cost options available to them? Are outreach practices of public health workers simply not getting through? Why is this and what can be done? If one of the greatest challenges is informational, that leaves a clear role for information professionals to conduct outreach at the community level. Once again, libraries, churches, and foodbanks are potentially excellent venues for intervention. Social workers may be of great assistance providing outreach in this area, also.
Low-income women need to be taught how to be efficient and effective consumers of online health information. A woman who attempts to access online health information but is wary of her findings is expressing barriers of information literacy and health literacy. In addition to not trusting their internet information evaluation abilities, women expressed being too shy or scared to seek information, and being afraid of the stress of too much information. Each of these is an issue of information literacy. So is the statement that the subject “already knows everything,” as this implies that the acquisition of reproductive health information is finite. It is the role of public health workers and information professionals to help women overcome information literacy deficits. Research into educational interventions that improve the literacies of women of low socioeconomic status may have significant impact on this group. One possible area that these competencies may need to be strengthened is in K-12 education, as half of the study population did not continue past this point. Public health interventions targeting young adult women may also be useful. Another potential avenue is instructing community aid workers on best practices to teach the target population information literacy skills.

Of course, the effectiveness of information literacy education must also be evaluated. The recommendation of information literacy education as a method to help this population is meant as a practical first step that falls within the scope of the information professions. It is certainly not meant as a panacea. Further research into the effectiveness and best practices of information literacy education would be an excellent start to explore how best to begin this work.
Finally, the conflicting research into the interaction of risk perception and information-seeking needs to be addressed. Why is it that for some populations worry encourages information-seeking while for others it is a catalyst for information avoidance? Does socioeconomic status, and therefore availability of resources to confront a potential issue, contribute to whether information is sought or avoided? For example, if information is avoided because it is seen as likely to confirm one’s fears, and this population sees cost as a major barrier to care, can information provided to this population regarding sliding scale or free clinics encourage information-seeking in a situation of heightened risk perception? Or, more simply put, is arming the target population with information and resources to counter a potential problem a way to encourage health information-seeking? This is an area that demands a great deal of further examination to try to determine both the relationships between these variables and the reasons for them. First, a determination needs to be made on whether this population is more likely to seek or avoid information when the subjects consider themselves to be of high personal risk. Next, if information is avoided, the reasons need to be discerned. Finally, these reasons must be added to the list of barriers that must be eliminated in order to ensure low-income women receive the reproductive health information and care that they need.
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APPENDIX A - SURVEY INSTRUMENT

University of South Carolina

Consent to be a Research Subject

PURPOSE AND BACKGROUND: You are being asked to volunteer for a research study conducted by Margaret Sullivan Zimmerman. I am a doctoral student in the School of Library Science Department at the University of South Carolina. This research is sponsored by the University of South Carolina. The purpose of this study is to learn about women’s access to information about reproductive health in Mecklenburg County. When I say reproductive health I mean family planning methods such as birth control, sexual health, abortion services, safe pregnancy and motherhood. I will also include the topic of domestic violence in my survey. You are being asked to participate in this study because you are a woman from Mecklenburg County between the ages of 18 and 29. This form explains what you will be asked to do if you decide to participate in this study. Please read it carefully and feel free to ask questions before you make a decision about participating. You are consenting to be a research subject by participating in this survey. On behalf of the research team and the University of South Carolina, thank you very much for your participation.
DESCRIPTION: You are invited to participate in a research study on examining what information about reproductive health is needed in your community. You will be asked a several questions your about information needs and your access to reproductive health information. The purpose of this study is to assess what gaps exist in information access. Your identity will be anonymous. I will not ask any identifiable information during our discussion.

If you agree to be in this study, the following will happen:

- You will be asked to complete a survey about information needs regarding reproductive health. You will be asked to state your responses for the investigator to record them on the survey.
- Your participation will take approximately 20 minutes.

There are no foreseeable risks associated with participation in this study. This research may help us understand what information needs there are in Mecklenburg County. You will receive $10 cash as payment for your completion of the survey. Participation in this study is voluntary. You are free not to participate, or to stop participating at any time, for any reason without negative consequences. In the event that you do withdraw from this study, the information you have already provided will be kept in a confidential manner. The survey will be administered on paper. You will speak your responses to me and I, the principle investigator, will record them for you. You can read the survey and the responses that I am recording at any time.
Please be advised that I am a doctoral student in library and information science. I am not a licensed medical professional.

I am going to read you the following questions. Please answer to the best of your ability. I will record your answers. You can read the survey and the responses that I am recording at any time.

Information Seeking

If you wanted to find reproductive health-related information, where would you likely go to look for such information?

When I say reproductive health I mean family planning methods such as birth control, sexual health, abortion services, safe pregnancy and motherhood. I will also include the topic of domestic violence. Please listen to the following list. Indicate where you are most likely to go to look for or ask about reproductive health questions. Please rank your top three answers by putting a “1” in the box next to what you consider the most likely, “2” for the second most likely, and “3” for the third-most likely.

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How much do you trust each of the following sources for information about reproductive health? Check all that apply.

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<tr>
<td>Internet</td>
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<tr>
<td>Health Department</td>
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<tr>
<td>Health Clinic</td>
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<tr>
<td>Television</td>
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<tr>
<td>Other</td>
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</tbody>
</table>
Information Needs

Please describe how much you need information about the following topics. The responses range from 1 to 5 with 1 being you don’t need information on this at all to 5 being you need information very much.

<table>
<thead>
<tr>
<th></th>
<th>1 (don’t need at all)</th>
<th>2 (need very little)</th>
<th>3 (not sure)</th>
<th>4 (need slightly)</th>
<th>5 (definitely need)</th>
<th>Why if don’t need?</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to prevent unwanted pregnancy</td>
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<tr>
<td>Where to go to get birth control</td>
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<tr>
<td>Getting an abortion</td>
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<tr>
<td>How to prevent</td>
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<tr>
<td>contracting HIV/AIDS</td>
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<tr>
<td>Sexually transmitted</td>
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<tr>
<td>diseases such as herpes,</td>
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<tr>
<td>gonorrhea, or chlamydia</td>
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<tr>
<td>Protection from</td>
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<tr>
<td>domestic violence</td>
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<tr>
<td>The following statements</td>
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<tr>
<td>all refer specifically to</td>
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<tr>
<td>pregnancy</td>
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<tr>
<td>How to get pregnant</td>
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<tr>
<td>How to be healthy during</td>
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<tr>
<td>pregnancy</td>
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<tr>
<td>How to have a healthy</td>
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<tr>
<td>child</td>
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<tr>
<td>Labor and delivery</td>
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<tr>
<td>Complications during</td>
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<tr>
<td>pregnancy</td>
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</tbody>
</table>
Perceived Barriers

The following section is about barriers or reasons that may get in the way of you getting information that you need about reproductive health. I’m going to mention some reasons why you might not get the information you need. Please tell me, on a scale of 1 to 5, if they are true for you. 1 means it’s not a reason, and 5 means it is definitely a reason.

<table>
<thead>
<tr>
<th>Reason</th>
<th>1 (disagree very much)</th>
<th>2 (disagree slightly)</th>
<th>3 (neutral)</th>
<th>4 (agree slightly)</th>
<th>5 (agree very much)</th>
</tr>
</thead>
<tbody>
<tr>
<td>You feel shy asking for information.</td>
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<tr>
<td>You are scared of asking for information.</td>
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<tr>
<td>You find getting too much information stressful.</td>
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<tr>
<td>You have too many other things to do instead.</td>
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<tr>
<td>You have to take care of childcare needs instead.</td>
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<tr>
<td>You don’t want to go to the health department or doctor alone.</td>
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<tr>
<td>Your spouse or partner does not want you asking for information.</td>
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<tr>
<td>You don’t have health insurance.</td>
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<tr>
<td>It is too difficult to get to the health department or doctor.</td>
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<td>---------------------------------------------------------------</td>
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<tr>
<td>It is too difficult to get an appointment at the health department or doctor.</td>
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<tr>
<td>You have to wait too long to see the doctor.</td>
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<tr>
<td>The health staff or front desk staff attitude is negative.</td>
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<tr>
<td>The doctor’s attitude is negative.</td>
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<tr>
<td>You can’t afford to go to the clinic.</td>
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<tr>
<td>You don’t know where to go.</td>
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<tr>
<td>You already know all of the information that you need, so you don’t need to look for more.</td>
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</tbody>
</table>

**Self-Efficacy**

This section is on how confident you are that you could get information if you needed to. The answers range from 1 to 5 with 1 being not confident at all and 5 being completely confident. “How comfortable (or confident) do you feel in getting information on...?”
<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>not at all</td>
<td>a little</td>
<td>somewhat</td>
<td>more</td>
<td>completely</td>
</tr>
<tr>
<td></td>
<td>confident</td>
<td>confident</td>
<td>confident</td>
<td>confident</td>
<td>confident</td>
</tr>
<tr>
<td>preventing getting</td>
<td></td>
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<td></td>
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<tr>
<td>pregnant</td>
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<tr>
<td>preventing sexually</td>
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<tr>
<td>transmitted diseases such</td>
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<tr>
<td>as herpes, gonorrhea, or</td>
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<tr>
<td>HIV/AIDS</td>
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<tr>
<td>getting an abortion</td>
<td></td>
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<tr>
<td>having a healthy pregnancy</td>
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<tr>
<td>domestic violence</td>
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</tbody>
</table>

**Perceived Risk**

How likely do you feel it is that the following things could happen to you? This section is on how likely you feel it is that different things might happen to you. The answers range from 1 to 5 with 1 being something that absolutely won’t happen to you and 5 being very likely.

<table>
<thead>
<tr>
<th></th>
<th>1 (it won’t happen)</th>
<th>2 (unlikely)</th>
<th>3 (neutral)</th>
<th>4 (moderately likely)</th>
<th>5 (very likely)</th>
<th>If the answer is 1 or 2, why not?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contracting a sexually</td>
<td></td>
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<tr>
<td>transmitted disease such as herpes, gonorrhea, or chlamydia</td>
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<tr>
<td>Contracting HIV or AIDS</td>
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<tr>
<td>Unintended pregnancy</td>
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<tr>
<td>Intended pregnancy</td>
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<tr>
<td>Poor health for yourself during pregnancy</td>
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<tr>
<td>Health problems for your unborn baby during pregnancy</td>
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<tr>
<td>Not having a normal delivery</td>
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<tr>
<td>Giving birth to a premature baby</td>
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<tr>
<td>Domestic violence</td>
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</tbody>
</table>

Information Seeking

“Within the next year, how likely are you to find information on...?”
<table>
<thead>
<tr>
<th></th>
<th>1 (extremely unlikely)</th>
<th>2 (unlikely)</th>
<th>3 (neutral)</th>
<th>4 (likely)</th>
<th>5 (extremely likely)</th>
<th>If 1 or 2, why not?</th>
</tr>
</thead>
<tbody>
<tr>
<td>birth control?</td>
<td></td>
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<tr>
<td>preventing sexually transmitted diseases such as herpes, gonorrhea, or HIV/AIDS?</td>
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<tr>
<td>abortion?</td>
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<tr>
<td>having a healthy pregnancy?</td>
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<tr>
<td>preventing or escaping domestic violence?</td>
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</tbody>
</table>

Open Ended Question

“At this point we are finished with the survey part of the questionnaire. However, I have a couple more open-ended questions. If you are tired of answering, we can stop here. However, if not, would you mind answering these last questions? Thank you very much.”

1. Now, in your own words (And, I apologize if these questions seem a bit repetitive.), what are your current information needs when it comes to your own reproductive health?
2. Next, I would like you to please think of any time that you needed to know something really important about your own reproductive health. What process did you go through to learn about it? What I mean by this is, where did you go for information at first, then to learn more, and did you have to keep looking for a while to learn what you needed?

3. In the last example, what were things that kept you from looking for what you needed to know? How did you overcome them?

Please tell me about yourself.

What is your age?

_____  

What is the highest level of education that you have completed?

- Some high school
- High school diploma or GED
- Associate/junior college degree
- Bachelor’s degree
- Master’s degree
- Professional degree (ex. MD, DDS, JD)

What is your employment status?

- Employed full time
• Employed part time
• Not employed
• A student
• Retired
• Unable to work

Which of the following describes your racial background? Select all that apply.

• American Indian or Alaska Native
• Asian
• Black or African American
• Native Hawaiian or Other Pacific Islander
• White
• Hispanic or Latina
• Other

How many children do you have?

_______

What is your marital status?

• Married
• Widowed
• Divorced
• Separated
Never married

Do you have consistent access to a computer with internet access?

How do you access the internet?

- Computer
- Phone
- Other

How would you rate your overall health status?

- Excellent
- Good
- Average
- Poor
- Very poor

Thank you for completing this survey.