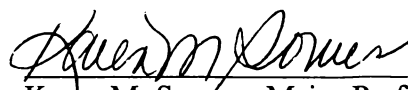
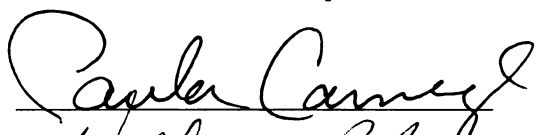
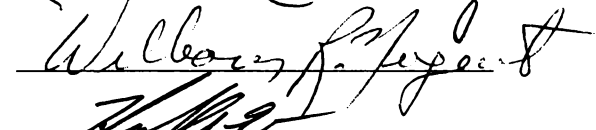


To the Graduate Council:

I am submitting herewith a dissertation written by Thomas Alex Washington entitled "Factors Associated with HIV Testing for Women during Prenatal Care." I have examined the final paper copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Social Work.


Karen M. Sowers, Major Professor

We have read this dissertation
and recommend its acceptance:


Accepted for the Council:


Vice Provost and Dean of
Graduate Studies

**FACTORS ASSOCIATED WITH HIV TESTING FOR WOMEN DURING
PRENATAL CARE**

**A Dissertation
Presented for the
Doctor of Philosophy
Degree
The University of Tennessee**

Thomas Alex Washington

August 2002

DEDICATION

This dissertation is dedicated to all of those who have lived with AIDS, yet whose lives have ended after their struggle with a disease that shows no respect of person.

Some of those persons have been dear to my heart, but most of them, I never knew. I continue to do research in the area of HIV/AIDS as my way of linking arms and standing steadfast to be part of the answer – a cure for AIDS and/or a prevention vaccine for HIV.

“In loving memory of Timmy, Freddie, Tina, Robbie, Ryan and Parker!”

ACKNOWLEDGMENTS

There is an African Proverb that states, “I am, because you are, because you are, therefore I am!” This proverb relays how I feel about my family, friends and colleagues for being a source for encouragement, and people who along with me lived my dream – attain the Ph.D. degree:

My mother, Vickie Marshall Riley, who is the wind beneath my wings, always provided me with love, encouragement, motivation, and an example of hard work. She has always believed in my ability to reach any goal I seek to achieve. My mother has always made education a high priority. Without her unselfish and neverending support, I would not have completed this work.

My grandparents, Almanda Washington and the late George Wellington Washington, the late Elnora Wooten Watson and the late Thomas Edward Marshall, all of whom provided their shoulders for me to stand on. My grandparents always encouraged me to use the gifts my ancestors gave, remembering that I am the hope the dream of the slave!

My partner, Atty. George Byron Stover, who has been my friend and confident, always reminding me to take a minute to breath. He has been a great example of success. He supplied me with emotional support during this project.

My siblings, Terrence, Terrica (Valexis) and Shawn, who have been my cheering squad. The accolades and love made the difficult moments of this academic journey bearable.

My funding sources, Southern Regional Education Board (Dr. Ansley Abraham), Council on Social Work Education (Dr. Arcelis Francis) and National Institute of Mental Health Research on AIDS Office (Dr. John Orme), for providing mentoring, financial support and a networking system during my doctoral education and my research.

My committee chair, Dr. Karen M. Sowers, who has advised me and supported me through my doctoral education. She has been a perfect role model as a scholar, community leader and dean of the college! Her concern for students makes her, not only a great dissertation chair, but an excellent example of how to excel and keep a balanced life! “Dr. Karen M. Sowers is a PHENOMENAL woman!”

My committee, Dr. William Nugent, Dr. Rodney Ellis and Dr. Paula Carney, for their scholarship, time, support, statistical and methodological assistance. I thank each of them for their respect, patience and for encouraging me to excel.

My mentors, Dr. Hugh Vaughn and Dr. Stan L. Bowie, who have nurtured me, encouraged me, provided a safe and confidential place for me to discuss issues and concerns, such as institutionalized racism and the continued struggle for freedom. I will always remember both of them for their support! Habari Ghani!

My mentor, Terri Combs-Orme, who challenged me to reach my greatest potential. I am grateful to her for expressing to me that I am a joy to have as a student. I have learned so much from her guidance in the areas of writing, presenting at professional conferences and conducting primary research. I am a better student for life because of her!

My colleagues, Nancy Meyer-Adams and Dr. Precilla Belin, having both of them as a colleague and friend during my doctoral studies at UT have made the difference in my life. I surely could not have made it through this process without their neverending encouragement, shoulders to cry on, listening ears, friendly counseling, and making me laugh when I needed it most!

The University of Tennessee staff, Faye Fillers, LeeAnn Killion, Karla Edwards, Gina Cox, Melody Kirby, Natalie Crippen, Ellie Read, and Cary Springer, for providing me with technical assistance, encouragement, and for making me smile during the rough times as a doctoral student. Thank you!

Finally, a very special thanks goes to my friend and soul-sister, Patricia Jackson, for practically lifting my head when it was down, making encouraging phone calls, inquiring and listening, and helping me develop a plan to “stick-with-it” when I was discouraged. No matter how difficult a moment was, she seemed to make me feel as if I could conquer any obstacle. HARAMBEE!

ABSTRACT

The objectives of this study were to examine the effects of demographics, cues to action, HIV risk appraisal, and practice setting on women's use of HIV testing during prenatal care. Three hypotheses based on the general theme of the Health Belief Model were tested. Furthermore, a prediction model was tested and a cross validation analysis was conducted to determine the accuracy of the model to predict HIV testing for women during prenatal care.

This study reports findings from an examination of the National Survey of Family Growth, Cycle V (NSFG) archival data. Face to face interviews were conducted using the NSFG survey instrument to screen non-incarcerated women (N=1033) ages 15 – 44 regarding childhood/young adult living arrangement history; work history; education, use of family planning and other medical services; clinic data bases; HIV testing; demographic characteristics (including race, age, marital status); child care; health insurance, number of sexual partners; and HIV risk behaviors. HIV testing was measured as a binary variable, determining whether the women received HIV testing during prenatal care.

Data were analyzed concerning cues to action (knowledge of HIV, knowledge of HIV prevention, received condoms from a clinic), and HIV risk factors (e.g., sex with males who share needles). Descriptive statistics and frequency distributions were computed for all variables. Logistic regression analyses were used to test hypotheses when the dependent variable was whether women received HIV testing during prenatal care (a dichotomous variable).

Logistic regression also was used to derive a prediction equation for the probability of women receiving HIV testing given one or more explanatory (age, race, education, marital status, type of care facility, HIV formal education, HIV prevention, received condoms, HIV testing, and HIV risk appraisal) variables. The odds ratios [log odd/coefficient (B)] were produced and used to interpret the relationship between the constructs: demographics, cues to action, HIV risk appraisal and the likelihood of the women receiving HIV testing during prenatal care.

Chi-square tests revealed that race, age, level of education, marital status, HIV risk appraisal, HIV formal education and practice setting are associated with HIV testing. Logistic regression analysis revealed that the prediction model [including race, age, level of education, marital status, HIV risk appraisal, cues to action (formal and informal HIV education), and practice setting] was a significant model for predicting women who did not receive HIV testing during prenatal care.

While medical researchers are focusing on pharmacological advancements that reduce the number of pediatric AIDS cases, its important that other research is conducted that generates knowledge to link social and behavioral advances with medical advances.

Moreover, whether ZDV or other treatments are effective in reducing the rates of HIV infection in women and children, prevention strategies must be developed that will encourage people to get tested before any treatment can be delivered. To this end, social work professionals can play a role.

The results of this study have implications in the areas of HIV prevention and maternal and child health. Identifying factors associated with HIV testing for women during prenatal care may assist health care officials, including social workers, in

viii

developing programs and services to increase HIV testing amongst this population and increase HIV testing for women before pregnancy.

TABLE OF CONTENTS

CHAPTER I.	INTRODUCTION	
	Introduction	1
	Statement of the Problem	2
	Purpose of the Study	6
	Research Questions	6
	Justification for Study	6
	Theoretical Framework	7
	Limitations	11
	Definitions of Terms	12
	Summary	13
CHAPTER II.	REVIEW OF LITERATURE	16
	Women and HIV	16
	Prenatal Care	21
	Research Related to the Study	25
	Summary	28
CHAPTER III.	METHODOLOGY	29
	Human Subject Review	29
	Sampling and Data Collection Procedures	30
	Research Design	31
	Instrumentation	32
	Measures	33
	Analysis of Data	35
	Missing Data	38
	Research Hypotheses	40
	Summary	41
CHAPTER IV.	RESULTS	42
	Introduction	42
	Test Sample	42
	Cross Validation Sample	45
	Results of Hypotheses Testing	46
	Summary	59

CHAPTER V.	SUMMARY, FINDINGS, CONCLUSIONS, PREVIOUS RESEARCH, LIMITATIONS, RECOMMENDATIONS, & IMPLICATIONS	62
	Introduction	62
	Summary of the Study	62
	Findings	63
	Conclusions	66
	The Study and Previous Research	67
	Limitations and Recommendations for future research	68
	Implications for Practice	68
	Implications for Policy	69
	Concluding Statement	70
REFERENCES		71
APPENDICES		78
	Appendix A Consent Form	79
	Appendix B Omit Data Form	82
VITA		86

LIST OF TABLES

TABLE	PAGE
1.1 Independent Variables	34
2.1 Missing Data Patterns	39
3.1 Characteristics of Test Sample	44
4.1 Characteristics of Cross Validation Sample	47
5.1 Respondent's Race and HIV Testing	48
5.2 Respondent's Age and HIV Testing	49
5.3 Respondent's Level of Education and HIV Testing	49
5.4 Respondent's Marital Status and HIV Testing	49
5.5 Respondent's Risk Appraisal and HIV Testing	51
5.6 Respondent's Cues to Action (formal education)	52
5.7 Respondent's Cues to Action (informal education) and HIV Testing	52
5.8 Respondent's Practice Setting and HIV Testing	53
6.1 Results of the Logistical Regression Analysis - Test Sample	57
7.1 HIV Testing Predicted in the Test Sample	57
8.1 Results of the Logistical Regression Analysis Cross Validation Sample	60
9.1 HIV Testing in the Cross Validation Sample	60
10.1 Regression Coefficient Confidence Intervals for the Test and Cross Validation Samples	61

CHAPTER I

INTRODUCTION

Introduction

Human Immunodeficiency Virus (HIV) in women is of great concern because women account for more than one-fifth of the HIV and Acquired Immune Deficiency Syndrome (AIDS) cases in the US (CDC, 2000). While the numbers of women infected with HIV increased over this decade, perinatally-acquired AIDS cases decreased by 70% due to significant improvements in effective prevention and treatment methods (CDC, 2000). However, any number of infants being born with HIV remains a great concern. Approximately, more than 1000 infants are born with HIV infection each year in the United States (CDC, 2000).

Pregnancy makes the concern of HIV in women urgent because two lives are affected. Prenatal care that includes HIV counseling, voluntary testing and new drug treatment for infected mothers and their children saves lives and resources. Hence, in an effort to reduce pediatric AIDS cases and improve treatment for mothers with AIDS, identifying pregnant women who are HIV-positive is crucial.

In order to identify HIV positive women, HIV testing is necessary. Therefore, as the debate goes on about recommended testing or routine testing, it is important to have research that helps to identify factors associated with HIV testing for women. And because African-American women are the fastest growing group infected with HIV, it is urgent that research is developed to identify factors associated with HIV testing for African-American women.

Research findings from states that conduct HIV surveillance indicate that most HIV-infected mothers were tested for HIV before their child's birth and confirm the effectiveness of current Public Health Services (PHS) guidelines for routine HIV counseling and voluntary testing of pregnant women (CDC, 1995). Moreover, high acceptance levels for HIV testing following counseling by informed providers have been demonstrated through previous assessments (Mofenson, 1999). Declines in perinatally acquired AIDS began before 1994, most likely reflecting increased use of Zidovudine (ZDV) to treat HIV-infected women (White, 1999).

Other factors possibly contributing to the decline include decreases in the number of HIV-infected women giving birth and increases in use of antiretroviral treatment for HIV-infected children. However, from 1992 to 1994, the number of children born to HIV-infected mothers was relatively stable (i.e., 6000-7000 per year) (Davis, Byers, Lindergren, Caldwell, Karon, & Gwimm, 1995). Even though prevention efforts have had some success, the continued incidence of perinatally acquired AIDS among infants documents ongoing perinatal transmission and underscores the need for strategies to ensure that women receive HIV counseling and voluntary testing during prenatal care.

Statement of the Problem

The problem addressed in this study dealt with the need to focus on increased HIV prevention services for women during prenatal care and to identify factors associated with and predictors of HIV testing for women during PNC. Identifying factors associated with HIV testing for women during PNC can be a first step in developing programs and services to increase HIV testing amongst this population and increase HIV

testing for women before pregnancy. Additionally, these efforts are important to prevent perinatal AIDS transmission.

Facts about HIV and AIDS

In 1980, an unknown disease began to affect gay white men primarily living in California and New York. This disease was labeled “gay-related immune disorder” (GRID) and is now known as acquired immune deficiency syndrome (AIDS). AIDS rapidly swept the country as it took the lives of people in major metropolitan areas. In 1984, researchers in France and the United States discovered that a human retrovirus (HIV) was the primary factor in the development of AIDS. HIV and AIDS have made their way into the lives of most Americans in less than two decades. The impact of HIV/AIDS has been major on the health care, political and family systems (Marx, Chang, Park & Katz, 1998).

According to CDC (2001), 753,907 people have been diagnosed with AIDS and an estimated 900,000 individuals are HIV positive as of June 2000. HIV and AIDS are no longer seen as the concern of the gay community, exclusively. Today, women account for more than 124,911 of Acquired Immune Deficiency Syndrome (AIDS) cases in the United States (CDC, 2001). Of these AIDS cases, 43% of the women report being injection drug users (IDU), and 43% report having had sex with injection drug users (CDC, 2001). Additionally, impoverished women are reportedly at increased risk for HIV as a result of heterosexual exposure to multiple sexual partners at risk, specifically men who have been in jail or prison and bisexual men (Nyamathi, Kington, Flaskerud & Lewis, 1999; Mondanaro, 1987).

Facts on Women and HIV

The facts concerning HIV show that HIV in women is of great concern because women account for more than one-fifth of the HIV and Acquired Immune Deficiency Syndrome (AIDS) cases in the US (CDC, 1998). In 1996, African-American women represented 60% of all cases of AIDS in women reported (Mauskopf et al, 1996), while representing only seven percent of the total U.S. population (U.S. Bureau of Statistics, 1999). Research suggests that African-American women are less likely to get needed health care services than their white counter-parts, including prenatal care. If this pattern is the same for HIV counseling and voluntary testing, and noting that African-American women have higher rates of infection, then African-American children will be infected at even higher rates than their white counter-parts.

Pregnancy and HIV

Again, its important to note that pregnancy makes the concern of HIV in women more urgent because two lives are affected. In an effort to reduce pediatric AIDS cases and to improve treatment for mothers with AIDS, the US Institute of Medicine (IOM) committee recommended universal testing for HIV as a routine part of prenatal care (AAP & ACOG, 1997).

Based on the research presented by Mauskopf et al. (1996), offering HIV counseling and HIV voluntary testing during prenatal care is crucial to the battle against HIV/AIDS, especially for women and children. Mauskopf (1996) found that increasing the accessibility of HIV screening and zidovudine (ZDV) treatment is cost-effective for pregnant women in areas where prevalence rates are high. However, in order for women to receive the ZDV drug treatment, they have to present themselves for prenatal care.

Moreover, early detection of HIV during pregnancy can open access to basic primary care, social services and auxiliary services for the mother and baby later.

The American College of Obstetricians and Gynecologists and the World Health Organization (WHO) recommend that women begin prenatal care in the first trimester of pregnancy and maintain a schedule of frequent visits throughout pregnancy (ACOG, 1997; Alaska Bureau of Vital Statistics, 1995; Combs-Orme, 1990). It is recommended that women without known complications visit monthly in the first trimester, with more frequent visits as delivery approaches.

There are a host of reasons women may not present themselves for health care. Some reported reasons are financial barriers to health care (e.g. cost of treatment), inability to afford transportation to medical appointments or child care costs while at appointments, and women's inattention to their own medical condition because of caretaking responsibilities for other family members (Raveis et al., 1998). The studies assessing these issues have used samples of women concerning health care in general, rather than focusing on HIV counseling/testing.

There is a need for more research focusing on HIV counseling and testing issues for woman in general, but more specifically for pregnant women. As the U.S. attempts to address the AIDS epidemic through preventive measures, it's important that researchers evaluate the effectiveness of the IOM recommendation that medical professionals offer all pregnant women HIV counseling and testing. Additionally, research is needed to provide information about why women who obtain prenatal care decline to be tested for HIV. Identifying factors associated with HIV testing for women during prenatal care is the main focus of this study.

Purpose of the Study

The purpose of this study was to examine predictors of HIV testing for women during pregnancy. Three hypotheses based on the general theme of the HBM were tested to examine the effects of demographics, cues to action, HIV risk appraisal, and practice setting on women's use of HIV testing during pregnancy. Furthermore, a cross validation analysis was applied to a different sample to determine if the adapted HBM accurately predicts HIV testing for women during pregnancy.

Research Questions

The following research questions were formulated to address the purpose of this study:

Research Question 1. Does a relationship exist between HIV testing for women during PNC and race (African-American, Hispanic, European-American, Other); levels of education; marital status; and practice setting (private MD/HMO, Clinic, Other)?

Research Question 2. Which factors in the adapted HBM (race, age, levels of education, marital status, cues to action, HIV risk appraisal and practice setting) predict HIV testing for women during PNC?

Research Question 3. Does the regression model accurately predict HIV testing for women during PNC as determined by applying the adapted HBM to a cross validation sample?

Justification for Study

While medical researchers are focusing on pharmacological advancements that reduce the number of pediatric AIDS cases, its important that other research is conducted that generates knowledge to link social and behavioral advances with medical advances.

Moreover, whether ZDV or other treatments are effective in reducing the rates of HIV infection in women and children, prevention strategies must be developed that will encourage people to get tested before any treatment can be delivered. To this end, social work professionals can play an important role.

The results of this study have implications in the areas of HIV prevention and maternal and child health. Identifying factors associated with HIV testing for women during prenatal care may assist health care officials, including social workers, in developing programs and services to increase HIV testing amongst this population and increase HIV testing for women before pregnancy.

Theoretical Framework

In addition to the lack of research investigating factors associated with HIV testing for pregnant women, there are no theories developed to explain pregnant women's motivation to receive HIV testing during prenatal care. This study examined possible associations using an adapted theoretical model that has been applied to other service utilization issues with women and their motivation to pursue activities associated with health care.

The Health Belief Model (HBM) was derived from the psychosocial theory of cognitive psychologists who were interested in attitudes related to participation in Tuberculosis chest X-ray screenings (Hochbaum, 1958). HBM is a value-expectancy theory developed to explain individual motivation to pursue activities associated with health care (Wheeler, 2000; Strecher & Rosenstock, 1996).

HBM was the focus of many HIV/AIDS prevention-research projects during the first decade of the epidemic (Wheeler, 2000). Moreover, the model has been used to explain behavior in relation to compliance with medical regimens, explain human perceptions concerning preventive health and evaluate caregiver utilization of pediatric services (Caramel, 1990). The HBM has not been used specifically to explore pregnant women's attitudes toward seeking prenatal care, or HIV counseling and testing during prenatal care.

The HBM includes three broad constructs: (1) general health motivation, (2) perception of the threat-value of a specific disease, and (3) perception of the effectiveness of a specific health behavior for reducing that threat (Becker, 1974). The original framework utilized by Janz and Becker (1974) and Becker (1990) has been adapted and will be the theoretical framework for this paper. The features include: (a) perceived risk appraisal; (b) perceived barriers; (c) perceived self-efficacy; and (d) cues to action.

Research conducted between 1974 and 1984 using the HBM found that perceived barriers were the most consistent predictors across study populations and outcome behaviors (Neff & Crawford, 1998). According to Mattson (1999), perceived barriers refer to the evaluation of possible negative consequences that may result from taking particular health actions. In other words, pregnant women may not consent to HIV testing when it is offered because they perceive that there is an existing physical (e.g., transportation-unable to get to continued posttest counseling), psychological (e.g., anxiety-receiving a positive test result), or financial barrier (e.g., cannot afford adequate health care and/or counseling).

Risk appraisal involves evaluating the behaviors an individual engages in that may cause her to become susceptible to getting infected with a certain disease. The HBM assumes that if an individual's assessed level of risk increases regarding a disease, such as HIV, chances of compliance with recommended prevention measures also increase (Mattson, 1999). Pregnant women who do not perceive themselves as high-risk for HIV infection are still susceptible to being infected with HIV if their partner has high-risk behaviors. Yet, some women may not consent to HIV testing. Additionally, women who do participate in high-risk behaviors may select not to get tested because of their fear of dealing with a HIV-positive result.

Perceived self-efficacy is related to an individual's level of confidence in her capability to perform healthy behaviors (Mattson, 1999). For example, if a woman is confident in talking about HIV and/or has voluntarily gotten tested for HIV before, she may be more likely to get tested during prenatal care. Perceived self-efficacy may be an important factor for pregnant women and the efforts to increase HIV testing. Lux and Petosa (1994) found that self-efficacy is a significant predictor of safer sex intentions of incarcerated youth. However, the practical significance of the self-efficacy construct was called into question by the small percentage of variance accounted for by this variable in Lux and Petosa's (1994) effort to predict safer sex intentions of incarcerated youth.

Nevertheless, the HBM and the self-efficacy constructs have never been included in research focusing on pregnant women and HIV testing. The HBM including self-efficacy appears to be useful for further research. The HIV testing literature using the HBM including the self-efficacy construct has found that individuals who are confident

in their capability to perform healthy behaviors are more likely to fulfill that self-perception (Mattson, 1999).

Literature regarding the HBM and “cues to action” define this construct as specific stimuli that trigger appropriate health behavior. According to the health literature, these cues may be internal (e.g., disease symptoms) or external (e.g., being offered HIV counseling/testing during a prenatal care visit or seeing the severity of the disease publicized through the mass media) (Becker, 1974; Mattson, 1999). Cues to action motivate individual beliefs and perceptions about diseases and their severity, and move individuals to action (Rosenstock, 1974).

There is a need for more research focusing on HIV testing issues for woman in general, but more specifically for pregnant women. As the U.S. attempts to address the AIDS epidemic through preventive measures, it’s important that researchers evaluate the effectiveness of the IOM recommendation that medical professionals offer all pregnant women HIV counseling and testing. Additionally, research is needed to provide information about why women who obtain prenatal care decline to be tested for HIV. Likewise, it is important to examine factors that are associated with HIV testing of women during prenatal care.

HBM assumes that an individual who is positively motivated towards health and perceives a disease as threatening and a particular behavior as threat-reducing, is more likely to engage in that behavior than someone who lacks any one of these beliefs (Neff & Crawford, 1998). Using the HBM and the aforementioned assumption, it can be hypothesized that pregnant women who are knowledgeable toward AIDS prevention and perceive AIDS as threatening are more likely to consent to HIV testing during prenatal

care. Likewise, pregnant women are more likely to consent to HIV testing when they understand that early detection of HIV is necessary for treatment that reduces the chance of the unborn fetus becoming infected and reduces the women's viral load.

This study's focus is HIV testing for women during prenatal care, and factors associated with and predictors of HIV testing for women during prenatal care.

Identifying factors associated with and predictors of HIV testing for women during prenatal care is important to increase HIV testing amongst this population and increase prevention efforts by motivating women to seek HIV testing before pregnancy in order to decrease neonatal pediatric AIDS cases.

Limitations

The study was limited in the following ways:

1. The data were self-reported and no effort was made to ascertain the reliability of what the respondents reported. Furthermore, because the data were self-reported, there may have been underreporting or overreporting.
2. The data were originally drawn from a probability sample of women in the U.S., but for the purpose of this study, a sample was then selected from that sample of women who reported receiving PNC. Thus, the data may not be representative of the nation.
3. The selection of variables for the study was limited because the data were originally collected to examine factors affecting childbearing and the study was not designed to collect data concerning women's beliefs and attitudes on HIV testing and HIV prevention. Therefore, some of the variables used in this study may only partially represent the concepts they were chosen to measure. Furthermore, because of the

limited selection of variables available to examine factors and predictors of HIV testing for women during PNC, the health belief model had to be adapted, yet it still was a good theoretical bases for this study.

Definitions of Terms

Specific terms operationally defined for purpose of this study are as follows:

Prenatal care: is medical care to monitor the progress of a pregnancy and treat pregnancy-related problems. The care can include counseling, a physical exam, medical tests (e.g., HIV testing) or treatment, but must have involved care for the pregnancy. It does not include childbirth education classes.

HIV test: is a blood test for infection with Human Immunodeficiency Virus, the virus that causes AIDS. It test for the presence of antibodies to the AIDS virus in your blood. The test does not determine if you have the AIDS disease.

Clinic: is a medical facility that provides birth control or other health services. Clinics can be sponsored by a private organization, such as planned parenthood, or a government agency such as public health departments, community outreach health center clinics, student health service clinics and abortion clinics.

Private Doctor's Office or Health Maintenance Organization (HMO): refers to one or more medical providers in a private medical practice or in an HMO setting. An HMO provides medical services for a fixed fee and may include prepaid group practices, independent practitioner associations, and preferred provider organizations. Medical providers may include doctors or nurses, nurse practitioners, nurse-midwives, etc.

Health Belief Model: A theory developed as a tool to explain and predict health-related behaviors (Hochbaum, 1958).

Cues to Action: The circumstances that lead to the readiness to take action (Hochbaum, 1958).

Summary

Women are at high risk for HIV infection. African-American women are eight times more likely to be infected than their white counterparts (Land, 2000). Addressing HIV in women can affect pediatric AIDS cases. Getting pregnant women to consent to HIV testing, whether by recommendation or routine testing as part of prenatal care, health care professionals may accomplish primary and secondary preventive methods.

Identifying pregnant HIV positive women can allow health care professionals to administer the necessary treatment and provide services needed to prevent the unborn baby from having a sero-positive status. The effort may help to reduce the number of pediatric AIDS cases in the United States.

Secondary prevention is traditionally known as a measure used to slow down the effects of a disease or stop the disease from causing greater damage once it is already present. Identifying HIV positive pregnant women will allow health care professionals to administer the necessary treatment and provide services needed to those women who are HIV positive. Providing pregnant women with HIV related treatment and services may decrease the disease process, stop the multiplication of the virus and keep the woman healthier.

Social workers are charged with program implementation and are likely to come into contact with pregnant women during the prenatal care process, as part of services offered in clinics for low-income women (Combs-Orme, 1993). Therefore, social workers can be very instrumental in conducting research that responds to maternal and infant health issues through preventive programs and services that address the nonmedical aspects of problems (Raymond, 1986). Moreover, introducing HIV education, counseling and testing during prenatal care is an important procedure for social workers and other health care providers, especially since mothers are concerned about the health of their babies and are motivated to prevent trauma and to ensure a healthy baby during PNC (Combs-Orme, 1990).

In order to identify HIV positive women, HIV testing is a major issue. Therefore, as the debate goes on about recommended testing or routine testing, it is important to have research that helps to identify factors associated with HIV testing for women during prenatal care. And because African-American women are the fastest growing group infected with HIV, it is urgent that research is developed that helps to identify perceived barriers to HIV testing for African-American women.

To understand predictors of HIV testing for women during prenatal care, the general theme of the health belief model was adapted and used as the theoretical foundation for this study. While the HBM examines how attitudes and beliefs concerning a particular disease motivates people to seek prevention behaviors, the HBM model was adapted using only cues to action, and risk taking behavior to predict factors that motivate women to HIV testing during prenatal care.

In this chapter, the introduction, the purpose, and the research questions that guided the study were presented. Also, definitions of terms, limitations and the justification for the study were discussed. Following is the review of the relevant literature, the methodology used in collecting the data and the data analysis procedures for this study.

CHAPTER II

REVIEW OF LITERATURE

This chapter presents a review of literature that has been developed in the area of maternal and child health and HIV prevention. First, there will be a discussion of how HIV/AIDS affects women. Next, a section addressing issues of women of color and how they are affected by HIV/AIDS at a more rapidly increasing rate than any other racial/ethnic group will be conveyed. Then, there will be a discussion concerning the importance of prenatal care in an effort to reduce pediatric AIDS cases. Furthermore, there will be a section discussing the need for more research that may generate knowledge to increase the number of women who seek prenatal care and to increase HIV prevention in the area of maternal and child health from a social work perspective. Finally, a summary will be presented.

Women and HIV

It is important to investigate factors and barriers to HIV testing, particularly for women. Research focusing on barriers to HIV testing has primarily focused on men. There is a need to explore barriers to HIV testing for women during prenatal care. It may be that the same barriers that exist for men also exist for women. Nevertheless, an investigation specific to pregnant women would add to the PNC and HIV/AIDS voluntary testing literature. The knowledge may help social workers and other health care professionals increase and improve voluntary HIV testing.

Women have been disadvantaged, as compared to their male counterparts, with education, research and financial services for HIV. Limited education and research can create a barrier for any group of people, and has surely set barriers for women and HIV (McNair & Roberts, 1997). In fact, women are at a disadvantage in managing their HIV infection, compared to men. Available data indicate that survival after an AIDS diagnosis tends to be shorter among women than men, a difference that persists even after controlling for HIV risk factors (e.g. intravenous drug use) (Brette & Leen, 1991). Women with advanced HIV disease generally have more symptoms and greater duration of symptoms. Furthermore, once in the health care system, women are less likely than men to be involved in clinical trials designed to help treat and manage their infection (El-Sadr & Capps, 1992).

Socio-economically deprived HIV-infected women experience financial barriers to health care, surfacing from the cost of needed supplies, cost of treatment and the usual living expenses generated in an attempt to seek treatment (e.g. transportation, child care). It's important to note that HIV-infected women may postpone attending to their own medical condition because of having caretaking responsibilities for other infected family members, such as partners or children (Anderson, 1989).

Research suggests that the perception of health-related control, self-care activities, social support, psychological adaptation, and coping strategies may influence the course of HIV infection (McCain & Zeller, 1994) and could lead to a more healthy immune system and self-esteem. However, because the samples within the body of literature that support these conclusions include only infected and/or high-risk groups of men, there is

no information about the impact of these areas for HIV-infected women in general or African-American HIV-infected women in particular.

Bright, Arnett, Blair, and Bayona (1996) examined gender and ethnic differences in survival with a cohort of HIV-positive clients. Files were examined for 804 HIV-infected individuals, in which 47% (or 141) were infected African-American women. Many socioeconomic variables that affect survival were identified and grouped together: high-risk activities, depression, social support, stress, and underrecognition of the disease. Two studies briefly mentioned health care providers as social support, but both really focused on access to services (Russell & Smith, 1999; Kissinger et al., 1995; Seals et al., 1995). Research focusing on health care providers as an important link to women's access to services is an important factor and should be explored. However, there is a need for research exploring women's social support systems conceptualized as levels of adaptive functioning. Moreover, research is needed that explores whether or not women's levels of adaptive functioning influences their decisions to receive health care (i.e. HIV testing during prenatal care).

African-American Women

African-American women and children are disproportionately affected by HIV/AIDS in the U.S., compared to other racial/ethnic group (CDC, 1998a). In 1997, African-American women represented 60% and African-American children represented 62% of all women and pediatric AIDS cases reported (CDC, 1998b).

Yet, African-American women do not view themselves as being part of the stereotypical high-risk groups, such as gay white males (Nyamathi, 1999). Because they do not view themselves as a high-risk group, they are less likely to seek education

concerning HIV prevention and less likely to modify behaviors that put them at high risk. Land (2000) stated, "The legacy of racism, coupled with cultural, religious, and sociopolitical factors, also influences the behavior of African-American women. Over the past decade, many African-American communities have been reluctant to acknowledge the threat of AIDS, in part due to the majority culture's tendency to associate African-American communities with deviant behavior (pg. 83)."

A limitation of the study from which the above data were gathered was that level of education regarding AIDS prevention was not measured. Therefore, this study, just as many others, does not offer findings that can enhance prevention programs developed to transform AIDS prevention knowledge of African-American women into a behavior changing modality. The research does offer important knowledge that can help identify the problem, however.

Most research focusing on African-American women and AIDS prevention suggests that they are aware of AIDS and ways to prevent the disease, but are not changing their behavior. However, Hines et al. (1998) found that 57.6% of African-American women, 29.7% of Hispanic women, and 54.8% of white women (N=842) used some form of protection in their most recent sexual encounter. Moreover, African-American women in this study were the most concerned about contracting AIDS.

Barriers to HIV Testing

There are perceived barriers for pregnant women who may or may not consent to HIV-testing. Some women are not being offered HIV testing by their physicians (Guglielmo, 1999). Women are fearful of receiving a positive result, some are not sure if

the results of their tests will be kept confidential, and others feel that the test does not apply to them because they are not in the high-risk group for HIV (CDC, 1999).

Some health care professionals argue that voluntary counseling and testing programs fail to identify numerous HIV carriers. There is a need for resources and research that will help identify, locate and educate those women that are at high risk for HIV. Locating more women to provide HIV counseling and testing may help reduce the number of women transmitting the disease to their children (Boyer et al., 1994).

According to CDC (1998), the main reason for people avoiding HIV testing is fear of a positive result. However, confidentiality also is an important factor in decisions to receive HIV testing. Therefore, HIV outreach efforts must focus on pretest and posttest counseling. Pregnant women who may not choose to receive HIV counseling, too, may have fear of receiving positive results.

Some states have laws that require informed consent prior to HIV testing for pregnant women (Dickson, 2001). For example, the State of Tennessee statute requires that the responsible prenatal care provider of any woman during gestation must provide HIV counseling and consent for testing [Tenn. Code Ann. §68-5-703 2000 Supp.]. HIV counseling may be presented by offering written material or videos that include the nature of the disease, methods of transmission, available treatment, advantages of being tested, and reliability of the tests.

Myers, Orr, Locker, and Jackson (1993) found that the reasons gay and bisexual men are not tested for HIV can be placed into three categories: 1) self-perceived health, 2) desire for anonymity, and 3) denial about being tested. The data were analyzed using

factor analysis and multiple linear regression. The authors suggest that public health officials individualize testing policies and education to address the concerns and fears to increase voluntary HIV testing. The findings of this study, just as many others, focus on factors associated with HIV testing for men, rather than HIV testing issues specific to women.

Solomon, Landrigan, Flynn, and Benjamin (1999) investigated barriers to HIV testing and concerns of HIV positive and high-risk individuals. Their findings suggest that confidentiality and fear of positive results were the factors that influenced whether or not people were tested. As we see illustrated here, confidentiality and fear of positive results are important barriers to voluntary HIV testing.

Prenatal Care

This section focuses on issues concerning research on women and HIV/AIDS that have arisen from the prenatal care (PNC) literature. However, the important link between women and prenatal care hasn't been conveyed. This section will discuss research and issues concerning PNC and HIV/AIDS. Additionally, barriers to HIV testing for women presenting themselves for PNC will be discussed along with the HIV Guidelines (ACOG, 1997) recommended to physicians for women during prenatal care visits.

Guidelines to Prenatal Care

Prenatal care is one of many components to ensure healthy maternal and infant outcomes. Other important components are linked to socioeconomic status, environmental, and psychological factors (Cook, C., Selig, K., Wedge, B., & Gohn-Baube, E., 1999; Combs-Orme, 1990). However, research suggests that early and regular

PNC is associated with better reproductive outcomes (Cook et al., 1999; Pierson, et al., 1994; Institute of Medicine, 1988; Gilbert & Harmon, 1986).

AGOG and AAP (1997) recommend that a woman in good health start PNC in the first trimester. Thereafter, the woman should have medical care once every four weeks until the end of the second trimester. Finally, the woman is recommended to seek medical care every 2 to 3 weeks until the 36th week and then weekly until delivery.

According to the CDC (1999a), the proportion of pregnant women in the U.S. receiving PNC during the first trimester was 81%, and the proportion of those receiving no care was four percent. Previous research suggests that there is a link between a woman receiving no PNC and educational level, attitude towards pregnancy, and socioeconomic status (Klitsch, 2000). Moreover, low-income African-American women are more likely to have fewer or no PNC visits than their white counterparts (Cook et al., 1999; LaVeist, Keith, & Guitierrez, 1995).

Despite efforts to decrease U.S. infant mortality rates, decrease Pediatric AIDS cases, and increase the rate women present themselves for PNC, health care for women is still a major concern and increased efforts should be made to improve health care for women, particularly for low-income African-American women. Low-income African-American women are still more likely, compared to their white counterparts, to receive late or no PNC, receive inadequate health care, have limited access to health care, and are infected at higher rates with HIV. Hence, it is important to explore how to best address PNC and HIV for women, but particularly African-American women.

HIV Testing and Prenatal Care

In recent years, the number of perinatally-acquired AIDS cases has decreased (Anonymous, 1998). However, the rate of infection is still high, especially within the African-American community. There is a high association between the HIV status of women and pediatric HIV/AIDS cases (Turner, et. al., 1997). In fact, 91% of all reported pediatric AIDS cases are linked to HIV transmission from mother to child during pregnancy, labor and delivery or breast feeding (CDC, 1999).

According to a Public Health survey of pregnant women concerning whether they received HIV testing during prenatal care (Joo et al., 2000), 56% received HIV testing during prenatal care. The percentage of women who do seek prenatal care and consent to be tested for HIV is too small (Etzioni, 1998). Increasing the percentage of women accepting HIV testing is crucial in order to identify sero-positive women and provide early treatment to them and their babies. Joo, Carmack, Garcia-Bunuel, and Kelly (2000) found that the percentage of women from their sample who were offered testing was 65%; of those offered testing, 56% were actually tested. Additionally, it is possible that pregnant women who consent to be tested may have a negative result, but may develop HIV after their tests and before delivery (Etzioni, 1998).

In 1997, the IOM committee recommended a plan for routine testing. This plan would include the following: (1) implementing health care policies to begin and track prenatal testing; (2) offering support of routine prenatal testing by including HIV testing in health insurance contracts; (3) updating practice guidelines for all medical organizations to recommend such testing; (4) educating providers on the importance of prenatal HIV screening, and providing the necessary skills to deal with those who test

positive; (5) ensuring that patients' privacy is protected, and making sure that guidelines are in place to ensure that no patient is forced/coerced into taking an HIV test (Droste, 1998).

In an effort to reduce pediatric AIDS cases and to improve treatment for mothers with AIDS, the US Institute of Medicine committee recommended universal testing for HIV as a routine part of prenatal care (AAP & ACOG, 1997). . It's important to point out that the decision to provide HIV counseling and offer HIV testing is only a recommendation for health care professionals and physicians, rather than a mandate. Universal testing for HIV was added in 1997 to the ACOG Guidelines as a recommendation. Therefore, physicians and other health care professionals make the decisions of offering HIV counseling/testing for their individual practices.

The Indiana State Health Department issued a mandate in April of 1997 urging health care professionals to provide HIV counseling and offer testing to all pregnant women. However, findings have shown many physicians to be non-compliant to the mandate due of lack to awareness (Anonymous, 1998). In a study evaluating how physicians in Illinois were adhering to the recommendation of offering HIV testing to their patients during prenatal care, Joo et al. (2000) found that 65% of their sample were offered testing.

The current ACOG Guidelines for HIV screening of pregnant women are very vague in their recommendation. In a section entitled, "Management," ACOG discusses the medical benefits for pregnant women of knowing their HIV serostatus. ACOG (1997) states, "These benefits include early diagnosis and treatment to delay active disease in women and significant reduction in perinatal transmission through early

treatment with zidovudine (ZDV). Routine testing for all pregnant women, with their consent, is recommended” (pp.218-9).

Establishing HIV testing as a routine part of prenatal care may help to normalize HIV testing for pregnant women and minimize the stigma associated with the disease. Minimizing the stigma associated with HIV testing may allow physicians and other health care officials to avoid offering screening tests, which can cause physicians to make assumptions based on external factors (i.e., where people live, race, marital status).

According to Droste (1998), routine testing of pregnant women would lower barriers that have traditionally prevented women from being tested. Additionally, including HIV testing in the standard battery of prenatal tests for all pregnant women would also lower the stigmatization in populations where perinatal HIV is more prevalent, such as African-Americans and Hispanics.

In May 2000, ACOG launched a campaign to educate its members and to make HIV screening of pregnant women a routine part of care. ACOG then proceeded to convince its 40,000 members to include HIV testing in the standard battery of prenatal tests. This issue is a top priority for ACOG and deserves research to explore issues of HIV testing for women during PNC.

Research Related to this Study

In an effort to address the AIDS epidemic, since there is no cure, research has primarily focused on education and information tailored to prevent the transmission of the virus among gay or bisexual men, high-risk adolescents, and college populations (Nyamathi et al., 1999). Few studies conducted on AIDS education programs among

impoverished and homeless women have been evaluated. It is important that an assessment is done that focuses on women's needs and whether or not those needs have been neglected, including their treatment needs and their prevention needs. In addition, prevention is more important with childbearing-age women because the lives of their infants are also at stake, and because their sexual behavior places them at greater risk than older women.

To date, research on pregnant HIV-positive women has primarily focused on reproductive issues (Capell et al., 1992; Kline, strickler, & Kempf, 1995); access to health and social services (Lieu, Wikler, Capra, Martin et al., 1998); drug treatments that reduce vertical transmission (Turner, McKee-Nelson, Fanning, & Hauck, 1997); and costs and effectiveness of a recommended prevention for perinatal transmission of HIV (Gorsky, Farnham, Straus, Caldwell, et al., 1996).

For example, Joo et al. (2002), examined the number of women who were offered, and accepted, HIV testing during prenatal care. The data were collected on demographics, HIV education/counseling, and HIV testing. Certified hospital staff administered the survey during intrapartum/postpartum period to women presenting in labor. The study measured the differences between HIV counseling and voluntary testing. Cochran-Mantel-Haenszel statistic and logistic regression modeling were used in analyzing relationships among the different variables.

The study also revealed that practice setting had a relationship with being offered HIV testing. For example, women receiving prenatal care from a private practice were less likely than women receiving prenatal care at a community clinic or hospital to be offered HIV testing. Furthermore, the study revealed that practice setting is a stronger

determinant than race/ethnicity and age for different rates of HIV counseling and voluntary testing. More interesting, from the sample (24% were Black, 43% were White and 23% were Hispanic), it was found that 65% of the respondents were offered HIV testing during prenatal care, while 56% were actually tested for HIV. The differences between HIV testing rates for the race variable were not reported. Likewise, the women's HIV serostatus were not reported because of conflicts with possible state confidentiality laws.

Overall, the study suggests that women who present themselves for PNC, regardless of receiving HIV counseling, are just as likely to be tested and receive test results as those women who do not receive HIV counseling. Some women who were tested were not aware of being tested, particularly disadvantaged women. The study's results indicate that some health care providers are not complying with Public Health Services recommendations of providing HIV counseling/testing to women during prenatal care.

Current research shows that medical advancements for HIV are effective in reducing pediatric AIDS cases. Additionally, research shows that women are at high risk for HIV. Rates for women of color infected and affected by HIV are increasing more rapidly than any other racial and/or ethnic group. Moreover, women who present themselves for prenatal care and receive HIV counseling and testing can help prevent infection in their babies, and also some health care professionals are adhering to the recommendation of offering HIV counseling and testing.

Current research also has indicated a new option for pregnant women who are HIV-positive that has promise for preventing the newborn baby from being infected with

HIV. The new option consists of offering Zidovudine (ZDV) treatment to the pregnant women. The ZDV drug must be administered orally to the mother for 3 to 4 months prior to delivery and intravenously during delivery, and the infant must receive a 6-week course of oral ZDV following birth (Lindergren, M. L. et al., 1999; Mauskopf, J., 1996). It is important to note that a Cesarean section is recommended and reduces HIV transmission from 25% to 2% when used concurrently with ZDV (Lindergren, M. L. et al., 1999).

Despite current research and the availability of treatments, there is no research that has investigated the factors that may be associated with being tested for HIV during prenatal care. Determining factors associated with being tested for HIV may help researchers, social workers and other health care officials increase HIV prevention, knowledge, and services for pregnant women. Also, such research may help to identify among what population of pregnant women to increase HIV education. Thus, this study attempted to examine factors associated with HIV testing for women during prenatal care.

Summary

This review of literature provided an overview of research in the area of maternal and child health as it relates to HIV and HIV testing. The literature presents information concerning procedures for offering HIV testing as outlined by ACOG. Critical analyses of the previous studies examining women and HIV related issues were presented. The studies present in this review of literature were used as a frame of reference for this study.

CHAPTER III

METHODOLOGY

The Health Belief Model (HBM) was adapted and used as the theoretical foundation to select constructs that would fit best in a model to examine predictors of HIV testing for women during prenatal care. Data were gathered concerning cues to action (knowledge of HIV, knowledge of HIV prevention, received condoms from a clinic), and HIV risk factors (e.g., sex with males who shares needles). This study utilized National Survey of Family Growth, Cycle V (NSFG) archival data. The original NSFG study had a probability sample of 10,847 women. Data regarding women's prenatal care within a twelve-month period were included. A sample ($n = 1,033$) was drawn for this study using the SPSS select cases function to select women who received prenatal care within twelve months of the initial interview. Logistic regression was used to test the hypotheses.

Human Subjects Review

Given that there was no contact with human subjects and the use of the archival data assured confidentiality of the subjects, the Institutional Review Board (IRB) at The University of Tennessee approved a Form A for use in this study (Appendix A). Additionally, a separate confidentiality form had to be completed for use of the HIV risk appraisal data. Because of the sensitive nature of these data, a confidentiality form was filed with the National Center for Health Statistics (NCHS) (Appendix B).

In order to further ensure the confidentiality of subject data, several steps were taken: (1) the data were accessed from the National Center for Health Statistics web site without any personal identifiers of the subjects other than the assigned identification numbers used to code subject data into computer data files, (2) the researcher for this study did not have access nor was access needed to any contact information (names, addresses, phone numbers) for the subjects because follow-up interviews were not part of this study's purpose, (3) the archival data accessed for this study were used only for examining factors associated with HIV testing for women as part of a dissertation project and the findings were not used to make general statements about or incriminate any subject.

Sampling and Data Collection Procedures

The sample ($n = 1,033$) was drawn from noninstitutionalized civilian women ages 15-44 who indicated having had prenatal care within twelve months of the initial interview using the SPSS select cases function. It included African-Americans (22%), European-Americans (71%), and Others (7%), including Asian-Americans, Hispanic-Americans and Native-Americans. Non-Hispanic black women were oversampled in order to increase the representativeness of the data for this population. Moreover, oversampling was done to increase the reliability of the data for non-black women by reducing the variations in the sampling rates for non-black women.

Interviews were conducted in person by trained female interviewers using laptop or notebook computers. This procedure is called computer-assisted personal interviewing (CAPI). The 105 minute interview collected data on each pregnancy; contraceptive use

by the respondent and her partner; ability to bear children; the use of medical services for contraception, infertility, and prenatal care; marriage, cohabitation, living situation, and work history; and a variety of demographic and economic characteristics.

Additionally, sensitive data were collected in a short self-administered interview in which the respondent heard the questions over headphones and entered her own answers into the notebook computer. This procedure is called audio computer-assisted self-interviewing (A-CASI). A-CASI was developed by Larry Greenfield, Ph.D., and is a software program that reports higher frequencies of responses related to sensitive behavior. Moreover, it checks for illogical answers and recognizes skip patterns. The A-CASI program was used to collect the HIV risk appraisal data.

Research Design

The study was designed using existing data research, and was conducted for the purpose of exploration. The data were collected as part of a study that was fifth in a series of periodic surveys of women 15-44 years of age. Previous surveys were conducted in 1973, 1976, 1982, and 1988 with a telephone re-interview of the 1988 respondents in 1990. The survey for this study was conducted between mid-January and October 1995. Topics covered ranges from first intercourse; pregnancy, contraceptive, marital and cohabitation histories to very sensitive questions, such as number of abortions and HIV risk questions.

The study was intended to identify factors affecting childbearing from a national probability sample of women 15 to 44 years of age. The purpose of the survey was to produce national estimates and an information base on factors affecting pregnancy

including sexual activity, contraceptive use, sources of family planning services and the health of women and infants.

Instrumentation

The instrument was originally developed for a study to examine factors affecting childbearing women 15 to 44 years of age (see Appendix B). The survey instrument included 11 sections. Five of the 11 sections were used for this study. Section A included childhood/young adult living arrangement history; work history, and education history. Section B included use of family planning and other medical services and clinic data base. Section H included use of infertility services and other conditions affecting fertility and HIV testing. Section I included demographic characteristics (including race, age, marital status and level of education), child care, and health insurance. Finally, Section J included abortions, number of sexual partners, and HIV-risking behaviors.

Items for the data collection instrument were originally selected for their theoretical or empirical relevance to factors affecting pregnancy based on both theory and a review of the relevant outcome literature. The items specific to this study were selected according to the Health Belief Model adapted to examine factors associated with HIV testing for women during prenatal care. The variables selected were: age, race, education, marital status, practice setting, HIV formal education, HIV informal education, HIV testing, and HIV risk appraisal.

Measures

The dependent variable was “HIV testing” –a nominal level variable indicating whether the respondent received HIV testing during prenatal care.” The data were coded as “yes” did receive HIV testing” or “no,” did not receive HIV testing. It is important to note that the response item asked, “Other than blood donations, have you had a blood test for infection with HIV (the virus that causes AIDS)?” A “yes” response was considered as the respondent consented to an HIV test. On the other hand, a “no” response was considered as the respondent having refused an HIV test or was never offered an HIV test during prenatal care.

Eleven independent variables were selected (see Table 1) based on theory, research findings, and availability of data. For example, previous research using the HBM suggests that the construct, “cues to action” is associated with an individual’s motivation to pursue healthcare and has been used to explain the failure of people to participate in programs for the detection and prevention of diseases (Becker, 1974; Mattson, 1999). In this study, “cues to action” was measured by two variables: HIV/AIDS formal education and HIV/AIDS informal education to examine an association between “cues to action” and HIV testing for women during prenatal care. In addition, race also has been associated with HIV testing for women (Joo, et al., 2000).

Race and gender were operationalized as dichotomous variables. More specifically, the race variable was measured using three categories (Black/African-American; White/Caucasian; Other). Age was measured as a continuous level variable

Table 1.1: Independent Variables

Construct and and Variable Name	Categories/Description
Block 1:	
Demographics	
Age	Chronological age at time of interview
Race	Black/White/Other
Education	Grammar School, HS Grad, College/ Graduate or Professional School
Marital Status	Married/Separated (widowed, divorced or separated)/Single
Block 2:	
Cues to Action	
HIV/AIDS formal education	YES/NO
HIV/AIDS informal education	YES/NO
Block 3:	
HIV Risk Appraisal	
IDU non-prescriptive	YES/NO
Sex with gay or bi-sexual men	YES/NO
Sex with male IDU	YES/NO
Sex with males having sex with other female partners	YES/NO
Other Independent Variable not in Model:	
Practice Setting Respondent received prenatal care	Clinic/Private doctor's office or HMO

using a ratio level scale. The marital/partner status variable was measured as a categorical variable (married; separated; or single). Likewise, education was measured as a categorical variable (grammar school; high school; college or professional school education).

“Cues to Action” was measured by two variables: HIV/AIDS formal education and HIV/AIDS informal education, and each variable was operationalized as dichotomous variables. In the Health Belief Model, “cues to action” is a construct defined as specific stimuli that triggers appropriate health behavior, such as publicity through the media concerning a particular disease that may motivate an individual to taking action to prevent a specific disease (Rossenstack, 1994).

The construct “HIV risk appraisal” was measured by four variables: Injection non-prescription drug usage (IDU), sex with gay or bi-sexual men, sex with male IDU, sex with males having sex with other female partners. Each variable was operationalized as a dichotomous variable. “HIV Risk Appraisal” has been found to be associated with HIV preventive action. “Practice Setting” was defined as a dichotomous variable (clinic; private doctor’s office or HMO).

Analysis of Data

The objective of this study was to examine predictors of HIV testing for women during prenatal care. Moreover, an analysis was done to examine factors that motivate women to seek HIV testing as an HIV preventive method to reduce the risk of her unborn child converting to an HIV positive status during prenatal care. Chi-square tests were performed to examine relationships between the binary dependent variable and the

categorical factors. An Independent t-test was used to determine if a relationship existed between the dependent variable and age. Furthermore, data were analyzed using logistic regression (LR) concerning cues to action (knowledge of HIV, knowledge of HIV prevention), and HIV risk factors (e.g., sex with males who shares needles) to analyze hypotheses two and three and to develop a prediction model. Next, the resultant prediction model was applied to the cross validation sample to test the accuracy of the model. Descriptive statistics and frequency distributions were computed for all variables.

Logistic regression analyses were used to test hypotheses when the dependent variable was whether women received HIV testing during prenatal care (a dichotomous variable). Logistic regression was also used to derive a prediction equation for the probability of women receiving HIV testing given one or more explanatory (age, race, education, marital status, type of care facility, HIV formal education, HIV prevention, received condoms, HIV testing, and HIV risk appraisal) variables. The odds ratios [log odd/coefficient (B)] were produced and used to interpret the relationship between the constructs: demographics, cues to action, HIV risk appraisal and the likelihood of the women receiving HIV testing during prenatal care. The log odd is the logistic regression coefficient (B) value and reports the odds of an event occurring (Kuzma, 1998).

Using the Statistical Package for Social Sciences (SPSS), the independent variables were entered into the model in three blocks representing (in order of entry): demographics, cues to action, and HIV risk appraisal. The blocks of variables were forced into the analysis with the order of entry determined by the chronological order of variable occurrence (see Figure 1 to visualize model). For example, the determination of

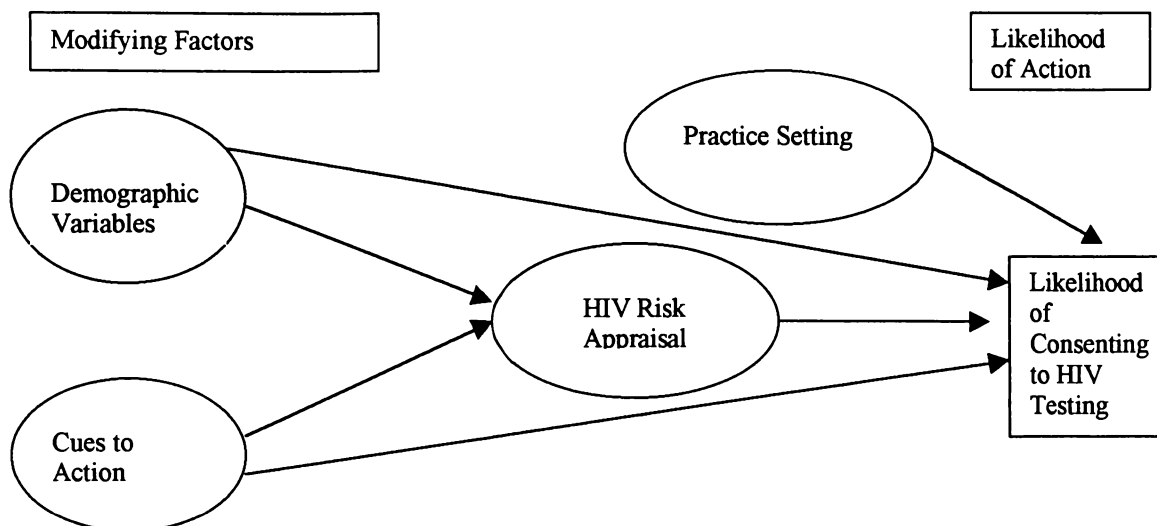


Figure 1.1. The health belief model (HBM).

Note. Modified from: Health behavior and health education theory, research and practice (2nd ed.) Glanz, K., Lewis, F.M. and Rimer, B.K. 1996, San Francisco: Josse-Bass. Copyright 1996 by Holder (Must request permission to utilize).

age, race, education, and marital status occurs prior to any of the other variables, and cues to action occurs prior to HIV risk appraisal. Because there was no theoretical reason to enter any particular variable first within blocks, entry of variables within each block was done empirically.

Logistic regression was used and is better suited for an analysis of dependent variables with a limited number of ordered categories, such as race (Kuzma, 1998). The assumptions of LR are as follows: (1) the dependent variable is categorical, with a limited number of ordered categories, (2) the observations are independent of one another, (3) the ordinal dependent variable is an indicator of an underlying continuous variable that has a logistic distribution, (4) the predictors are fixed by design, (5) the sample size is large,

and (6) no exact colinearities exist among the explanatory variables (Kuzma, 1998; Pedhazur, 1997).

In order to minimize the possibility of a Type 1 error, the Bonferroni inequality was used to set the individual test-wise alpha (Cohen & Cohen, 1983, Pedhazur, 1997). To maintain a Type 1 error rate of .10 or less over the set of statistical tests, the individual test level alpha was set at .006. According to the Bonferroni inequality, this gives a Type 1 error rate of less than or equal to $.09538 (1-(1-.006)^{20})$ (Darlington, 1990).

Missing Data

An examination of the data was completed to determine if data entry errors had occurred and to determine the extent of missing data. The examination revealed that of eleven predictor variables, four had no missing data, and six had missing data ranging from .001% to 1%. Using mean substitution for categorical variables procedure (Raaijmakers, 1999), substitute values were assigned by examining each variable independently to determine the most frequently occurring value count. The most frequently occurring value for the variable was used to substitute the missing values.

An examination of the dependent variable (HIV testing) revealed that the dependent variable had 2% missing values. Therefore, listwise deletion was used for cases having missing values. Listwise deletion allows one to exclude all cases that have missing values for any variable in the computation of the regression statistics (Norusis, 1998). Overall, as shown in Table 2, the examination of the missing values pattern revealed that total missing data for all variables was less than 7%.

Table 2.1: Missing Patterns (cases with missing values)

Missing and Extreme Value Patterns

Case	#Missing	Informal HIV Educ	Educ Level	Race	Formal HIV Educ	Multiple Sex Partners	Partner IDU	Sex with Bi-Men	HIV Test (DV)
3	1								M
81	1								M
92	1								M
142	1								M
240	1								M
251	1								M
270	1								M
322	1								M
353	1								M
420	1								M
454	1								M
627	1								M
640	1								M
653	1								M
767	1								M
865	1								M
950	1								M
156	1				M				
589	1				M				
319	1				M				
329	1				M				
1000	1				M				
1011	1				M				
172	1		M						
512	1		M						
200	1			M					
466	1			M					
46	1			M					
211	1	M							
666	1	M							
434	3					M	M	M	
691	3					M	M	M	
879	3					M	M	M	
897	3					M	M	M	
718	3					M	M	M	
618	3					M	M	M	
441	3					M	M	M	
Percent Missing		.001	.001	.003	1.00	1.00	1.00	1.00	2.00

a. Cases and variables are sorted on missing patterns.

Research Hypotheses

Hypotheses – Relationship Between HIV Testing for Women and Race, Education, Marital Status, and Practice Setting

The study anticipated a relationship between race, levels of education, marital status and the practice setting for women and HIV testing during prenatal care. It was expected that women's race, level of education, marital status and type of care facility would be associated factors in determining whether women received HIV testing during prenatal care. The relationship anticipated included:

(1) There is a relationship between HIV testing during prenatal care and one or more of the following factors: race, age, levels of education, marital status, HIV risk appraisal, cues to action and practice setting. A direction was not hypothesized because a significant difference between all factors would be important to examine.

Hypotheses – Predictors of HIV Testing for Women During Prenatal Care

This study also anticipated that factors in the adapted HBM would predict HIV testing for women during PNC.

(2) The following factors predict HIV testing for women during PNC: race, age, marital status and levels of education; cues to action, HIV/AIDS formal education, and HIV/AIDS informal education; and HIV risk appraisal.

(3) The regression model accurately predicts HIV testing for women during PNC as determined by applying the adapted HBM to a cross validation sample.

Summary

This methodology section has presented the methods that were used for sampling, data collection, and presented a description of how the variables used in the study were operationalized. In the next section, the analysis of the data will be presented. The analysis will determine if HIV testing is associated with factors, such as race, age, education, and marital status. Furthermore, the analysis of the data will determine what factors predict HIV testing for women during prenatal, using health belief model adapted as the theoretical model.

CHAPTER IV

RESULTS

Introduction

The purpose of this chapter is to present the findings associated with the data that were collected concerning predictors of HIV testing for women during prenatal care. First, the descriptive data are presented concerning the estimation sample and cross validation sample characteristics. Next, the results concerning the factors associated with prenatal care are presented. Then, the results from testing the three hypotheses presented in chapter three of this study are presented. Finally, the results of the cross validation model are presented.

Data analysis was conducted using a total of 1,033 cases. The total sample was split randomly using SPSS to create two separate samples in order to have a test sample and a cross validation sample. Frequency distributions and chi-square analysis were examined to determine if there were any differences found between the two samples. An examination of the chi-square analysis revealed that there is no significant difference between the test sample and the cross validation sample.

Test Sample

Data from a total of 517 cases were analyzed and were organized according to the characteristics of the women completing the survey as presented in Table 3. The total sample reported having prenatal care during pregnancy. The descriptive variables reported include age, race, level of education, marital status, and the type of practice setting for prenatal care.

African-American and other were collapsed in the race variable because the category “other” was less than five percent. Likewise, categories for marital status, levels of education, and risk appraisal were collapsed because of categories having less than five percent. The marital/partner categories were recoded for the analysis as “married” and “single.” Levels of education was recoded as “high school or less” and “attended college.”

The construct “HIV risk appraisal” was measured using four variables: Injection non-prescription drug usage (IDU), sex with gay or bi-sexual men, sex with male IDU, sex with males having sex with other female partners. The frequencies for two of the four variables were less than five percent, therefore the four variables were recoded into one variable that measures whether the respondent had no presence of risk or presence of risk.

The mean age for the women was 27.32 (SD = 5.83) with a range of 15 to 44. The racial composition of this group was 72.5% (n = 375) white and 27.5% (n = 142) minority. Three-hundred-thirty-six (65%) of these women were married and 181 women (35%) reported being single or separated. The women having a high school education or less was 49.7% (n = 257) and the number of women having attended college was 50.3% (n = 260). Approximately 77% of the women received their prenatal care from a private physician’s office or an HMO and 23% received their prenatal care from a clinic.

Table 3.1: Characteristics of Test Sample (N = 517)

Variable	%	n	M	SD
<u>Binary Variables:</u>				
Race of Respondent				
White	72.5	375		
Minority	27.5	142		
Minority included:				
African-American	21.1	109		
Other	6.4	33		
Marital Status				
Single or separated	35.0	181		
Married	65.0	336		
Level of Education				
High School or less	49.7	257		
Attended College	50.3	260		
Practice Setting				
Private MD/HMO	77.0	398		
Clinic	23.0	119		
<u>Continuous Variables:</u>				
Respondent's Age (years)			27.32	5.8

Cross Validation Sample

Data from a total of 516 cases were analyzed and were also organized according to the characteristics of the women completing the survey as presented in Table 4. Once again, the cross validation sample reported having prenatal care during pregnancy. The descriptive variables reported include age, race, level of education, marital status, and the type of practice setting for prenatal care. The African-American and other categories were collapsed in the race variable because the category “other” was less than five percent.

The mean age for the women was 27.44 (SD = 5.95) with a range of 15 to 44. The racial composition of this group was 70.7% (n = 365) white and 29.3% (n = 151) minority. Three-hundred-fifty-two (68.2%) of these women were married and 164 women (31.8%) reported being single or separated. The women having a high school education or less was 53.3% (n = 275) and the number of women having attended college was 46.7% (n = 241). Eighty-two percent of the women received their prenatal care from a private physician’s office or an HMO and 18.4% received their prenatal care from a clinic.

Results of Hypotheses Testing

Hypotheses I – Relationship between HIV testing during prenatal and one or more of the following factors: race, age, level of education, marital status, HIV risk appraisal, cues to action and PNC practice setting

As reported in chapter 3, the study anticipated a relationship between race, age, level of education, marital status, HIV risk appraisal, cues to action, and PNC practice setting and HIV testing during prenatal care. It was expected that women's level of education, marital status and type of care facility would be associated factors in determining whether women received HIV testing during prenatal care. A direction was not hypothesized because a significant difference between all factors was important to examine.

Following the procedures described in Chapter 3, the dependent variable, HIV testing, was identified by the first command and crosstabulated independently with race, age, level of education, marital status, HIV risk appraisal, cues to action, and PNC practice setting. Additionally, Chi-square tests were computed to determine if a significant difference existed between HIV testing and the above mentioned factors.

An examination of the first Chi-square test revealed that there was a significant difference between white women and minority women associated with receiving HIV testing during PNC ($X^2 = 26.618$, $p < .001$). As shown in Table 5.1, sixty-eight percent of minority women received HIV testing, while 32.1% did not. Among white women, 42.2% received HIV testing and 57.8% did not receive HIV testing. In other words, when comparing within racial groups, a greater percentage of minority women received HIV testing than did white women. The difference in the proportion of minority and

Table 4.1: Characteristics of Cross Validation Sample (N = 517)

Variable	%	n	M	SD
<u>Binary Variables:</u>				
Race of Respondent				
White	70.7	365		
Minority	29.3	151		
Minority included:				
African-American	22.1	114		
Other	7.2	37		
Marital Status				
Single or separated	31.8	164		
Married	68.2	352		
Level of Education				
High School or less	53.3	275		
Attended College	46.7	241		
Practice Setting				
PrivateMD/HMO	81.6	421		
Clinic	18.4	95		
<u>Continuous Variables:</u>				
Respondent's Age (years)			27.44	5.95

Table 5.1: Respondent's race and HIV testing during prenatal care
HIV Blood Test During Prenatal Care

Race	No	Yes	Total
Minority % Count	32.1% 45	67.9% 95	100% 140
White % Count	57.8% 212	42.2% 155	100% 367
Total Count	257	250	507

Chi-square = 26.618 df = 1 Level of Significance < .001

white women was 25.7%. The 95% confidence intervals (CI) for the difference were within the range of 13.2% to 38.2%.

An independent t-test was computed using age and HIV testing to determine if there was a relationship between age and HIV testing during prenatal care. As shown in Table 5.2, an examination of the independent t-test revealed that there was a significant difference between the mean age (Mean = 26.53) of those who received HIV testing and the mean age (Mean = 28.16) of those who did not receive HIV testing during PNC ($t = 3.17$, $p = .002$). More specifically, an examination of the mean age difference suggests that HIV testing decreases as age increases.

The second Chi-square test was computed to determine if a significant difference existed between HIV testing and level of education. An examination of the Chi-square test revealed that there was a significant difference between HIV testing for women who had a high school or less and women who had attended college ($X^2 = 17.078$, $p < .001$). As shown in Table 5.3, 58.4% of women who had a high school or less than high school education received HIV testing as compared to 41.6% of women with a high school

Table 5.2: Respondent's age and HIV testing during prenatal care
HIV Blood Test During Prenatal Care

	N	Mean Age	SD
Yes	250	26.53	6.041
No	257	28.16	5.531

t = -3.166 df = 505 Level of Significance = .002

Table 5.3: Respondent's level of education and HIV testing during prenatal care
HIV Blood Test During Prenatal Care

Education		No	Yes	Total
H.S. or less	%	41.6%	58.4%	100%
	Count	106	149	255
Attended College	%	60.0%	40.0%	100%
	Count	151	101	252
Total	Count	257	250	507

Chi-square = 17.078 df = 1 Level of Significance < .001

Table 5.4: Respondent's marital status and HIV testing during prenatal care
HIV Blood Test During Prenatal Care

Marital Status		No	Yes	Total
Single and Separated	%	31.8%	68.1%	100%
	Count	57	122	179
Married	%	61.0%	39.0%	100%
	Count	200	128	328
Total	Count	257	250	507

Chi-square = 39.319 df = 1 Level of Significance < .001

education who did not receive HIV testing during prenatal care. Among college women, 40.0% received HIV testing and 60.0% did not receive HIV testing. In short, when comparing within education groups, a greater percentage of high school educated women received HIV testing than did college women. The difference in the proportion of the

women with high school or less and those who attended college was 18.4%. The 95% confidence intervals (CI) for the difference were within the range of 5.9% to 30.9%.

The third Chi-square test was computed to determine if a relationship existed between HIV testing and marital status. An examination of the Chi-square test revealed that there was a significant difference between HIV testing for women who were married and women who reported being single ($X^2 = 39.319$, $p < .001$). As shown in Table 5.4, 68.1% of women who were single or separated received HIV testing as compared to 31.8% of those who were single or separated that did not receive HIV testing. Among married women, 39% received HIV testing and 61% did not receive HIV testing. In comparison of within marital status groups, a greater percentage of single or separated women received HIV testing than did married women. The difference in the proportion of the single and separated women and those was 29.1%. The 95% confidence intervals (CI) for the difference were within the range of 17% to 41.2%.

The fourth Chi-square test was computed to determine if a significant difference existed between HIV testing and HIV risk appraisal. An examination of the Chi-square test revealed that there was a significant difference between HIV testing for women who self reported having participated in no risk behaviors for HIV and those women who reported having participated in one or more HIV risk ($X^2 = 8.225$, $p < .001$).

Table 5.5 indicated that among the group with no reported risk, 46.6% received HIV testing and 53.4% did not receive HIV testing. Among the risk group, 64.5% received HIV testing and 35.5% did not receive HIV testing. Comparing within group differences for HIV risk and no HIV risk, women who self-reported having participated in HIV risk behaviors more often reported having received HIV testing, than those who

Table 5.5: Respondent's HIV risk appraisal and HIV testing during prenatal care
HIV Blood Test During Prenatal Care

HIV Risk Appraisal		No	Yes	Total
No Reported Risk	%	53.4%	46.6%	100%
	Count	230	201	431
Yes Reported Risk	%	35.5%	64.5%	100%
	Count	27	49	76
Total				
	Count	257	250	507

Chi-square = 8.225 df = 1 Level of Significance = .004

did not report having risk behaviors.). The difference in the proportion of the women who reported HIV risk and those who reported no risk was 17.9%. The 95% confidence intervals (CI) for the difference were within the range of 2.4% to 33.4%.

The fifth and sixth Chi-square tests were computed to determine if a significant difference existed between HIV testing and cues to action as operationalized as formal HIV education and informal HIV education. An examination of the Chi-square tests revealed that there was not a significant difference between HIV testing and HIV formal education ($X^2 = 4.639$, $p = .031$). As shown in Table 5.6, among the group with no formal HIV education, 42.4% received HIV testing and 57.6% did not receive HIV testing. Among the group who received formal education, 53% received HIV testing and 47% did not receive HIV testing. Comparing within group differences for HIV formal education and no formal education, women who had HIV formal education more often reported having received HIV testing, than those who did not report having formal education.). The difference in the proportion of the women who had formal HIV education and those who did not have formal HIV education was 10.6%. The 95% confidence intervals (CI) for the difference were within the range of -3.4% to 24.6%.

Table 5.6: Respondent's cues to action (formal education) and HIV testing
HIV Blood Test During Prenatal Care

Cues to Action		No	Yes	Total
No Formal Educ	%	57.6%	42.4%	100%
	Count	95	70	165
Yes Formal Educ	%	47.0%	53.0%	100%
	Count	162	180	342
Total				
Count		257	250	507

Chi-Square = 4.639 df = 1 Level of Significance = .031

Table 5.7: Respondent's cues to action (informal education) and HIV testing
HIV Blood Test During Prenatal Care

Informal Education		No	Yes	Total
No Informal Educ	%	50.5%	49.5%	100%
	Count	160	157	317
Yes Informal Educ	%	51.1%	48.9%	100%
	Count	97	93	190
Total				
Count		257	250	507

Chi-Square = .016 df = 1 Level of Significance = .899

Contrary to the formal education Chi-square test, an examination of the Chi-square test for the informal education revealed that there was no significant difference between HIV testing and HIV informal education ($X^2 = 26.618$, $p = .899$). As shown in Table 5.7, among the group with no informal HIV education, 49.5% received HIV testing and 50.5% did not receive HIV testing. Among the group who received informal education, 48.9% received HIV testing and 51.1% did not receive HIV testing. Comparing within group differences for HIV informal education and no informal education, there was no statistically significant difference for women who received HIV

Table 5.8: Respondent's Practice Setting and HIV testing during prenatal care
HIV Blood Test During Prenatal Care

Practice Setting		No	Yes	Total
Clinic	%	38.1%	61.9%	100%
	Count	45	73	118
Private MD/HMO	%	54.5%	45.5%	100%
	Count	212	177	389
Total				
	Count	257	250	507

Chi-Square = 9.698 df = 1 Level of Significance = .002

testing and had informal education and those who did not have HIV informal education. The difference in the proportion of the women who had informal HIV education and those who did not have informal HIV education was .6%. The 95% confidence intervals (CI) for the difference were within the range of -12.5% to 13.7%.

The final Chi-square test for hypothesis I was computed to determine if a significant difference existed between HIV testing and practice setting. An examination of the Chi-square test revealed that there was a significant difference between HIV testing for women who received prenatal care in a clinic and women received prenatal care in a private physician's office or HMO practice ($X^2 = 9.69$, $p = .002$). As shown in Table 5.8, 61.9% of women who received prenatal care in a clinic received HIV testing as compared to 38.1% of women who received prenatal care in a clinic but did not receive HIV testing. Among those women who received prenatal care in a private physician's office or an HMO, 45.5% received HIV testing and 54.5% did not receive HIV testing. In short, when comparing within practice setting groups, more women who received prenatal care in a clinic received HIV testing than did women who received care in a

private physician's office or an HMO. The difference in the proportion of the women who received PNC in a clinic and those who received PNC in a private physician's office/HMO was 16.4%. The 95% confidence intervals (CI) for the difference were within the range of 2.7% to 30.1%.

Hypotheses II – Predictors of HIV Testing for Women During Prenatal Care

Again, as reported in Chapter 3, the study anticipated that the following factors predict HIV testing for women during PNC: Race, age, marital status and levels of education; cues to action, HIV/AIDS formal education, HIV/AIDS informal education; HIV risk appraisal; and practice setting.

In order to test the second hypothesis, logistic regression was used to estimate the probability that pregnant women would receive HIV testing as determined by race, age, marital status and levels of education; cues to action, HIV/AIDS formal education, HIV/AIDS informal education; HIV risk appraisal; and practice setting. Logistic regression was used to derive a prediction equation for the probability of an event occurring given one or more explanatory variables.

The results of the logistic regression analysis of the test sample are presented in Table 6. The overall model was statistically significant [$X^2 (8) = 61.097, p < .001$]. However, as can be seen in Table 6, there were six variables that were statistically nonsignificant. Formal education was not statistically significant at the .05 level [$X^2 (1) = 3.744, p = 0.53$]. Informal education was not statistically significant at the .05 level [$X^2 (1) = .613, p = .434$]. HIV risk appraisal was not statistically significant at the .05 level [$X^2 (1) = .613, p = .434$]. Level of education was not statistically significant at the .05

level [$X^2 (1) = 2.278, p = .131$]. Likewise, practice setting was not statistically significant at the .05 level [$X^2 (1) = .506, p = .477$]. Additionally, age was not statistically significant at the .005 level [$X^2 (1) = .434, p = .510$].

The two variables associated with HIV testing were race and marital status. The logistic regression indicated that race was associated with HIV testing during prenatal care. Race had an OR = 0.465 (95% C I of .297 - .730) and Beta value = -.765. This implied that the probability of HIV testing decreased for white women (white was the reference group = 1, minority = 0) when compared to minority women. Moreover, an examination of the regression coefficient for marital status revealed that marital status was associated with HIV testing during prenatal care. Marital status had an OR = 0.490 (95% C I of .302 - .793) and Beta value = -.714. This implied that the probability of HIV testing decreased for married women (married was the reference group = 1, single or separated = 0) when compared to single or separated women.

The results of the prediction model are shown in Table 7. The model was able to predict with accuracy that 73.9% of respondents would report that they did not receive HIV testing during prenatal care. However, the model was poor in predicting who would report having received HIV testing during prenatal care. The model accurately predicted that 56.0% of respondents would report that they did receive HIV testing during prenatal care. The model was stronger for predicting those women who did not receive HIV testing than those who did receive HIV testing.

Cohen's Kappa was calculated. Cohen's Kappa corrects the observed percent agreement for chance of a relationship occurring between factors (Cohen & Cohen, 1983). That is, even if a relationship does not exist between women receiving HIV

testing and the factors (race, age, marital status, level of education, informal education, formal education, risk appraisal and practice setting) jointly in the regression model Cohen's Kappa corrects the observed percent agreement that could occur by chance. As shown in the footnote of Table 7, Cohen's Kappa was significant and the measure of agreement was .3 and indicates that there is some agreement, but it is not very strong.

A re-estimation of the prediction model was not done because an examination of the logistic regression model revealed that only two variables in the model were significant in predicting HIV testing. Furthermore, stepwise logistic regression revealed that order of entry using stepwise did not differ from the model with the eight variables entered in one block.

Hypotheses III – Cross Validation Model

The study anticipated that the prediction model would reveal similar results when applied to the cross validation sample as was revealed in the test sample. In order to test the third hypothesis, the procedures for testing hypothesis two were repeated. Again, logistic regression was used to estimate the probability that pregnant women would receive HIV testing as determined by race, age, marital status and levels of education; cues to action, HIV/AIDS formal education, HIV/AIDS informal education; HIV risk appraisal; and practice setting.

The results of the logistic regression analysis of the cross validation sample are presented in Table 8. The overall model was statistically significant [$X^2(8) = 26.012$, $p = .001$]. However, as can be seen in Table 8, all eight variables were statistically nonsignificant. Formal education was not statistically significant at the .05 level

Table 6.1: Results of the Logistic Regression Analysis of the Test Sample

Variable	df	B	S.E.	Wald	Sig.	Exp(B)
Formal Educ	1	.409	.212	3.744	.053	1.506
Inform Edu	1	-.377	.211	3.207	.073	.686
HIV Risk	1	.227	.290	.613	.434	1.255
Edu level	1	-.317	.210	2.278	.131	.729
Race	1	-.765	.229	11.109	.001*	.465
Prac Setting	1	-.174	.245	.506	.477	.840
Mari Status	1	-.714	.246	8.410	.004*	.490
Age	1	-.013	.019	.434	.510	.987
Constant	1	1.472	.591	6.191	.013	4.356

* p-value less than critical .005 level

Table 7.1: HIV Testing Predicted in the Test Sample for Model with Eight Terms (N = 517)

		Predicted		
		HIV Testing		
Observed		No	Yes	Percentage Correct
HIV Test	No	190	67	73.9
	Yes	110	140	56.0

$X^2 = 61.097$, p-value < .001
Kappa = .300, p-value < .001

$[X^2(1) = .056, p = 0.813]$. Informal education was not statistically significant at the .05 level $[X^2(1) = .562, p = .453]$. HIV risk appraisal was not statistically significant at the .05 level $[X^2(1) = 3.275, p = .070]$. Marital status was not statistically significant at the .05 level $[X^2(1) = 1.373, p = .241]$. Race was not statistically significant at the .05 level $[X^2(1) = 2.869, p = .090]$. Level of education was not statistically significant at the .05 level $[X^2(1) = .030, p = .863]$. Likewise, practice setting was not statistically significant at the .005 level $[X^2(1) = 2.208, p = .137]$. Additionally, age was not statistically significant at the .005 level $[X^2(1) = 1.066, p = .302]$.

Cohen's kappa, as shown in the footnote of Table 8, revealed a significant measure of agreement (kappa = .189, p-value < .001) for the cross validation sample prediction model. Similar to the test sample prediction model (kappa = .300, p-value < .001), the cross validation sample prediction model's kappa indicates that there is some agreement, but it is not very strong.

The results of the prediction model using the cross validation sample are shown in Table 9. Similar to the test sample model, the cross validation sample model was able to predict with accuracy that 74.9% of respondents would report that they did not receive HIV testing during prenatal care. Moreover, the model accurately predicted that 42.6% of respondents would report that they did receive HIV testing during prenatal care. Both the cross validation sample and test sample models were stronger in predicting those women who did not receive HIV testing than those who did receive HIV testing.

Furthermore, as shown in Table 10, the regression model including the eight factors and the Test and Cross Validation regression coefficients were compared to

determine if the Test and Cross Validation models' regression coefficients were significantly different. The omnibus test of the Test and Cross Validation set produced statistically non-significant results (X^2 (df=9) = 10.231, p-value = .332). The results suggested that the cross validation model replicated the findings of the test sample model. In addition, an examination of the confidence intervals for the Cohen's kappa for the cross validation sample (CI = .218 to .383) and the test sample (CI = .107 to .271) revealed that the confidence intervals overlapped, suggesting that the prediction models for both samples are not significantly different.

Summary

This chapter presented the findings based on the analysis of data. Also, this chapter contained results of the study concerning predictors of HIV testing for women during prenatal care. A cross validation analysis was conducted to determine if the results of the test model were replicated on the cross validation data. An examination of the regression coefficients for the logic regression model from the test data revealed that race and marital status were predictors of HIV testing. The cross validation suggested that the results from the cross validation analysis successfully replicated the results from the test model.

Table 8.1: Results of the Logistic Regression Analysis of the Cross Validation Sample

Variable	df	B	S.E.	Wald	Sig.	Exp(B)
Formal Edu	1	.048	.204	.056	.813	1.050
Inform Edu	1	.155	.206	.562	.453	1.167
HIV Risk	1	.485	.268	3.275	.070	1.625
Edu level	1	.035	.203	.030	.863	1.036
Race	1	-.370	.219	2.869	.090	.690
Prac Setting	1	-.373	.251	2.208	.137	.689
Mari Status	1	-.281	.239	1.373	.241	.755
Age	1	-.019	.018	1.066	.302	.981
Constant	1	.998	.546	3.342	.068	2.713

p-value less than critical .005 level

Table 9.1: HIV Testing Predicted in the Cross Validation Sample for Model with Eight Terms (N = 516)

		Predicted		
		HIV Testing		
Observed		No	Yes	Percentage Correct
HIV Test	No	200	67	74.9
	Yes	139	103	42.6

$X^2 = 21.012$, p-value = .001
Kappa = .189, p-value < .001

Table 10.1: Regression Coefficient Confidence Intervals for the Test Sample and Cross Validation Sample

Variable	Test Sample Beta	CI	Cross Validation Sample Beta	CI
Formal Edu	.409	-0.006 to .824	.048	-0.351 to .447
Inform Edu	-.377	-0.789 to .036	.155	-0.248 to .558
HIV Risk	.277	-0.341 to .795	.485	-0.040 to 1.01
Edu Level	-.317	-0.728 to .094	.035	-0.362 to .432
Race	-.765	-1.213 to -0.317	-.370	-0.799 to .059
Prac Setting	-.174	-0.654 to .306	-.373	-0.864 to .118
Mari Status	-.714	-1.196 to -0.232	-.281	-0.749 to .187
Age	-.013	-0.050 to .024	-.019	-0.054 to .016

$X^2 = 10.321$, p-value = .332

CHAPTER V

SUMMARY, FINDINGS, CONCLCUSIONS, PREVIOUS RESEARCH, LIMITATIONS, RECOMMENDATIONS, AND IMPLICATIONS

Introduction

This chapter addresses four sections. The first section is a summary of the study. The second section presents the findings of the study. In the third section, the conclusions relative to the findings will be presented. In the fourth section, recommendations will be presented as it relates to future research, practice and policy implications.

Summary of the Study

The primary purpose of this study was to determine if the factors race, age, level of education, marital status, HIV risk appraisal, cues to action and PNC practice setting are associated with HIV testing during prenatal care. Furthermore, an examination was done to determine if the above mentioned factors predict HIV testing during prenatal care. A cross validation analysis was also applied to a different sample to determine if the prediction model resulted in accurate predictions.

To accomplish the purpose of this study, the following three hypotheses were formulated:

1. There is a relationship between HIV testing during prenatal care and one or more of the following factors: race, age, level of education, marital status, HIV risk appraisal, and PNC practice setting.

2. The following factors predict HIV testing for women during PNC: race, age, level of education, marital status, HIV risk appraisal, cues to action and PNC practice setting.
3. The regression model accurately predicts HIV testing for women during PNC as determined by applying the adapted HBM to a cross validation sample.

To achieve this purpose, National Survey of Family Growth, Cycle V, archival data were analyzed. The sample (n = 1033) was drawn from noninstitutionalized civilian women ages 15-44 who indicated having had prenatal care within twelve months of the initial face to face interview. The study included 71% white and 29% minority women. To test the hypotheses, the data were analyzed by percentage frequencies, independent t-test, chi-square test, and logic regression using the SPSS 10.0 version.

Findings

The findings section will be presented according to the three hypotheses in numerical order.

Hypothesis 1: There is a relationship between HIV testing during prenatal care and one or more of the following factors: race, age, level of education, marital status, HIV risk appraisal, cues to action and PNC practice setting.

Race: There was a statistically significant relationship between race and HIV testing.

Comparing within the minority group, 67.9% received HIV testing and 32.1 did not.

Among the white racial group, 42.2% received HIV testing and 57.8% did not receive HIV testing.

Age: There was a statistically significant relationship between age and HIV testing. The mean age of women who received HIV testing was 26.53 and the mean age of women who did not receive HIV testing was 28.16.

Level of Education: There was a statistically significant relationship between level of education and HIV testing. Comparing within the high school or less group, 58.4% of the women received HIV testing and 41.6% did not receive HIV testing. Among college women, 40% received HIV testing and 60% did not receive HIV testing.

Marital Status: There was a statistically significant relationship between marital status and HIV testing. Comparing within the married group, 39% received HIV testing and 61% did not receive testing. Comparing within the single or separated group, 68.1% received HIV testing and 31.8% did not receive HIV testing.

HIV risk appraisal: There was a statistically significant relationship between HIV risk appraisal and HIV testing. Among the women with no reported risk, 46.6% received HIV testing and 53.4% did not receive HIV testing. Comparing within the group with reported risk, 64.5% received HIV testing and 35.5% did not receive HIV testing.

Cues to Action (HIV Formal Education): There was not a statistically significant relationship between HIV formal education and HIV testing. Comparing the group with no HIV formal education, 42.4% received HIV testing and 57.6% did not receive HIV testing. Comparing the group with HIV formal education, 53% received HIV testing and 47% did not receive HIV testing.

Cues to Action (HIV Informal Education): There was not a statistically significant relationship between HIV informal education and HIV testing. Comparing the group with no HIV informal education, 49.5% received HIV testing and 50.5% did not receive

HIV testing. Comparing the group with HIV informal education, 48.9% received HIV testing and 51.1% did not receive HIV testing.

Practice Setting: There was not a statistically significant relationship between practice setting and HIV testing. Comparing within the clinic group, 61.9% received HIV testing and 38.1% did not receive HIV testing. Among those received PNC in a physician's office/HMO, 45.5% received HIV testing and 54.5% did not receive HIV testing.

Hypothesis 2: The following factors predict HIV testing for women during PNC: race, age, level of education, marital status, HIV risk appraisal, cues to action and PNC practice setting.

Predictors: The overall prediction model was statistically significant. The model predicted with accuracy that 73.9% of respondents would report they did not receive HIV testing. The model was poor in predicting those who received HIV testing. The model accurately predicted that 56.0% of respondents would report they did receive HIV testing. The regression analysis revealed that race and marital status were statistically significant predictors of HIV testing during PNC [OR=0.465 (95% CI of .297 - .730) Beta = -.765]. The probability of HIV testing decreased for white women as compared to minority women. Additionally, the probability of HIV testing decreased for married when compared to single or separated women [OR=0.490 (95% CI of .302 - .793) Beta = -.714]. Cohen's Kappa revealed that the prediction model was significant (Kappa = .300, p-value < .001).

Hypothesis 3: The regression model accurately predicts HIV testing for women during PNC as determined by applying the adapted HBM to a cross validation sample.

Cross Validation: The overall model was statistically significant. The prediction model accurately predicted that 42.6% of respondents received HIV testing. Furthermore, the model accurately predicted that 74.9% did not receive HIV testing. However, contrary to the test model regression analysis, the cross validation regression analysis revealed no significant predictors. Nevertheless, an examination of the difference between the regression coefficients for the Test and Cross Validation Samples revealed that there was no significant difference in the Test model prediction and the Cross Validation model prediction. Hence, the Test model predictions were replicated when using the Cross Validation sample; inferring that the any difference occurring between the two models were due to the variability of the sample, rather than chance.

Conclusions

Based on the study's findings, the following conclusions were made as they relate specifically to the three hypotheses.

1. Race, age, level of education, marital status, HIV risk appraisal, and practice setting are associated with HIV testing during pregnancy.
2. The adapted HBM [including race, age, level of education, marital status, HIV risk appraisal, cues to action (formal and informal HIV education), and practice

setting] was a significant model for predicting women who did not receive HIV testing during prenatal care.

3. Race and marital status are significant predictors of HIV testing for women during prenatal care.
4. The adapted HBM [including race, age, level of education, marital status, HIV risk appraisal, cues to action (formal and informal HIV education), and practice setting] is a reliable model for predicting the women who will not receive HIV testing during prenatal care, but poorly predicts those women who receive HIV testing. Nevertheless, it is important to note that the model should be replicated using other samples before generalizing these findings.

The Study and Previous Research

Few studies have examined HIV testing for women during prenatal care. As mentioned in Chapter 2, Joo et al. (2002) examined the number of women who were offered, and accepted HIV testing during PNC. The previous study revealed that women were more likely to receive HIV testing when receiving PNC in a clinic compared to those receiving PNC in a private practice. Likewise, the findings in this current study revealed that women were more likely to receive HIV testing when receiving care in a clinic as compared to a private physician's office/HMO. The previous study did not explore predictors of HIV testing for women during PNC. Therefore, this study did examine predictors of HIV testing for women during PNC. The findings revealed that race and marital status are significant predictors of HIV testing for women during PNC.

Limitations and Recommendations for Future Research Using the HBM

This study attempted to explain and predict motivating factors of HIV testing for women during PNC using the general theme of the HBM. However, this study used archival data that did not include variables to measure all the constructs in the HBM. The only constructs operationalized and used for this study were demographics, risk appraisal, and cues to action. The study did not include any data concerning the perceptions and attitudes of women concerning HIV testing. Thus, the findings of this study cannot support the use of the HBM for predicting HIV testing for women during prenatal care. This study, however, did test a model that may be used as an exploratory prediction model for designing a primary study to test the HBM as a theoretical framework for predicting HIV testing during prenatal care.

Futhermore, the predictive model in this study did poorly in predicting women who reported receiving HIV testing. An examination of the Beta Coefficients in the regression model did not offer any reasoning as to why the model accurately predicted that 73.9% did not receive HIV testing, but poorly predicted that 56.0% received HIV testing. Future research should address this concern either by collecting qualitative data in addition to the quantitative data. It is important to identify why the model poorly predicts who is likely to be tested given the terms in the model.

Implications for Practice

Results of the present study suggest that race, age, level of education, marital status, HIV formal education, risk appraisal and practice setting are associated with HIV testing. In order to prevent unborn babies from converting to a HIV positive status

during pregnancy, the findings suggest that prevention services should include the following:

1. Make sure that HIV testing material (e.g., advertisements) for prenatal care are culturally sensitive and address the concerns of different racial groups.
2. The findings suggest that HIV testing during pregnancy decreased as age increased. This suggests that social workers and other health care professionals should continue to recommend HIV testing to women of all ages and encourage health care facilities that have mature clients to continue to discuss the importance of HIV counseling and testing.
3. Regardless of marital status, the data suggest that all women should be offered HIV counseling and testing.
4. Increased efforts should be made to encourage people who report having no risk to seek HIV testing.
5. Increased efforts should be made to educate and encourage private physicians to offer HIV counseling and testing to all women during PNC.

Implications for Policy

Implications of the present study for policy suggest that social workers and other health care professionals should rally together to develop a policy that states that all medical facilities, private or public, are mandated to “offer” HIV testing to all women during pregnancy. Public Health Services and ACOG have already recommended that HIV testing is offered to all women during PNC. Well, as the data in the study suggest, women who are receiving care in private medical facilities are less likely to receive HIV

testing. Moreover, medical research suggests that mothers with HIV can decrease the risk of transmitting the virus to her unborn fetus pending her HIV status is known. Thus, it is crucial that HIV testing is at least offered to all women during PNC.

Concluding Statement

This study did not recommend a prediction model for predicting HIV testing for women during pregnancy. In fact, the search for an empirically derived prediction tool for HIV testing for women during prenatal care remains a worthy goal for researchers. Nonetheless, this study did provide exploratory findings for future researchers to develop a prediction model for HIV testing and prenatal care.

Again, as mentioned in the limitations section, this study attempted to explain and predict motivating factors of HIV testing for women during PNC using the general theme of the HBM. The use of archival data limited the ability to measure all the constructs in the HBM. The study did not include any data concerning the perceptions and attitudes of women concerning HIV testing. Therefore, the findings of this study cannot support the use of the HBM for predicting HIV testing for women during prenatal care. However, the findings are important to present as indicators for implications for practice and policy issues related to HIV prevention and HIV testing for women during prenatal care. Furthermore, research in the area of AIDS should strongly continue Until There's A Cure!

REFERENCES

- American Academy of Pediatrics & American College of Obstetricians and Gynecologists. (1997). *Guidelines for perinatal care (4th ed.)*. Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: ACOG.
- Anonymous. (1998a). Every pregnant woman needs an HIV test, report says. *Nation's Health*. v.28(10), 9.
- Anonymous. (1998b). Indiana urges pregnancy HIV counseling, testing. *Nation's Health*. v.28(6), 10.
- Becker, M. H. (1974). *The health belief model and personal health behaviors*. Thorofare, New Jersey: Charles B. Slack, Inc.
- Bonifield, S. (1998). A cost-savings analysis of prenatal interventions. *Journal of Healthcare Management*. v.43(5), 443-451.
- Boyer, P., Dillion, M., Navaie, M., Keller, M., et al. (1994). Factors predictive of maternal-fetal transmission of HIV-1. *JAMA*. v. 271(24), 1925.
- Caramel, S. (1990). *The health belief in the research of AIDS-related preventive behavior in San Fransico, CA*: Jossey-Bass.
- Centers for Disease Control & Prevention. (1995). U.S. Public Health Service recommendations for human immunodeficiency virus counseling and voluntary testing for pregnant women. MMWR, 44 (no. RR-7). Retrieved October 15, 2000, from <http://www.cdc.gov>.
- Centers for Disease Control & Prevention. (1998). *Status of perinatal HIV prevention U.S. declines continue: Hope for extending success to developing world*. Retrieved November 10, 2000, from http://www.cdc.gov/nchstp/hiv_aids/pubs/facts/perinat1.htm

- Centers for Disease Control & Prevention. (1999). Fear of positive HIV result is major barrier. *Healthcare PR & Marketing News*. v. 8(2), 1.
- Centers for Disease Control & Prevention. (2000). *Maternal and child health statistics: Russian federation and U.S., selected years 1985-1995*. U.S. Department of Health and Human Services, v.5(10), Retrieved October 2001, from <http://www.cdc.gov>
- Centers for Disease Control & Prevention. (2001). U.S. HIV and AIDS cases reported through December 1999. *HIV/AIDS Surveillance Report*. v.10(2).
- Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*. Second edition. Hillsdale, NJ: Erlbaum.
- Combs-Orme, T. (1990). *Social work practice in maternal and child health*. New York: Springer Publishing Co.
- Combs-Orme, T. (1993). Health Effects of Adolescent Pregnancy: Implications for Social Workers. *Families in Society: The Journal of Contemporary Human Services*. 344-354.
- Cook, C., Selig, K., Wedge, B., & Gohn-Baube, E. (1999). Access barriers and the use of prenatal care by low-income, inner-city women. *Social Work*. v. 44(2), 129-139.
- Darlington, R.B. (1990). *Regression and linear models*. New York: McGraw-Hill.
- Davis, S., Byers, R.H., Lindergren, M.L., Caldwell, M.B., Karon, J.M., & Gwinn, M. (1995). Prevalence and incidence of vertically acquired HIV infection in the United States. *JAMA*. v. 274, 952-955.
- Dickson, D. (2001). *HIV, AIDS, and the law: Legal issues for social work practice and policy*. Hawthorne, NY: Aldine De Gruyter.

- Droste, T. (1998). IOM recommends routine HIV tests in pregnancy. *The Lancet*. v.352(9136), 1294.
- Etzioni, A. (1998). HIV testing of infants: Privacy and public health. *Health Affairs*. v.17(4), 170-183.
- Gilbert, E.S., & Harmon, J.S. (1986). *High-risk pregnancy and delivery*. St. Louis: C.V. Mosby.
- Guglielmo, W. (1999). Why more doctors aren't testing for HIV. *Medical Economics*. v.76(11), 180-196.
- Hochbaum, G. (1958). *Public Participation in Medical Screening Programs: a Socio-Psychological Study*. U S Dept. of Health, Education , and Welfare, Public Health Service, Bureau of State Services, Division of Special Health Services, Tuberculosis Program.
- Institute of Medicine. (1988). *Prenatal care: Reaching mothers, reaching infants*. Washington, DC: National Academy Press.
- Joo, E., Garcia-Bunuel, B., A, & Kelly, C. (2000). Implementation of guideline for HIV counseling and voluntary HIV testing of pregnant women. *American Journal of Public Health*. v.90(2), 273-276.
- Klitsch, M. (2000). Preexisting factors, but not logistical barriers, inhibit timely use of prenatal care. *Family Planning Perspectives*. v. 32(5), 262-263.
- Kuzma, J. (1998). *Basic statistics for the health sciences*. Mountain View, CA: Mayfield Publishing Co.

- Lancioni, C., Harwell, T., & Rutstein, R. (1999). Prenatal care and HIV infection. *AIDS Patient Care & STDs*. v.13(2), 97-102.
- Land, H. (2000). AIDS and women of color. In *HIV/AIDS at Year 2000*, V. Lynch (Ed). Boston: Allyn and Bacon.
- Levine, C. (1990). Women and HIV/AIDS Research: The Barriers to Equity. *Evaluation Review*. v.14(5), 447-000.
- Mattson, M. (1999). Toward a reconceptualization of communication cues to action in the health belief model: HIV test counseling. *Communication Monographs*. v. 66(3), 240-265.
- Mauskopf, J., Paul, J., Wichman, D., White, A., et al. (1996). Economic impact of treatment of HIV-positive pregnant women and their newborns with zidovudine. *The Journal of the American Medical Association*, v.276(2), 132-137.
- Mofenson, L. (1999). Short-course zidovudine for prevention of perinatal infection. *The Lancet*. v. 353(9155), 766-767.
- Myers, T., Orr, K., Locker, D., & Jackson, E. (1993). Factors affecting gay and bisexual men's decisions and intentions to seek HIV testing. *The American Journal of Public Health*, v.83(5), 701-704.
- Neff, J. A., & Crawford, S. L. (1998). The health belief model and HIV risk behaviours: A causal model analysis among Anglos, African-Americans and Mexican-Americans. *Ethnicity & Health*, v.3, 283-299.
- Norusis, M.J. (1998). *SPSS 8.0 Guide to Data Analysis*. Upper Saddle River, New Jersey: Prentice-Hall, Inc.

- Nyamathi, A.M., Kington, R.S., Flaskerud, J., & Lewis, C. (1999). Two-year follow-up of AIDS education programs for impoverished women. *Western Journal of Nursing Research*, v.21(3), 405-425.
- Pedhazur, E. (1997). *Multiple regression in behavioral research: 3rd Ed.* Fort Worth, Texas: Harcourt Brace College Publishers.
- Pierson, V.H., Schramm, W., Stockbauer, J., Land, G., Hoffman, H., & Herman, A. (1994). Prenatal care access and pregnancy outcomes in Missouri. *Missouri Medicine*, v.91, 624-629.
- Pizzo, P. A. & Wilfert, C., M. (1991). *Pediatric AIDS: The challenge of HIV infection in infants, children, and adolescents.* Baltimore, MD: Williams & Wilkins.
- Raaijmakers, Q. A. W. (1999). Effectiveness of different missing data treatments in surveys with likert-type data: Introducing the relative mean substitution approach. *Educational and Psychological Measurement*, v.59(5), 725-748.
- Rosenstock, I. M. (1974). Historical origin of the health belief model. *Health education monograph*, v.2(4), 328-335.
- Rosenstock, I.M., Strecher, V., & Becker, M. (1988). Social learning theory and the health belief model. *Health Education Quarterly*, 15(2), 175-183.
- Rubin, A., & Babbie, E. (2001). *Research methods for social work.* Belmont, CA: Wadsworth.
- Russell, J.M., Smith, K.V. (1999). A holistic life view of human immunodeficiency virus-infected African American women. *Journal of Holistic Nursing*, 17(4), 331-345.

- Solomon, L., Landrigan, J., Flynn, C., & Benjamin, G. (1999). Barriers to HIV testing and confidentiality: The concerns of HIV-positive and high-risk individuals. *AIDS & Public Policy Journal*, v.12(4), 147-156.
- Stein, T. (1998). *The Social Welfare of Women and Children with HIV and AIDS*. Oxford: Oxford University Press, Inc.
- Strecher, J.V. & Rosenstock, M. (1996). The health belief model. In Glanz, K, Lewis, F. M., & Rimer, K. B. (Ed), *Health Behavior and Health Education Theory Research and Practice* (Pp. 41-59). San Francisco Jossey-Bass Publishers.
- Turner, B., McKee-Nelson, L., Fanning, T., & Hauck, W. (1997). Prevention of vertical HIV transmission with zidovudine: projected impact of HIV testing and prenatal care. *AIDS Care*. v. 9(5), 577-588.
- U.S. Bureau of Statistics. (1999). *Population Statistics of U.S. Cities and States*. U.S. Department of Health and Human Services Report.
- Wheeler, D. (2000). HIV/AIDS Prevention. In Lynch, V. J. (Ed), *HIV/AIDS at Year 2000: A Sourcebook for Social Workers*. Allyn and Bacon: Needham Heights, MA.
- White, E. (1999). *Breastfeeding and HIV/AIDS*. McFarland & Company, Inc., Publishers: Jefferson, North Carolina, and London.
- Young, C., McMahon, J., Bowman, V., & Thompson, D. (1990). Psychosocial Concerns of Women Who Delay Prenatal Care. *Families in Society: The Journal of Contemporary Human Services*. September, 408-414.

APPENDIX A: Consent Form

Form A

IRB: _____

Certification for Exemption from IRB Review for Research Involving Human Subjects

- A. Principal Investigator:** Thomas Alex Washington (Student) and Karen M. Sowers, Ph.D. (Dissertation Chair)
- B. Department:** College of Social Work
- C. Complete mailing address and phone number:**
- 5 Henson Hall
Knoxville, TN 37996-3333
(865) 974-9136
- D. Title of Project:** Factors Associated with HIV Testing for Women During Prenatal Care.
- E. External funding agency:** Original funding source of archival data file, National Survey of Family Growth, Cycle V, 1995 ICPSR #06960, was the U.S. Dept. of Health and Human Services, National Center for Health Statistics.
- F. Grant submission deadline:** N/A
- G. Starting date:** March 2002 for analyzing archival data for dissertation (Note: original data collected during mid-January to October 1995)
- H. Estimated completion date:** Dissertation completion date Spring/Summer 2002
- I. Research Project:**

1. Objective of Project:

The objective of this study is to examine predictors of HIV testing for women during pregnancy. Three hypotheses based on the general theme of the Health Belief Model (HBM) will be tested to examine the effects of demographics, cues to action, HIV risk appraisal, prenatal care practice setting on women's use of HIV testing during pregnancy.

2. Subjects:

In order to preserve complete respondent anonymity, all personal identifiers were removed prior to this data set being posted on the ICPSR website. I will not have access, in any format, to identifying information of any of the respondents. Data used in this study were collected from 10,847 interviews from civilian noninstitutionalized women ages 15-44.

3. Methods/Procedures:

The study will utilize National Survey of Family Growth, Cycle V (NSFG) archival data. The original NSFG study had a probability sample of 10,847 non-incarcerated women ages 15 - 44. Data regarding women's prenatal care within a twelve-month period were included. A sample of 1,033 cases was drawn for this study.

In-person interviews were conducted using a survey with 11 sections. Five sections of the NSFG survey instrument were used for this study. The researcher focused on childhood/young adult living arrangement history, work history, education history, use of family planning and other medical services; clinic data base, HIV testing demographic characteristics (including race, age, marital status), child care, health insurance, number of sexual partners, and HIV-risk behaviors.

4. Category for Exempt Research Per CFR 46: 4

J. Certification: The research described herein is in compliance with 45 CFR 46.101 (b) and presents subjects with no more than minimal risk as defined by applicable regulations.

**Principal
Investigator**

Name

Signature

Date

**Student
Advisor**

Name

Signature

Date

**Dept. Review
Comm.Chair**

Name

Signature

Date

APPROVED:

Dept. Head

Name

Signature

Date

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control and Prevention
National Center for Health Statistics

Confidentiality agreement between NCHS and _____
(requestor)
regarding the use of the **National Survey of Family Growth, Cycle**

V (1995) Omitted Items File.

The National Center for Health Statistics (NCHS) agrees to
provide to _____ a data file
containing the items that were omitted, for reasons of
confidentiality, from the National Survey of Family Growth, Cycle

V (1995)Public Use File.

_____ agrees that:
(requestor)

1. The omitted items data file will be used only for purposes of research and statistical analysis. No attempt will be made to learn or disclose the identity of any individual in the survey sample, and survey information will not be used in any way to affect directly any individual survey participant. To this end, the requestor is responsible for obtaining and keeping on file a signed copy of this agreement and the attached "Data User's Confidentiality Agreement" from each person working on this project.
2. The only persons to be allowed access to the omitted items data file on this project will be colleagues and persons operating under the direction of the requestor. The requestor is personally responsible for the physical security of the data file. The requestor will employ security measures to prevent unauthorized computer access to the file.
3. The omitted items data file is provided only for use on the specific project agreed to. (Attach brief description of proposed project including data items to be used.) If the requestor wishes to use the omitted items data file for further research beyond that

spelled out in the attached project description, she or he will submit a new request to NCHS and will sign a confidentiality agreement specific to the new project.

4. The omitted items data file is provided to the requestor, not to his or her institution; new investigators who wish to undertake a different research project using the file will make an independent request to NCHS.

5. The omitted items data file will not be copied for use beyond this project. All requests from others for the data file will be referred to NCHS. The data file will specifically not be provided by the requestor in response to a direct order from any official in the Department of Health and Human Services, the Administration, or Congress, nor in response to an order from a court of justice. Such requests or orders should be referred to NCHS for conformity with its authorizing legislation.

6. All reports written using data from the omitted items data file will be submitted to NCHS for confidentiality review prior to publication. NCHS will make every effort to review such reports promptly.

7. The omitted items data file will remain the property and the responsibility of the requestor. When the requestor finishes using the file, or if the requestor changes her or his place of employment, she or he will retain the tape, return the tape to NCHS, or destroy it. No copy of the tape will be left behind.

_____(requestor)
Project Officer NSFG

(date)

Data User's Confidentiality Agreement

Individual identifiers have been removed from the microdata public use files available from the National Center for Health Statistics. Nevertheless, section 308(d) of the Public Health Service Act (42 U.S.C. 242m) specifies that data collected by the National Center for Health Statistics may not be used for any purpose other than that for which it was supplied. The information on the microdata public use files was supplied to NCHS for statistical research and reporting purposes. It is necessary, therefore, that the individual using such files sign the following assurance:

The undersigned gives assurance that individual elementary unit data on the Supplement to the National Survey of Family Growth, **Cycle V (1995) Omitted Items File** will be used solely for statistical research or reporting purposes, that no attempt will be made to learn or disclose the identify of any individual in the survey sample, and that survey information will not be used in any way to affect directly any individual survey participant.

Signed:

Date:

Title:

Organization:

VITA

Thomas Alex Washington is a talented performer, having studied vocal music and modern dance at the Watkins Overton School in Memphis, TN. In 1988, Alex performed at New York City's Carnegie Hall. After graduating from high school, Alex received a Bachelor of Arts degree in Sociology from LeMoyne-Owen College, a Master of Arts degree in Sociology from The University of Memphis and later received the Master of Science in Social Work degree concentrating on Clinical Treatment from The University of Tennessee Health Science Center in Memphis. In 1998, Washington entered the doctoral program at The University of Tennessee, Knoxville. Alex has received the following awards: Southern Regional Education Board Doctoral Scholars Fellowship, Council on Social Work Education Minority Research Fellowship (Award provided by the National Institutes of Mental Health Research on AIDS Office). Alex plans to continue his research as an Assistant Professor or as a Social Science Research Analyst.