UAB LIBRARIES
The University of Alabama at Birmingham

University of Alabama at Birmingham
UAB Digital Commons

All ETDs from UAB

UAB Theses & Dissertations

2004

Depression and sexual risk behaviors among African American women attending an urban STI clinic.

Makeda J. Williams
University of Alabama at Birmingham

Follow this and additional works at: https://digitalcommons.library.uab.edu/etd-collection

Recommended Citation

Williams, Makeda J., "Depression and sexual risk behaviors among African American women attending an urban STI clinic." (2004). *All ETDs from UAB*. 5244.
https://digitalcommons.library.uab.edu/etd-collection/5244

This content has been accepted for inclusion by an authorized administrator of the UAB Digital Commons, and is provided as a free open access item. All inquiries regarding this item or the UAB Digital Commons should be directed to the UAB Libraries Office of Scholarly Communication.

DEPRESSION AND SEXUAL RISK BEHAVIORS AMONG AFRICAN AMERICAN WOMEN ATTENDING AN URBAN STI CLINIC

by

MAKEDA J. WILLIAMS

A DISSERTATION

Submitted to the graduate faculty of The University of Alabama and The University of Alabama at Birmingham, in partial fulfillment of the requirements for the degree of Doctor of Philosophy

BIRMINGHAM, ALABAMA

2004

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

UMI Number: 3133370

Copyright 2004 by
Williams, Makeda J.

All rights reserved.

INFORMATION TO USERS

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleed-through, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

UMI®

UMI Microform 3133370
Copyright 2004 by ProQuest Information and Learning Company.
All rights reserved. This microform edition is protected against unauthorized copying under Title 17, United States Code.

ProQuest Information and Learning Company
300 North Zeeb Road
P.O. Box 1346
Ann Arbor, MI 48106-1346

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Copyright by
Makeda J. Williams
2004

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

ABSTRACT OF DISSERTATION
GRADUATE SCHOOL, UNIVERSITY OF ALABAMA AT BIRMINGHAM

Degree Ph.D. Program Health Education and Health Promotion

Name of Candidate Makeda J. Williams

Committee Chair Diane M. Grimley

Title Depression and Sexual Risk Behaviors Among African American Women Attending an Urban STI Clinic

African American women are disproportionately affected by sexually transmitted infections (STIs), experiencing higher morbidity and mortality rates than any other subpopulation in the United States. Social, behavioral, and mental health issues, such as depression and disparities in gender, have been shown to influence risky sexual behaviors. This study identified correlations among depressive symptoms (e.g., depression, loneliness, crying, and sadness) and risky sexual behaviors, including interpersonal victimization, substance use, number of sexual partners, rate of unprotected sex, and STI history. It also assessed the effect of depressive symptom status on sexually related negative health outcomes among African American women, specifically chlamydia and gonorrhea infections. Using a secondary data set from a larger study on STI prevention and control conducted in the Jefferson County Health Department's STI Clinic, statistical analyses were conducted to determine statistically significant differences between levels of depressive symptoms with respect to interpersonal victimization, substance abuse, risky sexual behaviors, and negative health outcomes.

Results indicated that women who reported depressive symptoms in the past week were more likely to have experienced interpersonal victimization, have a higher number of alcohol events in the past 30 days, participate in risky sexual behaviors (e.g., a higher

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

number of sexual partners, or substance use before sex) and have a history of STIs. However, a higher rate of unprotected sex and a positive test result for *Chlamydia trachomatis* or *Neisseria gonorrhea* showed no association with depressive symptoms reported. The findings of this study encourage public health researchers and clinicians working in STI prevention to be aware of the association among mental health, social and environmental factors, and the adoption and maintenance of behavior change.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

ACKNOWLEDGMENTS

I thank my dissertation committee members for their time, support and expertise. Thank you Drs. Carol Cornell, Susan Davies, David Macrina, Sharina Person, and my dissertation chair, Diane Grimley. I am deeply grateful to Dr. Grimley for giving me the opportunity to work on such a meaningful project and advising me throughout my dissertation research. I also thank Dr. Lucy Annang and the SOLUTIONS staff for their research support and expertise. I thank the Jefferson County Health Department's STD Clinic for their support of this research. In addition, I thank my parents, Jeremiah and Mimie, and my brother, Jaegan, for their continuous support and encouragement.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

TABLE OF CONTENTS

Page

ABSTRACT iii

ACKNOWLEDGMENTS v

LIST OF TABLES viii

LIST OF ABBREVIATIONS xii

CHAPTER

1 INTRODUCTION 1

Statement of the Problem 4
Significance of the Problem 6
Research Hypotheses 9
Limitations 10
Summary 11

2 REVIEW OF THE RELATED LITERATURE 12

Studies Investigating Depressive Symptoms in STD Clinic Patients, and Depressive Symptoms and Risky Sexual Behaviors 12
Conclusions 20

3 METHODOLOGY 21

Study Design 21
Setting 21
Sample 22
Study Intervention 22
Study Instrument 23
Data Collection 25

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

TABLE OF CONTENTS (Continued)

Page

Analysis of Data 25
Summary 28

4 RESULTS 29

Descriptive Statistics 29
Depressive Symptoms and Interpersonal Victimization 32
Depressive Symptoms and Alcohol Drinking Days 36
Depressive Symptoms and Risky Sexual Behaviors 38
Depressive Symptoms and STD Infection 42

5 CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS 71

Conclusions from the Data Analyses 71
Correlation of Study Results to Previous Research 73
Recommendations for Future Research 75
Implications for STD Prevention Practitioners 76
Study Summary 78

LIST OF REFERENCES 79

APPENDIX

A DATA COLLECTION INSTRUMENT 83

B INSTITUTIONAL REVIEW BOARD APPROVAL FORM 88

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIST OF TABLES

Table		*Page*
1	Demographic Variables for Study Population	48
2	Level of Depression in the Past Week by Selected Demographic Variables	49
3	Level of Loneliness in the Past Week by Selected Demographic Variables	50
4	Level of Crying in the Past Week by Selected Demographic Variables	51
5	Level of Sadness in the Past Week by Selected Demographic Variables	52
6	Depressive Symptoms: Reliability Analysis	53
7	Composite Score of Depressive Symptoms for Selected Demographic Variables	54
8	Levels of Depression in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse	55
9	Levels of Loneliness in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse	55
10	Levels of Crying in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse	55
11	Levels of Sadness in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse	56
12	Relationship Between Forced to Have Sexual Intercourse and Depressive Symptom Variables (ORs, CIs and P-value)*: Cumulative Logit Results	56
13	Levels of Depression in the Past Week Versus Whether Women Were Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse	56
14	Levels of Loneliness in the Past Week Versus Whether Women Were Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse	57

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIST OF TABLES (Continued)

Table		*Page*
15	Levels of Crying in the Past Week Versus Whether Women Were Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse	57
16	Levels of Sadness in the Past Week Versus Whether Women Were Hit, Slapped or Physically Hurt by Their Boyfriend or Spouse	57
17	Relationship Between Women Who Have Been Hit, Slapped, or Physically Hurt By Their Boyfriend or Spouse and Depressive Symptom Variables (ORs, CIs and P-value)*: Cumulative Logit Results	58
18	Association Between the Number of Alcohol Drinking Days in the Past 30 Days and Depression Levels in the Past Week	58
19	Association Between the Number of Alcohol Drinking Days in the Past 30 Days and Loneliness Levels in the Past Week	59
20	Association Between the Number of Alcohol Drinking Days in the Past 30 Days and Crying Levels in the Past Week	59
21	Association Between the Number of Alcohol Drinking Days in the Past 30 Days and Sadness Levels in the Past Week	60
22	Association Between the Number of Sexual Partners Since Becoming Sexually Active and Depression Levels in the Past Week	60
23	Association Between the Number of Sexual Partners Since Becoming Sexually Active and Loneliness Levels in the Past Week	61
24	Association Between the Number of Sexual Partners Since Becoming Sexually Active and Crying Levels in the Past Week	61
25	Association Between the Number of Sexual Partners Since Becoming Sexually Active and Sadness Levels in the Past Week	62
26	OR 95% CI in P-values For Drinking Alcohol or Using Drugs Before Having Sex	63
27	Association Between the Rate of Protected Sex and Depression Levels in the Past Week	63
28	Association Between the Rate of Protected Sex and Loneliness Levels in the Past Week	64

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIST OF TABLES (Continued)

Table		*Page*
29	Association Between the Rate of Protected Sex and Crying Levels in the Past Week	64
30	Association Between the Rate of Protected Sex and Sadness Levels in the Past Week	65
31	Levels of Depression in the Past Week by STI History	65
32	Levels of Loneliness in the Past Week by STI History	65
33	Levels of Crying in the Past Week by STI History	66
34	Levels of Sadness in the Past Week by STI History	66
35	OR 95% CI in *P*-values for Being Told by a Doctor or Nurse of a Positive STI Result	66
36	Levels of Depression in the Past Week by Chlamydia Results	67
37	Levels of Loneliness in the Past Week by Chlamydia Results	67
38	Levels of Crying in the Past Week by Chlamydia Results	67
39	Levels of Sadness in the Past Week by Chlamydia Results	68
40	OR 95% CI in *P*-values For Positive Chlamydia Results	68
41	Levels of Depression in the Past Week by Gonorrhea Results	68
42	Levels of Loneliness in the Past Week by Gonorrhea Results	69
43	Levels of Crying in the Past Week by Gonorrhea Results	69
44	Levels of Sadness in the Past Week by Gonorrhea Results	69
45	OR 95% CI in P-values for Positive Gonorrhea Results	70

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIST OF ABBREVIATIONS

ACASI	Audio Computer-Assisted Self Interviewing
CDC	Centers for Disease Control and Prevention
CES-D	Centers for Epidemiologic Studies Depression Scale
DSM-IV	Diagnostic and Statistical Manual, 4th Edition
GHQ	General Health Questionnaire
HHS	Health and Human Services
HP 2010	Healthy People 2010
HPV	Human Papilloma Virus
IV	Intravenous
JCDH STD Clinic	Jefferson County Department STD Clinic
PID	Pelvic Inflammatory Disease
STD	Sexually Transmitted Disease
STI	Sexually Transmitted Infection

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CHAPTER 1

INTRODUCTION

More than 65 million people are living with an incurable sexually transmitted infection (STI) (Centers for Disease Control and Prevention [CDC], 2001). There are 15 million new cases of STIs annually (Cates, 1999). STIs are among the most under-recognized public health problems in the world. They can be difficult to track, due to nonreporting of infections, and some infections often are asymptomatic.

Asymptomatic or mild symptoms may decrease medical care seeking; 75% of women and 50% of men with chlamydia have no symptoms (CDC, 2001). Long latent periods between infection and complications may also exist, such as with human papilloma virus (HPV) and cervical cancer, Hepatitis B and liver infection, chlamydia and gonorrhea, and infertility and ectopic pregnancy (U.S. Department of Health and Human Services [USDHHS], 2000). Females are more affected by STIs than males; for adolescent females, the cervix is covered with cells that are especially susceptible to STIs, such as chlamydia (USDHHS, 2000). Untreated gonorrhea and chlamydia can lead to pelvic inflammatory disease (PID), which can cause infertility, chronic pain, and ectopic pregnancy. Sexually transmitted infections can also have a serious effect on pregnancy outcomes. For example, STIs can lead to early onset of labor, premature rupture of membranes, and uterine infections during and after labor (USDHHS, 2000).

Not only do biological factors affect the severity of STIs and related complications, but there are social and behavioral factors that play important roles. STIs

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

disproportionately affect disenfranchised persons and persons who are in social networks in which high-risk sexual behaviors are common and either access to care or health-seeking behavior are compromised (USDHHS, 2000). Access to high-quality health care is essential for early detection, treatment, and behavior-change counseling for STIs. Groups with the highest rates of STIs are the same groups with limited access to health services (USDHHS, 2000).

Behavioral factors that perpetuate STI transmission within communities include exchanging of sex for drugs, engaging in sexual intercourse with anonymous sex partners, lack of motivation to use barrier protection, and not seeking medical treatment (USDHHS, 2000). Substance abuse is also an important behavioral factor. Many studies have shown the association of substance abuse with STIs (Beltrami, Wright-DeAguero, & Fullilove, 1997). Alcohol may affect an individual's cognitive and negotiating skills before and during sex, and crack cocaine has been attributed to the nationwide syphilis epidemic during the 1980s (Gunn et al., 1995).

Media companies can play an important part in reshaping sexual behaviors and norms in the United States in the next decade. While people in the United States are bombarded by sexual messages and images, there are few that provide informed, high-quality STI prevention information on contraception and risky sexual behaviors (USDHHS, 2000). Studies have shown that popular television programs depict as many as 25 instances of sexual behaviors for every 1 instance of protected sexual behavior or discussion about STIs or pregnancy prevention (Lowery & Schindler, 1993).

Adolescents are severely affected by STIs due to their propensity toward high-risk sexual behaviors; therefore, they are more likely to transmit and/or contract STIs.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Adolescents are more likely to have multiple sex partners and to engage in unprotected sex. In addition, adolescent females often have older partners overall. Younger women are biologically more susceptible to gonorrhea, Chlamydia, and HIV infection. Gonorrhea and chlamydia are the most common and curable sexually transmitted infections in adolescents (CDC, 2001). Five percent of young men and 5 to 10% of young women become infected with chlamydia each year in the United States (CDC, 2001). Gonorrhea rates are highest in young women 15 to 19 years and young men 20 to 24 years (CDC, 1998).

There are also regional effects of STI prevalence and incidence in the United States. Although the rates of herpes and HPV are rather evenly distributed across the four regions of the United States, chlamydia, gonorrhea, and syphilis rates are higher among females in the southern region (CDC, 2001). High rates in the south may be attributed to high rates of poverty and limited access to quality health care (CDC, 2001).

STI rates vary among different racial/ethnic groups. In 1997, African Americans (non-Hispanic Blacks) accounted for 77% of the total number of reported cases of gonorrhea, 31 times the rate in Whites (non-Hispanic Whites) (USDHHS, 2000). African Americans have gonorrhea and syphilis rates that are up to 30 times higher than those for White Americans (CDC, 2001). However, it is important to recognize these data may be artificially high, due to the fact that African Americans are more likely to seek care at public health clinics where disease rates are reported more often than in private health care settings (CDC, 2001). Other factors include poverty, lack of health care access, drug use, lack of health care seeking behaviors, and sexual networks with high STI prevalence (CDC, 2001).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

To address the prevention of sexually transmitted diseases and other health concerns of the nation, *Healthy People 2010* (HP 2010) includes a set of health objectives that can be used by individuals, communities, and organizations to develop programs to improve health (USDHHS, 2000). Chapter 25 of HP 2010 addresses the goals and targets for STI prevention. The HP 2010 Goal for sexually transmitted diseases (STDs) is as follows: "Promote responsible sexual behaviors, strengthen community capacity, and increase access to quality services to prevent STDs and their complications" (USDHHS, 2000). Of the 17 STI-related HP 2010 objectives, 10 were either met or moved toward their project targets. The nation is making strides in reducing the occurrence of STIs, educating people about condom use, increasing clinic services for HIV and other STDs, and encouraging abstinence from sexual intercourse among adolescents (USDHHS, 2000).

Statement of the Problem

To address the high rates of STI and create effective interventions and initiatives targeted at HP 2010 goals and objectives, many studies have been conducted that focus on the reduction of STIs and risky sexual behaviors (Bachanas et al., 2002; Champion, Shain, Piper, & Perdue, 2002; DiClemente et al., 2001; Erbelding, Hummel, Hogan, & Zenilman, 2001; Orr, Celentano, Santelli, & Burwell, 1994; Shrier, Harris, Strenberg, & Beardslee, 2001; Shrier, Harris, & Beardslee, 2002). These studies have investigated how certain biological, social, and behavioral factors can be controlled and/or eliminated to reduce STIs. But within these studies, the influence of mental health disorders, specifically depression, has not been addressed or data are sparse.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Past clinical research on depression in African American women has been scarce. African American women may not seek treatment for their depression, may be misdiagnosed, or withdraw from treatment because of a lack of cultural and gender sensitivity (Warren, 1994).

African Americans may be less likely to suffer from major depression and more likely to suffer from phobias than are non-Hispanic Whites (USDHHS, 2001). Somatization is more common among African Americans (15%) than among Whites (9%) (USDHHS, 2001). Only one third of Americans with a mental illness or a mental health problem get care (USDHHS, 2001).

There are many factors contributing to fewer African Americans being diagnosed with clinical depression (National Mental Health Association, [NMHA], 2004). These factors include mistrust of medical health professionals, cultural barriers, and reliance on the support of family and the religious community rather than mental health professionals, during periods of emotional distress, a "masking" of depressive symptoms by other medical conditions, somatic complaints, substance abuse and other psychiatric illnesses, and socioeconomic factors, such as limited access to medical care.

Currently there are only a handful of studies that have examined the effects of depression on risky sexual behaviors and STI outcomes, but these studies have focused on adolescents. Keller et al. (1991) found that teens with emotional or behavioral problems are more likely to participate in risky sexual behavior. A study conducted by Miller-Johnson et al. (1999) showed that African American female adolescents with high depression levels were more likely to engage in unprotected sex, become pregnant and initiate sexual activity at an early age. Also Doljanac and Zimmerman (1998) found that

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

conduct disorders and delinquency were positively correlated with risky sexual behaviors among African American adolescents. These studies suggest that depression and other mental health problems may need to be addressed within STI prevention programs and initiatives.

Due to the relatively few studies examining the relationship between depressive symptoms and sexual behavior among African American women seeking care at urban public STI clinics, more research is needed to examine the effects of depressive symptoms on risky sexual behaviors and STI infection, thus providing further support for mental health services or referrals in public STI clinics.

Significance of the Problem

African American women are disproportionately affected by sexually transmitted infections. They experience higher morbidity and mortality rates than any other sub-population (CDC, 1998). Social and behavioral factors, such as depression, have been shown to have an effect on engagement in risky sexual behaviors (USDHHS, 2000).

NMHA conducted a survey on attitudes and beliefs about depression among African Americans (NMHA, 2004). Approximately 63% of African Americans believe that depression is a "personal weakness." Only 31% of African Americans said they believed depression is a "health" problem. Close to 30% of African Americans said they would "handle it" (depression) themselves if they were depressed, while close to 20% said they would seek help for depression from friends and family. Almost two thirds of respondents said they believe prayer and faith alone will successfully treat depression "almost all of the time" or "some of the time."

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

There are also disparities by gender for depression (USDHHS, 1999). Women are twice as likely as men to suffer from major depression (Weissman & Klerman, 1993). Women who are poor, less educated, on public assistance, or unemployed are more likely to experience depressive symptoms than other women in the general population (APA, 1998).

STI clinic patients have high rates of HIV/STD risk behaviors and high degrees of mental distress at the time of clinic presentation (Erbelding et al., 2001). The mental stress of these patients could influence their ability to acquire knowledge, perceive risk, process messages, and enact behavior change (Erbelding et al.). Therefore, mental distress of STI clinic patients could limit the success of interventions designed to change risky sexual behaviors.

High rates of STIs in marginalized populations, such as African Americans, coupled with disproportionate rates of depressive symptoms in all women, lay a heavy burden on publicly funded STI clinics. For this reason, tailored interventions and mental health services or appropriate referrals within STI clinics may be imperative for the prevention of risky sexual behaviors and reduction of STIs. This study will identify correlates of depressive symptoms and sexual risk behaviors and assess the effect of depressive symptom status on sexually related negative health outcomes among African American women.

Sexual coercion is an important factor associated with high-risk sexual behaviors. In 1995, 16% of females whose first sexual intercourse took place when they were aged 15 years or under reported that it was not voluntary (Abma, Chandra, Mosher, Peterson, & Piccinino, 1997). Sexual violence against women contributes both directly and

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

indirectly to STI transmission. Women experiencing sexual violence are less able to protect themselves from STIs or pregnancy (USDHHS, 2000). A study conducted by Champion et al. (2002) found that women who had an STD and who had been sexually abused were more likely to report symptoms of psychological distress than nonabused women.

In a study by Bachanas et al. (2002) assessing the relationships between potential risk factors (e.g., depression, conduct problems, and substance use) and risky sexual behavior in African American adolescent females, they found that adolescents who reported more substance abuse were more likely to engage in more high-risk sexual behaviors. Of the three risk factors noted above, substance abuse was the only factor that accounted for variance in teens' sexual behavior (Bachanas et al., 2002).

Using the General Health Questionnaire (GHQ), a 30-item measurement on psychological distress, Erbelding et al. (2001) found that high rates of depressive symptoms existed, especially in women who were comparable to hospitalized medical patients. Results of this study imply that depressive mood syndromes may decrease the effectiveness of risk reduction counseling in clinical STI clinics. Miller-Johnson et al. (1999) found that African American female adolescents with high depression levels are more likely to become pregnant, engage in unprotected sex, and initiate sexual activity at an early age. DiClemente et al. (2001) found that distressed adolescents, when compared to nondistressed adolescents, were more fearful about the adverse consequences of condom use negotiation with sex partner, perceived more barriers to condom use, perceived less control in their relationship, had lower self-efficacy to negotiate condom

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

use, had perceived norms nonsupportive of healthy relationships, and were more likely to experience dating violence.

Research Hypotheses

There are four main hypotheses in the current study. The first hypothesis is that women who have a history of interpersonal victimization are more likely to have higher depressive symptom levels than women who do not have a history of interpersonal victimization. Hypothesis 1A states that women who have been forced to have sexual intercourse against their will are more likely to have higher depressive symptom levels than women who have not been forced to have sexual intercourse. Hypothesis 1B states that women who have been hit, slap, or physically hurt by their boyfriend or spouse are more likely to have higher depressive symptom levels than women who have not been hit, slapped, or physically hurt by their boyfriend or spouse.

The second main hypothesis is that women who report higher depressive symptom levels are more likely to partake in substance abuse, specifically alcohol, than women who do not have higher depression levels. Hypothesis 2 states that women who report higher depressive symptom levels are more likely to have a higher proportion of alcohol drinking days in the past 30 days than women who do not have higher depressive symptom levels.

The third main hypothesis is that women who have higher depressive symptom levels are more likely to participate in risky sexual behaviors than women who do not have higher depressive symptom levels. Hypothesis 3A states that women who have higher depressive symptom levels are more likely to have more sexual partners since

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

becoming sexually active than women who do not have higher depressive symptom levels. Hypothesis 3B states that women who report higher depressive symptom levels are more likely to drink alcohol or use drugs before sex than women who do not have higher depressive symptom levels. Hypothesis 3C states that women who have higher depressive symptom levels are more likely to have a lower rate of protected sex than women that do not have higher depressive symptom levels.

The fourth hypothesis is that women who have higher depressive symptom levels are more likely to have a positive STI history. Hypothesis 4A states that women who report a higher depressive symptom level in the past week are more likely to ever have been told by a doctor or nurse they had an STI. Hypothesis 4B states that women with a higher depressive symptom level in the past week were more likely to be positive for chlamydia during the time prior to the intervention. Hypothesis 4C states that women with a higher depressive symptom level in the past week were more likely to be positive for gonorrhea during the time of the intervention. Information on chlamydia and gonorrhea infections will be collected from medical abstractions of patients' charts.

Limitations

The results from this study may provide valuable information for addressing the reduction of depressive symptoms in the prevention of sexually transmitted diseases for African American women, but they are not without limitations. The individuals in this study may not be representative of other African American female populations. Also since the patients were recruited from a clinical setting, they may not represent women who are not seeking STD care. The data collected were self-reported; there is potential

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

that some participants may have answered in a socially desirable manner. However, a number of studies support the conclusion that computer-assessments of sensitive information, such as behaviors associated with sexual practices, promotes disclosure of high-risk activities (Paperny, 1997; Turner et al., 1998), which may reflect a more accurate representation of actual behaviors. Finally the use of a computer may be challenging for patients who have rarely or never used computer technology. However, results from a feasibility study (Bellis, Grimley, & Alexander, 2002) with this specific population of STD patients, demonstrated that ACASI technology was a viable approach. Not only were study participants able to respond independently to assessment items, they were able to navigate through the assessment without assistance.

Summary

Previous and current health promotion and disease prevention initiatives have provided a foundation for the prevention of risky sexual behaviors and reduction of STD infections, especially among minority populations and women. Because mental health issues, such as depression, have been shown to have an effect on the adoption of healthy behaviors, it is imperative to further investigate if depressive symptoms affect whether minority women, especially African American women, participate in risky sexual behavior. This study seeks to identify correlates of depressive symptoms and sexual risk behaviors and assess the effect of depressive symptoms on sexual-related negative health outcomes among African-American women. Data analysis will be conducted using cross-sectional baseline data from the larger study, SOLUTIONS: An STD Awareness Program (PI: Grimley).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

Previous research has shown an association between depressive symptoms and risky sexual behavior and STI infections, but few studies have examines whether this association exists among STI clinic patients, specifically African American women. This study aims to investigate whether depression is a correlate of risky sexual behaviors and current chlamydia and gonorrhea. Literature that is relevant to this study includes the few existing studies investigating depressive symptoms in STI clinic patients, behavioral and mental health issues in minority adolescent females, and others investigating risky sexual behaviors and depressive symptoms.

Studies Investigating Depressive Symptoms in STD Clinic Patients, and Depressive Symptoms and Risky Sexual Behaviors

Shrier et al. (2001) examined the relationships between depressive symptoms and low self-esteem and condom nonuse and self-reported history of STI in a national sample of sexually active male and female adolescents, and explored whether or not substance use mediated or moderated these associations. Data were derived from the National Longitudinal Study of Adolescent Health baseline interviews of 7th to 12th graders from a systematic random sample of 80 high schools and 52 associated feeder schools across the nation. To reduce social desirability bias, students listened to sensitive health questions on audio and entered their responses directly into a laptop computer (audio

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

computer-assisted self interviewing [ACASI]). Data from 6,583 adolescents (32% of study sample) who reported consistently to having sexual intercourse (penis in vagina) and having sexual intercourse in the past 12 months were analyzed. Depression was measured using Center for Epidemiologic Studies Depression (CES-D) and cutoff scores of 22 for males and 24 for females. These scores were adapted to the 19-item depressive symptom scale in Add Health data that identified "very high" levels of depressive symptoms as 21 for males and 23 for females (Shrier et al., 2001). Depressive symptoms were associated with an increased risk of condom nonuse at last sexual intercourse. This association was mediated by substance use, specifically alcohol and marijuana. At last sexual intercourse, half of the females did not use a condom (Shrier et al, 2001). Using bivariate analysis, depressive symptoms were associated with girls ever having had an STI (Shrier et al., 2001). In the logistic regression model, depressive symptoms remained independently associated with ever having an STI (Shrier et al., 2001). When substance use variables were added, individually and together, they did not result in a substantial change in the parameter estimates for depressive symptoms, thus illustrating that substance use did not mediate the relationship between depressive symptoms and a self-reported history of STIs (Shrier et al., 2001).

Shrier et al. (2002) conducted another study using Add Health data. The purpose of the study was to investigate reciprocal associations between depressive symptoms and diagnosis of STIs. Ninety-minute in-home interviews were completed between April and December 1995 (Wave 1) and 1 year later (Wave 2). Data analyzed from this study were from adolescents who completed Wave 1 and Wave 2 interviews, reported consistent answers on separate occasions about sexual intercourse at Wave 2, had sexual intercourse

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

consistent answers on separate occasions about sexual intercourse at Wave 2, had sexual intercourse between Wave 1 and Wave 2, and had all sample weights available (n = 4,738). Depressive symptoms in the past week were assessed during baseline and follow-up using the CES-D. Two sets of logistic regressions were conducted. The first set evaluated whether baseline depressive symptoms independently predicted diagnosis of an STI within the following year. The second set of analyses explored the possibility that STI diagnosis precedes rather than follows the development of depression. The number of males (n = 2,232) and females (n = 2,506) in the study sample were almost equal. Females were twice as likely as males to report a history of STI at baseline and to report being diagnosed as having an STI between Wave 1 and Wave 2 (Shrier et al., 2002). Eighty percent of interval STIs was reported by adolescents who did not have a history of STIs at baseline (Shrier et al., 2002). The median depressive symptoms score was higher for females than males at both waves. When observing depressive symptoms as a predictor of STI diagnosis, the level of depressive symptoms at Wave 1 was associated with STI diagnosis between Wave 1 and 2 for both males and females (Shrier et al., 2002). Females with high and very high levels of depressive symptoms were more likely than those with low and moderate levels of depressive symptoms to report interval STI diagnosis (Shrier et al., 2002). Compared to those without interval STI diagnosis, twice as many females with STI diagnosis reported very high levels of depressive symptoms at Wave 2 (Shrier et al., 2002). This study illustrated that STI diagnosis was a risk factor for depression, but depression was not associated with STI diagnosis when models controlled for baseline history of STIs.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Bachanas et al. (2002) assessed the relationships between potential risk factors and risky sexual behavior in black adolescent females. These risk factors included depression, conduct problems, and substance use. Second, they looked at whether social/environmental factors (e.g., social support and peer norms) or knowledge and skill factors could play a protective role in moderating relationships between risk factors and risky sexual behavior. The study assessed self-reported behavior, rather than intentions to engage in healthy behaviors. One hundred fifty-eight participants from low-income families who lived in inner-city neighborhoods were recruited into the study from an adolescent primary clinic at Hughes Spaulding Children's Hospital in Atlanta, Georgia. A demographic questionnaire was used to assess the following variables: age, gender, race/ethnicity, academic status and history, living situation, family status and income. History of STIs and pregnancy was extracted from medical records. Depression was measured using the Beck Depression Inventory (Beck & Beamesderfer, 1974), which contains 21 items assessing cognitive, behavioral, affective, and somatic components of depression. Results indicated that 78% of teens reported that they engaged in vaginal intercourse at least once (Bachanas et al.). Forty-three percent of sexually active teens reported having at least one STI in the past year, and 14% reported having an STI during the study period (Bachanas et al.). Seventeen percent of teens that were sexually active reported they used condoms less than half of the time during sexual intercourse, and 11% reported never using condoms (Bachanas et al.). Adolescents who reported more substance abuse were more likely to engage in high-risk sexual behaviors (Bachanas et al.). Self-reported symptoms of depression and conduct disorders were not significantly correlated with risky sexual behavior when controlling for age (Bachanas et al., 2002).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Also, perceived social support was not significantly related to teens' engaging in more risky sexual behavior (Bachanas et al.). Results of this study showed that emotional and behavioral problems did not predict adolescents' risky sexual behaviors, nor did social support and self-efficacy.

Orr et al. (1994) conducted a study to determine the association between HIV-related risk factors and depressive symptoms among women seeking health care. The study was conducted at two urban public community health centers in Baltimore, MD. The population was economically disadvantaged and resided in areas of high social and health problems, such as unemployment, infant mortality, and teen pregnancy. A questionnaire was administered over a 4-week period in 1990. Twenty items assessed sociodemographic factors and behaviors related to HIV transmission, such as number of partners, history of STI, and having sex with an intravenous (IV) drug user. CES-D scores were used to measure depressive symptoms. Scores ranged from 0 to 60, and the cut-off for significant levels of depression was 16. The sample consisted of 173 women; 90% were African American, and the median age was 25 years. One third of the sample had two or more sex partners during the past year, and 9% had a drug-using partner (Orr et al.). CES-D scores ranged from 0 to 55, and the median score was 15 (Orr et al.). Fifty percent of the sample scored 16 or higher (Orr et al.). Women who were classified with high levels of depression were more likely to have more than one sexual partner in the past year, have had an IV drug user partner ever, or have had a partner with a previous STI history (Orr et al.). This study showed that high levels of depressive symptoms were associated with risk factors for possible HIV infection among predominately black women in urban health centers. Women with high levels of depression were also more

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

DiClemente et al. (2001) conducted a study that examined of the association between black adolescent females' psychological distress and HIV/STI sexual risk behaviors and the association between psychological distress and adolescents' attitudes about various aspects of their relationships with their male sex partners. From December 1996 through April 1999, 1,130 female adolescents in adolescent medicine clinics, health departments, and school health classes were screened. Of those screened, 522 eligible Black female adolescents who were sexually active in the past 6 months were enrolled and completed the baseline assessments. Baseline data collection consisted of three components: A self-administered survey (e.g., sociodemographic characteristics, relational attitudes, perceptions of HIV/STI sexual risk behaviors, and psychological distress); a structured personal interview on sexual risk behaviors; and urine specimen collection for pregnancy testing. Adolescents were randomly assigned to an HIV sexual risk-reduction or comparison group (no HIV risk reduction intervention) and completed four, 4-hr group sessions. At the 6-month follow up, 468 of the 522 participants (90%) who completed baseline assessments completed follow-up assessments. Psychological distress was measured using an 8-item version of the Center for Epidemiologic Depression (CES-D) scale (Radloff, 1977). A score of 7 or higher is the recommended indicator and definition of psychological distress. Using baseline scores, the researchers compared psychologically distressed adolescents with nondistressed adolescents at a 6-month follow-up assessment on the following factors: pregnancy, risky sexual behaviors, dating violence, and psychosocial scales. Results showed about 48% ($n = 224$) of adolescents were defined as psychologically distressed (DiClemente et al.). Of that group, 60.3% scored above the threshold at 6-month follow up assessment. Compared to

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

adolescents who were not psychologically distressed, distressed adolescents at baseline were more fearful about the adverse consequences of condom use negotiation with sex partners, perceived more barriers to condom use, perceived less control in their relationship, had lower self-efficacy to negotiate condom use, had perceived norms nonsupportive of healthy relationships, and were more likely to experience dating violence (DiClemente et al.). Results of this study indicate that screening adolescent females for depressive symptoms may be effective in providing STI/HIV counseling, conducting sexual health history, and providing referrals to psychological counseling and treatment.

A study by Champion et al. (2002) examined psychological distress among relationship-abused women with STIs from a randomized controlled trial of the effects of a behavioral intervention on STI occurrence. The sample consisted of Mexican American and African American women with current STIs (chlamydia, gonorrhea, syphilis, or trichomonas) who were recruited from public health clinics in San Antonio, TX. The majority of abuse was experienced in a relationship with a boyfriend or friend/ acquaintance. Using chi square and correlation for data analyses, Champion et al. found that women with an STI who were abused were more likely to report psychological distress symptoms than women who were not abused. Current psychological distress was found not only in sexually abused women, but also in physically and psychologically abused women (Champion et al.). This study identified the need for psychotherapeutic intervention for risky sexual behavior and abuse reduction. It also indicated the importance of identifying abuse history and psychological distress so that psychological treatment can be provided along with medical care.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Erbelding et al. (2001) conducted a study to estimate the prevalence of depressive symptoms in patients attending an inner-city STI clinic in Baltimore. The rationale behind this study was that limited data on mental health disorders among sexually high-risk persons existed and that depressive mood symptoms may inhibit risk reduction counseling and behavioral interventions. The convenience sample included 79 male patients, with an average age of 30 years, and 46 female patients, with an average age of 27 years, who were recruited in waiting areas. They completed the General Health Questionnaire (GHQ), a 30-item inventory containing queries regarding on thoughts and feelings indicative of psychological distress. Symptom scores of greater than or equal to 6 were thought to indicate cases of "probable depression." Demographics, reason for visit, risk behaviors (such as substance abuse in past week), and STI clinical diagnosis were abstracted from medical records. One hundred twenty-five of the 133 patients completing the GHQ could be matched to a medical record documenting services received. Results showed that, of the 125 patients, 39.2% had a depressive symptom score above the clinical cut-off for probable depression (Erbelding et al., 2001). Women were more likely to be classified with probable depression than men (Erbelding et al., 2001). There was no association between probable depression and self-reported substance use in the past week (Erbelding et al., 2001). No association between having an STI diagnosed at the clinical encounter and the outcome of probable depression existed (Erbelding et al., 2001). The high prevalence of probable depression indicates that the prevalence of depressive mood syndromes in the STI clinic population may be comparable to hospitalized medical patients (Erbelding et al., 2001).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

syndromes in the STI clinic population may be comparable to hospitalized medical patients (Erbelding et al., 2001).

Conclusions

The aforementioned studies on the relationship between depression and risky sexual behaviors have shown mixed results regarding the importance of addressing mental health disorders when implementing STI prevention programs. However, several studies show an association between depression and risky sexual behavior. Some of the studies reviewed also addressed predictor variables, such as substance use, STI history, and number of sex partners, and also showed gender differences in the relationship between depression and risky sexual behavior. But all the studies, with the exception of Erbelding et al. (2001), failed to focus on women in STI clinics, as opposed to adolescents in STI clinics. African Americans are more likely to receive STI care at publicly funded STI clinics due to financial restraints and health care access. Depressive symptoms may play a major role in behavior change motivation and risky behavior reduction.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CHAPTER 3

METHODOLOGY

The purpose of this study was to examine the association of depressive symptoms on risky sexual behavior and current chlamydia and gonorrhea infection among African American women seeking care at an urban STI clinic. This chapter describes the research methodology for the study.

Study Design

The research design for this study is cross-sectional. Data for this study were collected at the time of the baseline assessment from the control group of a larger study, SOLUTIONS: An STI Awareness Program, at the Jefferson County Health Department Sexually Transmitted Disease Clinic (JCHD STD Clinic). Patients were randomized via a computer to intervention or control groups, allowing each patient to have an equal chance of being selected for either group. The clinical research associates responsible for recruitment and facilitation of the intervention were blinded regarding group selection until after the patient completed the computer assessment.

Setting

JCHD STD Clinic is located near UAB. The clinic serves predominately lower socioeconomic class, ethnic minority residents of Birmingham, AL, with approximately 90% of the population being African American.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Sample

This research study focuses on baseline data from females assigned to the control group of the SOLUTIONS study, specifically African American women between the ages of 18 and 40. This group is disproportionately affected by STI infections and more likely to participate in risky sexual behaviors. STD Clinic patients were eligible to participate in the SOLUTIONS study if (a) they presented to the clinic for STI evaluation, (b) were African American women between the ages of 18 and 40, and (c) provided informed consent to participate after being given a brief description of the current study purpose and requirements. Men were excluded from the study because of the focus on depressive symptoms and risky behavior of women. White patients were excluded because there were too few to make any meaningful comparisons.

Study Intervention

The SOLUTIONS intervention was developed as an audio, computer-delivered, interactive, individually tailored intervention implemented in an STI clinical setting. This intervention was created in a Macromedia Authorware 4 ™ multimedia authoring environment. The participant was guided through the assessment, having only to "click" in response to various queries. The intervention consists of video segments, graphics, and text, and all text was written and spoken in English.

Over a 2-year period, 1,848 JCHD STD Clinic patients were recruited and randomly assigned to either intervention or control. This study focused on African American women in the control group. There were 960 controls, of which 539 were female and 455 were African American females.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Study Instrument

Data used for this study consists of the control group computer assessment, which analyzes sociodemographic characteristics, depressive symptoms, interpersonal victimization, substance use, and risky sexual behavior.

Descriptive statistics were conducted to describe sociodemographic characteristics of the sample, including gender, age, race, employment status, education level, and marital status. The descriptive statistics also include whether the woman has any health insurance, how the health insurance is paid for, if she had any clinic visits within the last 12 months, the reason for seeking care (e.g., you were sick or had a new problem, you had a regularly scheduled visit, or it was an unscheduled check-up or screening), and reason for visit to the STD Clinic (e.g., because you have symptoms, because you were told that someone you had sex with was infected, or because you just wanted to get checked out).

Depressive symptoms were measured based on the following assessment: "Please tell me how often you felt these emotions during the past week." Of the selections presented, depression was addressed by four statements: "You felt depressed," "You felt lonely," "You cried," and "You felt sad." Response options were as follows: less than one day; 1 to 2 days; 3 to 4 days; 5 to 7 days. The assessment items used for depressive symptoms were a modified version of the CES-D scale (Radloff, 1977). "Depression," "lonely," "cried," and "sad" are ordinal variables, with four levels. Women who reported depressive symptoms less than one day were considered as not experiencing depressive symptoms. Women who reported depressive symptoms more than one day in the past week were considered as experiencing depressive symptoms. By keeping them ordinal,

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the statistical power is stronger, and assumptions about the levels of depression, sadness, and loneliness are avoided (i.e., 2 days may be different than 7 days). A composite score of depression, loneliness, crying, and sadness was created to represent all depressive symptoms combined. A reliability analysis was conducted to examine whether depressed, lonely, crying, and sadness represented a composite score of depressive symptoms.

Interpersonal victimization was measured from two questions. The first question was, "During the past 12 months, did your boyfriend, girlfriend, or spouse ever hit, slap or physically hurt you?" This was a dichotomous variable with two levels, "yes" or "no." The second question was, "Have you ever been forced to have sexual intercourse when you did not want to?" This was also a dichotomous variable with two levels, "yes" or "no." Substance use focused on alcohol use: "In the past 30 days, about how many days did you drink alcohol?" This was a continuous variable.

Risky sexual behavior constructs were continuous, with the exception of substance use before sex, which was a dichotomous variable with two levels, "yes" and "no." They included number of sex partners, drinking alcohol or using drugs before sex, condom use with main partner, non-condom use with main partner, condom use with someone who is not the main partner, and non-condom use with someone who was not the main partner.

STI infection focused on previous history of an STI, and chlamydia and gonorrhea infections, abstracted from patients' medical charts. Positive chlamydia and gonorrhea test results were analyzed separately. They were dichotomous variables with two levels, "yes" and "no."

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Data Collection

Data on demographics, perceived STI risk, STI history, repeat clinic visits, condom use data for main and other partners, and substance use (e.g., cigarette smoking, alcohol use, and illegal drug use) were collected via ACASI technology for participants in the control (usual care) group in the SOLUTIONS study. Control group participants received a computer assessment only, as opposed to the intervention group, who received an automated, individually tailored intervention.

Records were written to a file identified by participant ID number, and later aggregated into a Microsoft Access database file. These data were linked by participant ID to medical record extracts to determine STI status at the evaluation visit.

Analysis of Data

Hypothesis 1A stated that women who were forced to have sexual intercourse were more likely to have higher depressive symptom levels than women who were not been forced to have sexual intercourse.

Hypothesis 1B stated that women who were hit, slapped, or physically hurt by their boyfriends or spouses were more likely to have higher depressive symptom levels than women who were not been hit, slapped, or physically hurt by their boyfriends or spouses.

These two hypotheses related to women who had a history of interpersonal victimization and higher depressive symptom levels. The dependent variables were depressive symptoms, and the independent variable was interpersonal victimization. Statistical analysis conducted for these hypotheses was the proportional odds model, as

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

the levels for the depression variable were not collapsed. This model provided a strategy that took into account the ordinality of data. The assumptions of this test were large sample sizes, an independent random sample, and that the covariate structure is correct when responses are considered nominal.

Hypothesis 2A stated that women who had a high depressive symptom level were more likely to have more alcohol drinking days in the past 30 days than women who did not have a high depression level.

The second hypothesis related to women who had high depression levels and alcohol use. The independent variables were the depressive symptoms, and the dependent variable was drinking events in the past 30 days. Statistical analysis for this hypothesis was conducted using ANOVA.

Three hypotheses related to women who had high depression levels and participation in risky sexual behaviors.

Hypothesis 3A stated that women who had high depressive symptom levels were more likely to have more sexual partners since becoming sexually active than women who did not have a high depressive symptom level.

The independent variables, depressive symptoms, were ordinal with four levels, and the dependent variable, sexual partners, was continuous. Statistical analysis for this sub-hypothesis used ANOVA, so that "more" did not have to be quantified.

Hypotheses 3B stated that women who had high depressive symptom levels were more likely to drink alcohol or use drugs before sex than women who did not have a high depressive symptom level.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

The independent variables were depressive symptoms, ordinal with four levels, and the dependent variable was drink alcohol or use drugs before sex, dichotomous with two levels. The statistical analysis for this hypothesis was conducted using logistic regression.

Hypothesis 3C stated that women who have high depression levels were more likely to have a lower rate of protected sex than women that did not have a high depression level.

The independent variable was depression. The dependent variable was rate of protected sex. The rate, or ratio, of protected sex was measured by dividing the total number of protected sexual encounters by the total number of sexual encounters. The total number of sexual encounters was total sexual encounters with main partner (condom use and non-condom use) plus total number of sexual encounters with someone who was not the main partner (condom use and non-condom use). Total number of protected sexual encounters was the total number of protected encounters with a main partner plus the total number of protected encounters with someone who was not the main partner. Statistical analysis for this subhypothesis was conducted using one-way ANOVA. Potential interaction effects included depression with risky sexual behaviors and depression with interpersonal victimization.

Hypothesis 4A stated that women with high depression level were more likely to have an STI, specifically chlamydia and gonorrhea.

The fourth hypothesis related to high depression level and STI infection. Data on chlamydia and gonorrhea infections were collected from medical abstractions of patients' charts. The statistical analysis for this hypothesis was conducted using logistic regression.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Summary

The research design and statistical analyses for this study provided a unique opportunity for investigating how high levels of depressive symptoms may affect risky sexual behaviors and sexually transmitted infections. Not only was depression examined, but depressive symptoms such as loneliness, crying, and sadness were also analyzed. The availability of data on multiple psychosocial factors allowed for the examination of other pertinent variables, such as interpersonal victimization and substance use, and how they interact with depressive symptoms and risky sexual behaviors.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CHAPTER 4

RESULTS

This chapter includes the results of the data analyses. This study identified correlations between depressive symptoms experienced in the past week (e.g., depression, loneliness, crying, and sadness), and sexual risk behaviors. It also assessed the effect of depression status on sexually related negative health outcomes among African American women. Differences between levels of depressive symptoms with respect to interpersonal victimization, substance abuse, risky sexual behaviors, and negative health outcomes were examined. A comprehensive description of each analysis and results follows.

Descriptive Statistics

Baseline data indicated that African American women in the control group (N = 455) had a mean age 24.68 years (See Table 1). Almost 50% of the population was employed, 33% was unemployed, and 12% were students. In terms of education, almost 52% had a high school diploma, and about 9% have a college degree. About 84% were single, and 7% were married. For reason of general health care, 27% were sick or had a new problem, 20% had a regularly scheduled visit, and 14% had an unscheduled check-up or screening. As to reasons for coming into the clinic, almost 32% of women said they had symptoms, 19% said their partner was infected, and 50% said they wanted to get checked out.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Tables 2 through 5 describe the study population using the demographic variables, based on each level of depressive symptom in the past week. When looking at the demographic variables overall, more women self-reported being in a depression level more than one day compared to a depression level less than one day (See Table 2). Women who were depressed less than one day tended to be in the age groups of 36 to 40 years (42.3%) and 19 years and younger (41.0%), and were more likely to be students (44.8%), not married (33.6%), and not have a health care plan (36.9%). Also women who were not depressed more than one day tended to have had their health care plan paid for by someone else (52.2%), had a medical visit in the last 12 months (34.9%), sought care because they were sick or had a new problem (37.7%), and were told that a sex partner was infected (34.9%). For each demographic variable, with the exception of age, employment, and health care plan schedule, a trend was found showing that, as the level of depression increased, the percentage of women within each level decreased.

More women self-reported feeling lonely less than one day compared to feeling lonely more than one day (See Table 3). Women who were in the age groups of 31 to 35 years (42.6%), 20 to 25 years (41.7%), and 26 to 30 years (40.0%) felt lonely less than one day. Women who felt lonely less than one day in the past week tended to be students (48.3%), have a college degree (57.5), be married (48.5%), and not have a health care plan (41.5%). Women who did not feel lonely tended to have had a medical visit in the last 12 months (51.9%), have had a regular scheduled visit (38.7%) or felt sick or had a new problem (38.5%), and came to the clinic to get checked out (42.4%).

A higher percentage of women cried more than 1 day in the past week as opposed to less than 1 day in the past week (See Table 4). Women who cried less than one day

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

were more likely to be 41 to 45 years old (66.7%), employed (52.4%), have a college degree (67.5%), and married (54.5%). Women who had someone else paying for their health plan (65.2%), had a medical visit in the last 12 months (58.9%), sought care because they were sick or had a new problem (52.5%), or just wanted to get checked out (54.5%) cried less than one day. A trend was found for employment, marital status, health care plan, reason for seeking care, and reason for coming to clinic: as the level of crying increased, the percentage of women in each group decreased.

Overall, more women self-reported being sad less than 1 day versus more than 1 day (See Table 5). Women who were sad less than 1 day were more likely to be 36 to 40 years old (50.0%), a student (46.6%), have a college degree (50.0%) and be married (45.5%). Also, women who were sad less than 1 day had a health care plan (42.4%), another source paying for health care (62.5%), a medical visit in last 12 months (47.3%), sought health care because they were sick or had a new problem (42.6%), and went to the clinic because they wanted to get checked out (42.0%).

A composite score of depressive symptoms was created to observe the effect of all depressive symptoms in the past week combined when associated with the study variables (See Table 6). A reliability analysis was conducted to determine whether feeling depressed, lonely, crying, or feeling sad would be representative of all depressive symptoms; an alpha of 0.8481 was found. The scale for each depressive symptom ranged from 1 (*less than 1 day*) to 4 (*5 to 7 days*). By adding all four depressive symptoms, the scale for the composite score ranged from 4 to 16, with higher values indicating higher levels of depressive symptoms.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Women who were 36 to 40 years old (8.42), 20 to 25 years old (8.12), and 31 to 35 years old (8.00) had high mean composite scores for depressive symptoms (See Table 7). Women who were unemployed (8.23) had high mean composite scores for depressive symptoms. Mean scores were also high for women who had a 9th to 11th grade high school education (8.88), women who were not married (8.09), and women who had a health care plan (8.16). Mean composite scores for depressive symptoms were high for women with a regularly scheduled visit (8.32) and women who had been told that they had an infected sex partner (8.30).

Depressive Symptoms and Interpersonal Victimization

The first hypothesis stated that women who have a history of interpersonal victimization will be more likely to have higher depressive symptom levels than women who do not have a history of interpersonal victimization. The dependent variables were depressive symptoms, and the independent variable is interpersonal victimization.

Hypothesis 1A stated that women who had been forced to have sexual intercourse were more likely to have higher depressive symptom levels than women who have not been forced to have sexual intercourse. The statistical analysis for this hypothesis, the proportional odds model, identified statistical differences between depressive symptoms and whether women were forced to have sexual intercourse. Probabilities modeled were cumulated over the lower ordered values.

Almost 37% of women who felt lonely less than one day were never forced to have sexual intercourse, compared to almost 30% of women who were forced (See Table

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

8). Of women who were more likely to have been forced to have sexual intercourse, about 70% were depressed at least one day.

About 45% of women who felt lonely less than one day were never forced to have sexual intercourse, compared to almost 33% of women who were forced (See Table 9). Of women who were more likely to have been forced to have sexual intercourse, about 67% were lonely at least one day.

About 57% of women who cried less than one day were never forced to have sexual intercourse, compared to almost 40% of women who were forced (See Table 10). Of women who were more likely to have been forced to have sexual intercourse, about 61% cried at least one day.

About 46% of women who felt sad less than one day were never forced to have sexual intercourse, compared to almost 33% of women who were forced (See Table 11). Of women who were more likely to have been forced to have sexual intercourse, about 67% cried at least 1 day.

Being forced to have sexual intercourse had an impact on all of the depressive symptoms analyzed (See Table 12). Women who were forced to have sexual intercourse were 1.75 times more likely to have a higher level of depression in the past week than women who were not forced to have sexual intercourse ($p < .0001$). The score test for the proportional odds assumption takes the chi-square value of 4.065 ($p = 0.1310$; $df = 2$). This is nonsignificant, thus the assumption of proportional odds is reasonable for these data.

Women who were forced to have sexual intercourse were 2.18 times more likely to have a higher level of loneliness in the past week than women who were not forced to

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

have sexual intercourse ($p < .0001$). The score test for the proportional odds assumption takes the chi-square value of 5.246 ($p = 0.0726$; $df = 2$). This is nonsignificant, thus the assumption of proportional odds is reasonable for these data.

Women who were forced to have sexual intercourse were 1.82 times more likely to have a higher level of crying in the past week than women who were forced to have sexual intercourse ($p < .0001$). The score test for the proportional odds assumption takes the chi-square value of 4.2103 ($p = 0.12$; $df = 2$). This is nonsignificant, thus the assumption of proportional odds is reasonable for these data.

Women who were forced to have sexual intercourse were 2.101 times more likely to have a higher level of sadness in the past week than women who were not forced to have sexual intercourse ($p < .0001$). The score test for the proportional odds assumption takes the chi-square value of 5.999 ($p = 0.05$; $df = 2$). This is significant, thus the assumption of proportional odds is not reasonable for these data.

Hypothesis 1B stated that women who have been hit, slapped, or physically hurt by a boyfriend or spouse were more likely to have higher depressive symptom levels than women who have not been hit, slapped or physically hurt by a boyfriend or spouse. The statistical analysis for this hypothesis, the proportional odds model, identified statistical significant differences between depressive symptoms and whether women were forced to have sexual intercourse. Probabilities modeled were cumulated over the lower ordered values.

About 37% of women who were depressed less than 1 day were never hurt, compared to 24% of women who were hurt (See Table 13). Of women who were more likely to have been hurt, about 76% cried at least one day.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

About 37% of women who felt lonely less than 1 day were never hurt, compared to 24% of women who were hurt (See Table 14). Of women who were more likely to have been hurt, about 76% cried at least 1 day.

About 54% of women who cried less than 1 day were never hurt, compared to 41% of women who were hurt (See Table 15). Of women who were more likely to have been hurt, 59% cried at least 1 day.

About 45% of women who cried less than 1 day were never hurt, compared to 28% of women who were hurt (See Table 16). Of women who were more likely to have been hurt, 72% cried at least 1 day.

Being hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months had an impact on all of the depressive symptoms analyzed (See Table 17). Women who were hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months were 1.401 times more likely to have had a higher level of depression in the past week than women who were not hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months ($p = 0.01$). The score test for the proportional odds assumption takes the chi-square value of 6.4796 ($p = 0.04$; $df = 2$). This is significant, thus the assumption of proportional odds is not reasonable for these data. Women who were hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months were 1.634 times more likely to have had a higher level of loneliness in the past week than women who were hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months ($p = 0.0003$) (See Table 17). The score test for the proportional odds assumption takes the chi-square value of 1.5625 ($p = 0.46$; $df = 2$). This is nonsignificant, thus the assumption of proportional odds is reasonable for these data.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Women who were hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months were 1.631 times likely to have had a higher level of crying in the past week than women who were not hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months ($p = 0.0008$) (See Table 17). The score test for the proportional odds assumption takes the chi-square value of 1.1325 ($p = 0.57$; $df = 2$). This is nonsignificant, thus the assumption of proportional odds is reasonable for these data.

Women who were hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months were 1.504 times more likely to have had a higher level of sadness in the past week than women who were hit, slapped, or physically hurt by a boyfriend or spouse in the past 12 months ($p = 0.0032$) (See Table 17). The score test for the proportional odds assumption takes the chi-square value of 5.6073 ($p = 0.06$; $df = 2$). This is nonsignificant, thus the assumption of proportional odds is reasonable for these data.

Depressive Symptoms and Alcohol Drinking Days

Hypothesis 2A stated that women who had a higher depressive symptom level in the past week would be more likely to have a higher number of alcohol drinking days in the past 30 days than women who did not have higher depressive symptom levels. The independent variable was depression, and the dependent variable was number of alcohol drinking events in the past 30 days. The statistical analysis for this hypothesis, ANOVA, identified statistically significant differences between depressive symptoms and drinking alcohol in past 30 days.

A higher level of depression showed a larger number of alcohol drinking events in the past 30 days ($p = 0.0004$) (See Table 18). The least square mean of number of alcohol

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

drinking events in the past 30 days was 2.67 if the depressed level was less than 1 day. The least square mean of number of alcohol drinking events in the past 30 days was 6.34 for those who were depressed 5 to 7 days.

A higher level of loneliness showed a larger number of alcohol drinking events in the past 30 days ($p = 0.0002$) (See Table 19). The least square mean of number of alcohol drinking events in the past 30 days was 3.35 if the loneliness level was less than 1 day. The least square mean of number of alcohol drinking events in the past 30 days was 6.49 for those who were lonely 5 to 7 days.

A higher level of crying was not shown in a larger number of alcohol drinking events in the past 30 days ($p = 0.1492$) (See Table 20). The least square mean of number of alcohol drinking events in the past 30 days was 3.41 if the crying level was less than 1 day. The least square mean of number of alcohol drinking events in the past 30 days was 5.74 for those who cried 5 to 7 days.

A higher level of sadness resulted in a larger number of alcohol drinking events in the past 30 days ($p = 0.0007$) (See Table 21). The least square mean of number of alcohol drinking events in the past 30 days was 2.84 if the crying level was less than 1 day. The least square mean of number of alcohol drinking events in the past 30 days was 6.65 for those who were sad 5 to 7 days.

Overall, a higher level of all depressive symptoms combined resulted in a larger number of alcohol drinking events in the past 30 days ($p = 0.0002$).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Depressive Symptoms and Risky Sexual Behaviors

The third main hypothesis was that women who have had higher depressive symptom levels would be more likely to participate in risky sexual behaviors than women who do not have higher depression levels.

Hypothesis 3A stated that women who have higher depressive symptom levels are more likely to have had more sexual partners since becoming sexually active than women who do not have higher depressive symptom levels. The independent variable was depression, and the dependent variable was number of sexual partners. The statistical analysis for this hypothesis, ANOVA, identified statistically significant differences between depressive symptoms and number of sexual partners.

A higher level of depression showed a larger number of sexual partners, but was not statistically significant ($p = 0.06$) (See Table 22). The least square mean of number of sexual partners was 8.97 if the depressed level was less than 1 day. The least square mean of number of sexual partners was 12.63 for those who were depressed 5 to 7 days. Therefore, there was a main trend in the means.

A higher level of loneliness showed a larger number of sexual partners ($p = 0.01$) (See Table 23). The least square mean of number of sexual partners was 8.76 if the loneliness level was less than 1 day. The least square mean of number of sexual partners was 11.41 if the loneliness level was 1 to 2 days. The least square mean of number of sexual partners was 11.69 if the loneliness level was 3 to 4 days. The least square mean of number of sexual partners was 15.36 for those who were lonely 5 to 7 days. Therefore, there is a main trend in the means.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

A higher level of crying did not result in a larger number of sexual partners (p = 0.25) (See Table 24). The least square mean of number of sexual partners was 9.77 if the crying level was less than 1 day. The least square mean of number of sexual partners was 14.26 for those who cried 5 to 7 days. Therefore, there is a main trend in the means.

A higher level of sadness showed a larger number of sexual partners (p = 0.01) (See Table 25). The least square mean of number of sexual partners was 8.86 if the sadness level was less than 1 day. The least square mean of number of sexual partners was 13.87 for those who were sad 5 to 7 days. Therefore, there is a main trend in the means.

Overall a higher level of all depressive symptoms resulted in a larger number of sexual partners (p = 0.0014).

Hypothesis 3B stated that women who have higher depressive symptom levels are more likely to drink alcohol or use drugs before sex than women who do not have higher depressive symptom levels. The independent variable was depression, and the dependent variable was drinking alcohol or using drugs before sex. The statistical analysis for this hypothesis, logistic regression, identified statistical significances between depressive symptoms and substance use before drugs. Probabilities modeled were whether a woman reported she had used alcohol or drugs before sex.

Women who had the least amount of depression were more likely to use drugs or alcohol before sex than those who were more depressed (See Table 26). Women who used drugs or alcohol before sex were 1.795 times as likely to be depressed 1 to 2 days in the past week than women who were depressed 5 to 7 days in the past week (p = 0.72).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Overall, women who were in a higher level of loneliness in the past week were more likely to use drugs or alcohol before sex ($p = 0.0020$). Women who used drugs or alcohol before sex were 3.039 times as likely to have felt lonely less than 1 day in the past week than women who were lonely 5 to 7 days in the past week ($p = 0.0028$). Women who used drugs or alcohol before sex were 2.242 times as likely to feel lonely 1 to 2 days in the past week than women who felt lonely 5 to 7 days in the past week ($p = 0.20$).

In general, women who cried more in the past week were more likely to use drugs or alcohol before sex ($p = 0.05$). Women who used drugs or alcohol before sex were not significantly less likely to cry less than 1 day in the past week than women who cried 5 to 7 days in the past week ($p = 0.22$). Women who used drugs or alcohol before sex were 92% as likely to have cried 1 to 2 days in the past week than women who cried 5 to 7 days in the past week ($p = 0.43$).

Overall, women who had a higher level of sadness in the past week were more likely to use drugs or alcohol before sex ($p = 0.01$). Women who used drugs or alcohol before sex were 2.564 times as likely to be sad less than 1 day in the past week than women who were sad 5 to 7 days in the past week ($p = 0.0097$). Women who used drugs or alcohol before sex were 2.222 times as likely to be sad 1 to 2 days in the past week than women who were sad 5 to 7 days in the past week ($p = 0.0931$).

When all the depressive symptoms were combined into one variable, women who used drugs or alcohol before sex were 89% as likely to have a higher level of depressive symptoms in the past week than women who were not in a lower level of depressive symptoms in the past week ($p = 0.0004$).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Hypothesis 3C stated that women who had a higher depressive symptom level in the past week were more likely to have a lower rate of protected sex than women who did not have higher depressive symptom levels. The independent variable was depressive symptoms, and the dependent variable was rate of protected sex. The statistical analysis for this hypothesis, ANOVA, identified marginal statistically significant differences between depressive symptoms and rate of protected sex.

A higher level of depression in the past week resulted in a lower rate of protected sex, but only marginally ($p = 0.06$) (See Table 27). The least square mean of the rate of protected sex was 0.66 if the depressed level was less than 1 day. The least square mean of the number of times a condom was not used with a main sexual partner was 0.60 if the depressed level was 5 to 7 days.

A higher level of loneliness in the past week did not result in a lower rate of protected sex ($p = 0.3345$) (See Table 28). The least square mean of the rate of protected sex was 0.66 if the loneliness level was less than 1 day. The least square mean of the number of times a condom was not used with a main sexual partner was 0.62 if the depressed level was 5 to 7 days.

A higher level of crying in the past week did not result in a larger rate of protected sex ($p = 0.27$) (See Table 29). The least square mean of the rate of protected sex was 0.65 if the crying level was less than 1 day. The least square mean of the number of times a condom was not used with a main sexual partner was 0.59 if the crying level was 1 to 2 days. The least square mean of the number of times a condom was not used with a main sexual partner was 0.55 if the crying level was 3 to 4 days. The least square mean of the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

number of times a condom was not used with a main sexual partner was 0.66 if the crying level was 5 to 7 days.

A higher level of sadness in the past week did not result in a larger rate of protected sex ($p = 0.06$) (See Table 30). The least square mean of the rate of protected sex was 0.67 if the crying level was less than 1 day. The least square mean of the number of times a condom was not used with a main sexual partner was 0.55 if the crying level was 1 to 2 days. The least square mean of the number of times a condom was not used with a main sexual partner was 0.60 if the crying level was 3 to 4 days. The least square mean of the number of times a condom was not used with a main sexual partner was 0.62 if the crying level was 5 to 7 days.

When all the depressive symptoms were combined to form one variable, a higher level of depressive symptoms in the past week did not result in a larger rate of protected sex ($p = 0.2824$).

Depressive Symptoms and STD Infection

The fourth hypothesis stated that women with a higher depressive symptom level in the past week would be more likely to have an STD infection than women who did not have a higher depressive symptom level in the past week.

Hypothesis 4A stated that women with a higher depressive symptom level in the past week were more likely to report that they have ever been told by a doctor or nurse they had an STD infection. The independent variable was depressive symptom level, and the dependent variable was STD history. The statistical analysis for this hypothesis, logistic regression, identified statistically significant differences between depressive

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

symptoms and STD history. Probabilities modeled were whether a woman said she ever was told she had an STD.

Of women who were depressed for less than one day, 40% reported not ever being told of an STD history, compared to 32% of women who had an STD history (see Table 31). Of women who were more likely to have an STD history, 68% were depressed for at least 1 day.

When compared to 35% of women who had an STD history, 53% of women who felt lonely less than 1 day did not report ever being told of an STD history (see Table 32). Of women who were more likely to have an STD history, 65% felt lonely at least one day.

About 57% of women who cried less than one day did not report ever being told of an STD history, compared to 48% of women who had an STD history (see Table 33). Of women who were more likely to have an STD history, almost 52% cried at least one day.

About 52% of women who felt sad less than one day did not report ever being told of an STD history, compared to 37% of women who had an STD history (See Table 34). Of women who were more likely to have an STD history, about 63% felt sad at least one day.

Women who felt more lonely or sad in the past week were likely to self-report an STD history (see Table 35). Women who had a higher level of depression in the past week were 21% more likely to have ever been told by a doctor or nurse that they had an STD than women who were not in a higher level of depression in the past week (p = 0.05). Women who had a higher level of loneliness in the past week were 38% more

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

likely to have ever been told by a doctor or nurse that they had an STD than women who were not in a higher level of loneliness in the past week ($p = 0.001$). Women who cried more in the past week were less likely to have ever been told by a doctor or nurse that they had an STD than women who did not cry more in the past week ($p = 0.10$). Women who had a higher level of sadness in the past week were 24% more likely to have ever been told by a doctor or nurse that they had an STD than women who had a higher level of sadness in the past week ($p = 0.04$). When all depressive symptom variables were combined to form one variable, women who had a higher level of depressive symptoms in the past week were 8% more likely to have ever been told by a doctor or nurse that they had an STD than women who were not in a higher level of depressive symptoms in the past week.

Hypothesis 4B stated that women with a higher depressive symptom level in the past week would be more likely to be positive for chlamydia during the time of the intervention. The independent variable was depressive symptom level, and the dependent variable was chlamydia results. The statistical analysis for this hypothesis, logistic regression, identified statistically significant differences between depressive symptoms and chlamydia results. Probabilities modeled were whether a woman was positive for chlamydia.

About 34% of women who were depressed less than one day did not report having chlamydia, compared to 34% of women who had chlamydia (See Table 36). Of women who had chlamydia, almost 66% felt depressed at least one day.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Almost 44% of women who felt lonely less than one day did not report having chlamydia, compared to about 32% of women who had chlamydia (See Table 37). Of women who had chlamydia, almost 68% felt lonely at least one day.

Of women who cried less than one day, almost 52% did not report having chlamydia compared to about 45% of women who had chlamydia (See Table 38). Of women who had chlamydia, almost 55% cried at least one day.

Almost 43% of women who cried less than one day did not report having chlamydia, compared to almost 36% of women who had chlamydia (See Table 39). Of women who had chlamydia, almost 65% felt sad at least one day.

Depressive symptoms had no effect on having chlamydia, although feeling sad in the past week was marginally significant (See Table 40). Women who had a higher level of depression in the past week were 10% more likely to be positive for chlamydia than women who were not in a higher level of depression in the past week ($p = 0.45$). Women who had a higher level of loneliness in the past week were 15% more likely to be positive for chlamydia than women who were not in a higher level of loneliness in the past week ($p = 0.25$). Women who cried more in the past week were 15% more likely to be positive for chlamydia than women who were not in a higher level of crying in the past week ($p = 0.09$). Women who had a higher level of sadness in the past week were 28% more likely to be positive for chlamydia than women who were not in a higher level of sadness in the past week ($p = 0.06$). When all depressive symptom variables were combined to form one variable, women who had higher levels of depressive symptoms in the past week were 6% more likely to have a positive chlamydia result during the

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

intervention than women who did not have higher levels of depressive symptoms in the past week.

Hypothesis 4C stated that women with a higher depressive symptom level in the past week were more likely to be positive for gonorrhea during the time of the intervention. The independent variable was depressive symptom level, and the dependent variable was gonorrhea results. The statistical analysis for this hypothesis, logistic regression, identified statistically significant differences between depressive symptoms and gonorrhea results.

About 35% of women who felt depressed less than 1 day did not report having gonorrhea, compared to almost 26% of women who had gonorrhea (See Table 41). Of women who had gonorrhea, almost 74% felt depressed at least one day.

Almost 40% of women who felt lonely less than one day did not report having gonorrhea, compared to almost 56% of women who had gonorrhea (See Table 42). Of women who had gonorrhea, about 44% felt lonely at least 1 day.

About 50% of women who cried less than one day did not report having gonorrhea, compared to almost 56% of women who had gonorrhea (See Table 43). Of women who had gonorrhea, about 44% cried at least one day.

Almost 41% of women who cried less than one day did not report having gonorrhea, compared to almost 60% of women who had gonorrhea (See Table 44). Of women who had gonorrhea, about 40.7% cried at least one day.

Depressive symptoms were not associated with being positive for gonorrhea, with the exception of having a higher level of sadness in the past week (See Table 45). Women who had a higher level of depression in the past week were not likely to be

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

positive for gonorrhea than women who were not in a higher level of depression in the past week ($p = 0.7601$). For women who had a higher level of loneliness in the past week, there was no significant difference in whether they were positive for gonorrhea ($OR = 1.141$; $p = 0.0884$). For women who had a higher level of crying in the past week, there was no significant difference in whether they were positive for gonorrhea ($OR = 1.190$; $p = 0.4264$). Women who did not have a higher level of sadness in the past week were 70% less likely to have been found positive with gonorrhea than women who had a higher level of sadness in the past week ($p = 0.0284$). When all depressive symptom variables were combined to form one variable, women who had a higher level of depressive symptoms in the past week were not more likely to have a positive gonorrhea result during the intervention than women who did not have a higher level of depressive symptoms in the past week ($p = 0.1866$).

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 1

Demographic Variables for Study Population

Variables	Frequency	%
Age		
19 years and younger	83	18.2
20 to 25 years	216	47.5
26 to 30 years	80	17.6
31 to 35 years	47	10.3
36 to 40 years	26	5.7
41 to 45 years	3	0.7
Employment		
Employed	225	49.5
Unemployed	168	36.9
Student	58	12.7
Other	4	0.9
Grade		
8th or lower	5	1.1
High school (9th to 11th)	357	78.5
High school diploma/Equivalency exam	29	6.4
College degree	40	8.8
Marital status		
Married	33	7.3
Not married	422	92.7
Health care plan		
Yes	238	52.3
No	217	47.7
Health care plan: Pay schedule		
Your employer	37	8.1
Your parent's employer	28	6.2
You or someone else	23	5.1
Medicaid, medical assistance, other state-funded plan	121	26.6
Other	8	1.8
Doctor/Clinic visit in last 12 months		
Yes	129	28.4
No	326	71.6
General health care		
Sick or had a new problem	122	26.8
Regular scheduled visit	93	20.4
Unscheduled check-up	64	14.1
Other	42	9.2
Reason for coming to clinic today		
Symptoms	145	31.9
Told that sexual partner was infected	86	18.9
Wanted to get checked out	224	49.2

Note. $N = 455$.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 2

Level of Depression in the Past Week by Selected Demographic Variables

Variables	Level of depression in past week (%) Less than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days
Age				
19 years and younger	41.0	30.1	14.5	14.5
20 to 25 years	33.8	30.6	22.2	13.4
26 to 30 years	31.3	37.5	11.3	20.0
31 to 35 years	25.5	25.5	27.7	21.3
36 to 40 years	42.3	23.1	23.1	11.5
41 to 45 years	33.3	33.3	33.3	0.0
Employment				
Employed	35.6	31.6	20.4	12.4
Unemployed	29.2	29.8	20.8	20.2
Student	44.8	29.3	12.1	13.8
Other	25.0	50.0	25.0	0.0
Grade				
8th or lower	40.0	40.0	20.0	0.0
High School (9th to 11th)	34.2	31.9	18.5	15.4
High school diploma/Equivalency exam	27.6	24.1	24.1	24.1
College degree	42.5	22.5	22.5	12.5
Marital status				
Married	42.4	27.3	18.2	12.1
Not married	33.6	31.0	19.7	15.6
Health care plan				
Yes	31.9	34.9	14.7	18.5
No	36.9	26.3	24.9	12.0
Health care plan pay schedule				
Your employer	40.5	24.3	24.3	10.8
Your parent's employer	42.9	17.9	21.4	17.9
You or someone else	52.2	26.1	8.7	13.0
Medicaid, medical assistance, other state-funded plan	30.6	28.9	29.8	10.7
Other	50.0	25.0	12.5	12.5
Doctor/Clinic visit in last 12 months				
Yes	34.9	36.4	13.2	15.5
No	34.0	28.5	22.1	15.3
Reason for seeking care				
Sick or had a new problem	37.7	26.2	20.5	15.3
Regular scheduled visit	29.0	29.0	24.7	15.6
Unscheduled check-up	32.8	31.3	25.0	17.2
Other	35.7	28.6	19.0	10.9
Reason for coming to clinic today	33.8	37.9	20.0	16.7
Symptoms				
Told that sexual partner was infected	34.9	24.4	24.4	8.3
Wanted to get checked out	34.4	28.6	17.4	16.3

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 3

Level of Loneliness in the Past Week by Selected Demographic Variables

Variables	Level of loneliness in past week (%) Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days
Age				
19 years and younger	39.8	30.1	15.7	14.5
20 to 25 years	41.7	26.4	16.7	15.3
26 to 30 years	40.0	25.0	10.0	25.0
31 to 35 years	42.6	14.9	19.1	23.4
36 to 40 years	34.6	26.9	26.9	11.5
41 to 45 years	33.3	33.3	33.3	0.0
Employment				
Employed	42.7	25.8	13.8	17.8
Unemployed	35.7	23.8	19.6	20.8
Student	48.3	27.6	17.2	6.9
Other	25.0	75.0	0.0	0.0
Grade				
8th or lower	40.0	20.0	40.0	0.0
High School (9th to 11th)	40.3	24.6	17.1	17.9
High school diploma/Equivalency exam	27.6	41.4	3.4	27.6
College degree	57.5	20.0	15.0	7.5
Marital status				
Married	48.5	24.2	12.1	15.2
Not married	40.0	25.8	16.6	17.5
Health care plan				
Yes	39.9	24.4	16.8	18.9
No	41.5	27.2	15.7	15.7
Health care plan pay schedule				
Your employer	43.2	18.9	21.6	16.2
Your parent's employer	39.3	28.6	17.9	14.3
You or someone else	52.2	30.4	8.7	8.7
Medicaid, medical assistance, other state-funded plan	38.8	28.9	14.9	17.4
Other	50.0	25.0	12.5	12.5
Doctor/Clinic visit in last 12 months				
Yes	51.9	18.6	14.0	15.5
No	36.2	28.5	17.2	18.1
Reason for seeking care				
Sick or had a new problem	38.5	28.7	14.8	18.0
Regular scheduled visit	38.7	26.9	20.4	14.0
Unscheduled check-up	26.6	34.4	14.1	25.0
Other	38.1	21.4	23.8	16.7
Reason for coming to clinic today				
Symptoms	40.0	28.3	20.0	11.7
Told that sexual partner was infected	37.2	25.6	19.8	17.4
Wanted to get checked out	42.4	24.1	12.5	21.0

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 4

Level of Crying in the Past Week by Selected Demographic Variables

	Level of crying in past week (%)			
Variable	Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days
Age				
19 years and younger	49.4	31.1	13.3	6.0
20 to 25 years	50.9	28.7	11.6	8.8
26 to 30 years	57.5	15.0	13.8	13.8
31 to 35 years	42.6	34.0	17.0	6.4
36 to 40 years	50.0	15.4	15.4	19.2
41 to 45 years	66.7	33.3	0.0	0.0
Employment				
Employed	52.4	26.2	12.4	8.9
Unemployed	49.4	26.2	13.1	11.3
Student	50.0	27.6	15.5	6.9
Other	50.0	50.0	0.0	0.0
Grade				
8th or lower	40.0	20.0	20.0	20.0
High School (9th to 11th)	49.6	27.5	14.0	9.0
High school diploma/Equivalency exam	62.1	20.7	6.9	10.3
College degree	67.5	12.5	7.5	12.5
Marital status				
Married	54.5	21.2	18.2	6.1
Not married	50.7	27.0	12.6	9.7
Health care plan				
Yes	51.3	26.9	11.3	10.5
No	50.7	26.3	14.7	8.3
Health care plan pay schedule				
Your employer	56.8	21.6	13.5	8.1
Your parent's employer	42.9	35.7	14.3	7.1
You or someone else	65.2	13.0	17.4	4.3
Medicaid, medical assistance, other state-funded plan	47.1	28.1	15.7	9.1
Other	62.5	25.0	0.0	12.5
Doctor/Clinic visit in last 12 months				
Yes	58.9	20.2	8.5	12.4
No	47.9	29.1	14.7	8.3
Reason for seeking care				
Sick or had a new problem	52.5	23.8	13.9	9.8
Regular scheduled visit	41.1	33.3	12.9	9.7
Unscheduled check-up	46.9	31.3	18.8	3.1
Other	42.9	33.3	16.7	7.1
Reason for coming to clinic today				
Symptoms	51.7	22.1	15.9	10.3
Told that sexual partner was infected	40.7	36.0	15.1	8.1
Wanted to get checked out	54.5	25.9	10.3	9.4

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 5

Level of Sadness in the Past Week by Selected Demographic Variables

	Level of Sadness In Past Week (%)			
$N = 455$	Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days
Age				
19 years and younger	47.0	30.1	13.3	9.6
20 to 25 years	39.8	33.8	14.4	12.0
26 to 30 years	42.5	26.3	18.8	12.5
31 to 35 years	36.2	25.5	21.3	17.0
36 to 40 years	50.0	15.4	26.9	7.7
41 to 45 years	33.3	33.3	33.3	0.0
Employment				
Employed	42.2	30.7	16.4	10.7
Unemployed	39.9	27.4	17.3	15.5
Student	46.6	32.8	13.8	6.9
Other	25.0	50.0	25.0	0.0
Grade				
8th or lower	20.0	20.0	40.0	20.0
High School (9th to 11th)	40.6	31.9	16.0	11.5
High school diploma/Equivalency exam	41.4	24.1	17.2	17.2
College degree	50.0	25.0	12.5	12.5
Marital status				
Married	45.5	27.3	21.2	6.1
Not married	41.5	30.1	16.5	11.9
Health care plan				
Yes	42.4	28.6	14.7	14.3
No	41.0	31.3	18.4	9.2
Health care plan pay schedule				
Your employer	45.9	21.6	27.0	5.4
Your parent's employer	21.4	46.4	21.4	10.7
You or someone else	56.5	26.1	13.0	4.3
Medicaid, medical assistance, other state-funded plan	39.7	33.1	16.5	10.7
Other	62.5	12.5	12.5	12.5
Doctor/Clinic visit in last 12 months				
Yes	47.3	27.9	9.3	15.5
No	39.6	30.7	19.3	10.4
Reason for seeking care				
Sick or had a new problem	42.6	25.4	20.5	11.5
Regular scheduled visit	37.6	31.2	20.4	10.8
Unscheduled check-up	34.4	39.1	20.3	6.3
Other	40.5	33.3	14.3	11.9
Reason for coming to clinic today				
Symptoms	41.4	31.7	17.2	9.7
Told that sexual partner was infected	41.9	29.1	16.3	12.8
Wanted to get checked out	42.0	29.0	16.5	11.9

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 6

Depressive Symptoms: Reliability Analysis

Item-total Statistics				
	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Alpha if item deleted
Depressed	5.438	6.5366	0.7189	0.7928
Lonely	5.5495	6.5463	0.6614	0.8203
Cried	5.8916	7.5916	0.5973	0.8428
Sad	5.6288	6.5468	0.7793	0.7675
Reliability coefficients				
N of Cases = 959.0			*N* of Items = 4	
Alpha = 84.81				

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 7

Composite Score of Depressive Symptoms for Selected Demographic Variables

Variable	Mean (*SD*)
Age	
19 years and younger	7.69 (0.389)
20 to 25 years	8.12 (0.259)
26 to 30 years	7.75 (0.372)
31 to 35 years	8.00 (0.466)
36 to 40 years	8.42 (0.637)
41 to 45 years	6.50 (1.773)
Employment	
Employed	7.90 (0.237)
Unemployed	8.23 (0.236)
Student	7.25 (1.775)
Other	
Grade	
8th or lower	8.60 (1.574)
High School (9th to 11th)	8.88 (0.320)
High school diploma/Equivalency exam	7.76 (0.216)
College degree	7.30 (0.557)
Marital status	
Married	7.58 (0.618)
Not married	8.09 (0.172)
Health care plan	
Yes	8.16 (0.230)
No	7.94 (0.241)
Health care plan pay schedule	
Your employer	7.81 (0.566)
Your parent's employer	8.29 (0.650)
You or someone else	6.83 (0.718)
Medicaid, medical assistance, other state-funded plan	8.17 (0.313)
Other	7.13 (1.217)
Doctor/Clinic visit in last 12 months	
Yes	7.70 (0.312)
No	8.20 (0.196)
Reason for seeking care	
Sick or had a new problem	8.08 (0.314)
Regular scheduled visit	8.32 (0.359)
Unscheduled check-up	8.28 (0.433)
Other	8.21 (0.535)
Reason for coming to clinic today	
Symptoms	7.86 (0.295)
Told that sexual partner was infected	8.30 (0.323)
Wanted to get checked out	8.09 (0.237)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 8

Levels of Depression in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse

		Levels of depression in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Forced	No	112 (36.7%)	102 (33.4%)	52 (17.0%)	39 (12.8%)	305 (100%)
	Yes	44 (29.3%)	38 (25.3%)	37 (24.7%)	31(20.7%)	150 (100%)
Total		156 (34.3%)	140 (30.8%)	89 (19.6%)	70 (15.4%)	455 (100%)

Table 9

Levels of Loneliness in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse

		Level of loneliness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Forced	No	136 (44.6%)	87 (28.5%)	42 (13.8%)	40 (13.1%)	305 (100%)
	Yes	49 (32.7%)	30 (20.0%)	32 (21.3%)	39 (26.0%)	150 (100%)
Total		185 (40.7%)	117 (25.7%)	74 (16.3%)	79 (17.4%)	455 (100%)

Table 10

Levels of Crying in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse

		Level of crying in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Forced	No	173 (56.7%)	77 (25.2%)	31 (10.2%)	24 (7.9%)	305 (100%)
	Yes	59 (39.3%)	44 (29.3%)	28 (18.7%)	19 (12.7%)	150 (100%)
Total		232 (51.0%)	121 (26.6%)	59 (13.0%)	43 (9.5%)	455 (100%)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 11

Levels of Sadness in the Past Week Versus Whether Women Were Forced to Have Sexual Intercourse

		Level of sadness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Forced	No	141 (46.2%)	97 (31.8%)	39 (12.8%)	28 (9.2%)	305 (100%)
	Yes	49 (32.7%)	39 (26.0%)	36 (24.0%)	26 (17.3%)	150 (100%)
Total		190 (41.8%)	136 (29.9%)	75 (16.5%)	54 (11.9%)	455 (100%)

Table 12

Relationship Between Reportedly Forced to Have Sexual Intercourse and Depressive Symptom Variables (ORs, CIs and P-value): Cumulative Logit Results*

		95% Wald		
Psychological Distress Variables	OR	Confidence Intervals		*P*-value
Higher Levels of Depression	1.750	1.383	2.222	$p< 0.0001$
Higher Levels of Loneliness	2.180	1.718	2.778	$p< 0.0001$
Higher Levels of Crying	1.820	1.412	2.358	$p< 0.0001$
Higher Levels of Sadness	2.101	1.642	2.681	$p< 0.0001$

* Each row represents a separate model.

Table 13

Levels of Depression in the Past Week Versus Whether Women Were Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse

		Level of depression in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Hurt	No	132 (37.2%)	109 (30.7%)	62 (17.5%)	52 (14.6%)	355 (100%)
	Yes	24 (24.0%)	31 (31.0%)	27 (27.0%)	18 (18.0%)	100 (100%)
Total		156 (34.3%)	140 (30.8%)	89 (19.6%)	70 (15.4%)	455 (100%)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 14

Levels of Loneliness in the Past Week Versus Whether Women Were Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse

		Level of loneliness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Hurt	No	156 (43.9%)	90 (25.4%)	54 (15.2%)	55 (15.5%)	355 (100%)
	Yes	29 (29.0%)	27 (27.0%)	20 (20.0%)	24 (24.0%)	100 (100%)
Total		185 (40.7%)	117 (25.7%)	74 (16.3%)	79 (17.4%)	455 (100%)

Table 15

Levels of Crying in the Past Week Versus Whether Women Were Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse

		Level of crying in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Hurt	No	191 (53.8%)	93 (26.2%)	41 (11.5%)	30 (8.5%)	355 (100%)
	Yes	41 (41.0%)	28 (28.0%)	18 (18.0%)	13 (13.0%)	100 (100%)
Total		232 (51.0%)	121 (26.6%)	59 (13.0%)	43 (9.5%)	455 (100%)

Table 16

Levels of Sadness in the Past Week Versus Whether Women Were Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse

		Level of sadness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Hurt	No	162 (45.6%)	101 (28.5%)	53 (14.9%)	39 (11.0%)	355 (100%)
	Yes	28 (28.0%)	35 (35.0%)	22 (22.0%)	15 (15.0%)	100 (100%)
Total		190 (41.8%)	136 (29.9%)	75 (16.5%)	54 (11.9%)	455 (100%)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 17

Relationship Between Women Reportedly Being Hit, Slapped, or Physically Hurt by Their Boyfriend or Spouse and Psychological Distress Variables (ORs, CIs, and P value): Cumulative Logit Results*

		95% Wald		
Psychological Distress Variables	OR	Confidence Intervals		*P*-Value
Higher Levels of Depression	1.401	1.078	1.825	0.0120
Higher Levels of Loneliness	1.634	1.253	2.137	0.0003
Higher Levels of Crying	1.631	1.227	2.174	0.0008
Higher Levels of Sadness	1.504	1.147	1.976	0.0032

* Each row represents a separate model.

Table 18

Association Between the Number of Alcohol Drinking Days in the Past 30 Days and Depression Levels in the Past Week

Overall F	6.21
P-Value	0.0004

Least Square Means

Depression Level	Mean Number of Drinking Days in Past 30 Days	Standard Error	*P*-Value
Less Than 1 Day (a)	2.67	0.49	<.0001
1 to 2 Days (a)	4.03	0.52	<.0001
3 to 4 Days (a)	3.17	0.65	<.0001
5 to 7 Days (a)	6.34	0.73	<.0001

Levels with the same letter significantly different $p = 0.05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 19

Association Between the Number of Alcohol Drinking Events in the Past 30 Days and Loneliness Levels in the Past Week

Overall F	6.74		
P-Value	0.0002		
Least Square Means			
Loneliness Level	Mean Number of Drinking Events in Past 30 Days	Standard Error	*P*-Value
Less Than 1 Day (a)	3.35	0.45	<.0001
1 to 2 Days (a)	2.75	0.56	<.0001
3 to 4 Days (a)	3.42	0.71	<.0001
5 to 7 Days (a)	6.49	0.68	<.0001

Levels with the same letter significantly different $p = 0.05$

Table 20

Association Between the Number of Alcohol Drinking Events in the Past 30 Days and Crying Levels in the Past Week

Overall F	1.78		
P-Value	0.1492		
Least Square Means			
Crying Level	Mean Number of Drinking Events in Past 30 Days	Standard Error	*P*-Value
Less Than 1 Day (a)	3.41	0.41	<.0001
1 to 2 Days (a)	3.57	0.56	<.0001
3 to 4 Days	4.00	0.81	<.0001
5 to 7 Days (a)	5.74	0.94	<.0001

Levels with the same letter significantly different $p = 0.05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 21

Association Between the Number of Alcohol Drinking Events in the Past 30 Days and Sadness Levels in the Past Week

Overall F	5.82		
P-Value	0.0007		
Least Square Means			
Sadness Level	Mean Number of Drinking Events in Past 30 Days	Standard Error	*P*-Value
Less Than 1 Day (a)	2.84	0.44	<.0001
1 to 2 Days (a)	3.52	0.52	<.0001
3 to 4 Days	4.40	0.70	<.0001
5 to 7 Days (a)	6.65	0.83	<.0001

Levels with the same letter significantly different $p = 0.05$

Table 22

Association Between the Number of Sexual Partners Since Becoming Sexually Active and Depression Levels in the Past Week

Overall F	2.51		
P-Value	0.0582		
Least Square Means			
Depression Level	Mean Number of Sexual Partners Since Sexually Active	Standard Error	*P*-Value
Less Than 1 Day (a)	8.97	1.19	<.0001
1 to 2 Days	10.75	1.25	<.0001
3 to 4 Days (a)	14.01	1.56	<.0001
5 to 7 Days	12.63	1.76	<.0001

Levels with the same letter significantly different $p = 0.05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 23

Association Between the Number of Sexual Partners Since Becoming Sexually Active and Loneliness Levels in the Past Week

Overall F	3.82
P-Value	0.0100

Least Square Means

Loneliness Level	Mean Number of Sexual Partners Since Sexually Active	Standard Error	*P*-Value
Less Than 1 Day (a)	8.77	1.08	<.0001
1 to 2 Days	11.41	1.36	<.0001
3 to 4 Days	11.69	1.71	<.0001
5 to 7 Days (a)	15.37	1.65	<.0001

Levels with the same letter significantly different $p = 0.05$

Table 24

Association Between the Number of Sexual Partners Since Becoming Sexually Active and Crying Levels in the Past Week

Overall F	1.53
P-Value	0.205

Least Square Means

Crying Level	Mean Number of Sexual Partners Since Sexually Active	Standard Error	*P*-Value
Less Than 1 Day	9.77	0.97	<.0001
1 to 2 Days	12.27	1.35	<.0001
3 to 4 Days	11.37	1.93	<.0001
5 to 7 Days	14.26	2.26	<.0001

Levels with the same letter significantly different $p = 0.05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 25

Association Between the Number of Sexual Partners Since Becoming Sexually Active and Sadness Levels in the Past Week

Overall F	3.81
P-Value	0.0102

Least Square Means

Sadness Level	Mean Number of Sexual Partners Since Sexually Active	Standard Error	*P*-Value
Less Than 1 Day (a)	8.86	1.07	<.0001
1 to 2 Days	10.89	1.26	<.0001
3 to 4 Days (a)	14.93	1.70	<.0001
5 to 7 Days (a)	13.87	2.00	<.0001

Levels with the same letter significantly different $p = 0.05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 26

OR 95% CI in P-values For Drinking Alcohol or Using Drugs Before Having Sex

			95% Wald			Overall
		OR	Confidence Intervals		*P*-value	*P*-value
Depressed	Less than 1 Day vs 5 to 7 days	3.145	1.597	6.211	0.0020	0.0077
	1 to 2 days vs 5 to 7 days	1.795	0.944	3.413	0.7200	
	3 to 4 days vs 5 to 7 days	1.404	0.705	2.793	0.3912	
Lonely	Less than 1 Day vs 5 to 7 days	3.039	1.597	5.650	0.0028	0.0020
	1 to 2 days vs 5 to 7 days	2.242	0.944	4.329	0.2036	
	3 to 4 days vs 5 to 7 days	1.311	0.705	2.604	0.2021	
Cried	Less than 1 Day vs 5 to 7 days	0.977	0.424	2.252	0.2218	0.0471
	1 to 2 days vs 5 to 7 days	0.924	0.380	2.247	0.4317	
	3 to 4 days vs 5 to 7 days	0.414	0.162	1.054	0.0073	
Sad	Less than 1 Day vs 5 to 7 days	2.564	1.294	5.076	0.0097	0.0084
	1 to 2 days vs 5 to 7 days	2.222	1.088	4.525	0.0931	
	3 to 4 days vs 5 to 7 days	1.130	0.534	2.392	0.1097	
All Depressive Symptoms		0.895	0.842	0.951		0.0004

Table 27

Association Between the Rate of Protected Sex and Depression Levels in the Past Week

Overall F	2.55
P-Value	0.0549

Least Square Means

Depression Level	Mean Rate of Protected Sex	Standard Error	*P*-Value
Less Than 1 Day (a)	0.66	0.03	$p < .0001$
1 to 2 Days (a)	0.55	0.03	$p < .0001$
3 to 4 Days (a)	0.67	0.04	$p < .0001$
5 to 7 Days	0.60	0.05	$p < .0001$

Levels with the same letter significantly different $p = 0.05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 28

Association Between the Rate of Protected Sex and Loneliness Levels in the Past Week

Overall F	1.14
P-Value	0.3345

Least Square Means

Loneliness Level	Mean Rate of Protected Sex	Standard Error	*P*-Value
Less Than 1 Day	0.66	0.03	$p < .0001$
1 to 2 Days	0.58	0.04	$p < .0001$
3 to 4 Days	0.59	0.05	$p < .0001$
5 to 7 Days	0.62	0.04	$p < .0001$

Levels with the same letter significantly different $p = 0.05$

Table 29

Association Between the Rate of Protected Sex and Crying Levels in the Past Week

Overall F	1.32
P-Value	0.2677

Least Square Means

Crying Level	Mean Rate of Protected Sex	Standard Error	*P*-Value
Less Than 1 Day	0.65	0.03	$p < .0001$
1 to 2 Days	0.59	0.04	$p < .0001$
3 to 4 Days	0.55	0.05	$p < .0001$
5 to 7 Days	0.66	0.06	$p < .0001$

Levels with the same letter significantly different $p = 0.05$

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 30

Association Between the Rate of Protected Sex and Sadness Levels in the Past Week

Overall F	2.45		
P-Value	0.0626		
Least Square Means			
Sadness Level	Mean Rate of Protected Sex	Standard Error	*P*-Value
Less Than 1 Day	0.67	0.03	$p < .0001$
1 to 2 Days	0.56	0.03	$p < .0001$
3 to 4 Days	0.60	0.04	$p < .0001$
5 to 7 Days	0.62	0.05	$p < .0001$

Levels with the same letter significantly different $p = 0.05$

Table 31

Levels of Depression in the Past Week by STI History

		Level of depression in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
STI	No	56 (39.2%)	47 (32.9%)	22 (15.4%)	18 (12.6%)	143 (100%)
	Yes	100 (32.2%)	93 (29.9%)	67 (21.5%)	51 (16.4%)	311 (100%)
Total		156 (34.4%)	140 (30.8%)	89 (19.6%)	69 (15.2%)	454 (100%)

Table 32

Levels of Loneliness in the Past Week by STI History

		Level of loneliness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
STI	No	76 (53.1%)	32 (22.4%)	17 (11.9%)	18 (12.6%)	143 (100%)
	Yes	109 (35.0%)	85 (27.3%)	57 (18.3%)	60 (19.3%)	311 (100%)
Total		185 (40.7%)	117 (25.8%)	74 (16.3%)	78 (17.2%)	454 (100%)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 33

Levels of Crying in the Past Week by STI History

		Level of crying in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
STI	No	82 (57.3%)	37 (25.9%)	10 (7.0%)	14 (9.8)%	143 (100%)
	Yes	150 (48.2%)	84 (27.0%)	49 (15.8%)	28 (9.0%)	311 (100%)
Total		232 (51.1%)	121 (26.7%)	59 (13.0%)	42 (9.3%)	454 (100%)

Table 34

Levels of Sadness in the Past Week by STI History

		Level of sadness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
STI	No	75 (52.4%)	35 (24.5%)	15 (10.5%)	18 (12.6%)	143 (100%)
	Yes	115 (37.0%)	101 (32.5%)	60 (19.3%)	35 (11.3%)	311 (100%)
Total		190 (41.9%)	136 (30.0%)	75 (16.5%)	53 (11.7%)	454 (100%)

Table 35

OR 95% CI in P-values for Being Told By a Doctor or Nurse of a Positive STI Result

		95% Wald		
	OR	Confidence Intervals		*P*-value
Depressed	1.209	0.998	1.464	0.530
Lonely	1.380	1.141	1.668	0.001
Cried	1.190	0.965	1.467	0.103
Sad	1.238	1.012	1.1514	0.038
All Depressive Symptoms	1.085	1.022	1.152	0.0072

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 36

Levels of Depression in the Past Week by Chlamydia Results

		Level of depression in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Chlamydia	Negative	123 (34.3%)	115 (32.0%)	66 (18.4%)	55 (15.3%)	359 (100%)
	Positive	21 (33.9%)	14 (22.6%)	17 (27.4%)	10 (16.1%)	62 (100%)
Total		144 (34.2%)	129 (30.6%)	83 (19.7%)	65 (15.4%)	421 (100%)

Table 37

Levels of Loneliness in the Past Week by Chlamydia Results

		Level of loneliness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Chlamydia	Negative	157 (43.7%)	83 (23.1%)	59 (16.4%)	60 (16.7%)	359 (100%)
	Positive	20 (32.3%)	20 (32.3%)	9 (14.5%)	13 (21.0%)	62 (100%)
Total		177 (42.0%)	103 (24.5%)	68 (16.2%)	73 (17.3%)	421 (100%)

Table 38

Levels of Crying in the Past Week by Chlamydia Results

		Level of crying in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Chlamydia	Negative	184 (51.3%)	97 (27.0%)	49 (13.6%)	29 (8.1%)	359 (100%)
	Positive	28 (45.2%)	16 (25.8%)	7 (11.3%)	11 (17.7%)	62 (100%)
Total		212 (50.4%)	113 (26.8%)	56 (13.3%)	40 (9.5%)	421 (100%)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 39

Levels of Sadness in the Past Week by Chlamydia Results

		Level of sadness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Chlamydia	Negative	154 (42.9%)	105 (29.2%)	63 (17.5%)	37 (10.3%)	359 (100%)
	Positive	22 (35.5%)	18 (29.0%)	8 (12.9%)	14 (22.6%)	62 (100%)
Total		176 (41.8%)	123 (29.2%)	71 (16.9%)	51 (12.1%)	421 (100%)

Table 40

OR 95% CI in P-values for Positive Chlamydia Results

	OR	95% Wald Confidence Intervals		*P*-value
Depressed	1.101	0.857	1.414	0.4505
Lonely	1.149	0.909	1.452	0.2445
Cried	1.246	0.964	1.611	0.0929
Sad	1.275	0.993	1.638	0.0566
All Depressive Symptoms	1.062	0.987	1.143	0.1058

Table 41

Levels of Depression in the Past Week by Gonorrhea Results

		Level of depression in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Gonorrhea	Negative	130 (35.2%)	11 (30.1%)	68 (18.4%)	60 (16.3%)	369 (100%)
	Positive	7 (25.9%)	9 (33.3%)	9 (33.3%)	2 (7.4%)	27 (100%)
Total		137 (34.6%)	120 (30.3%)	77 (19.4%)	62 (15.7%)	396 (100%)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 42

Levels of Loneliness in the Past Week by Gonorrhea Results

		Level of loneliness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Gonorrhea	Negative	147 (39.8%)	94 (25.5%)	62 (16.8%)	66 (17.9%)	369 (100%)
	Positive	15 (55.6%)	6 (22.2%)	4 (14.8%)	2 (7.4%)	27 (100%)
Total		162 (40.9%)	100(25.3%)	66 (16.7%)	68 (17.2%)	396 (100%)

Table 43

Levels of Crying in the Past Week by Gonorrhea Results

		Level of crying in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Gonorrhea	Negative	185 (50.1%)	99 (26.8%)	50 (13.6%)	35 (9.5%)	369 (100%)
	Positive	15 (55.6%)	8 (29.6%)	2 (7.4%)	2 (7.4%)	27 (100%)
Total		200 (50.5%)	107 (27.0%)	52 (13.1%)	37 (9.3%)	396 (100%)

Table 44

Levels of Sadness in the Past Week by Gonorrhea Results

		Level of sadness in the past week				
		Less Than 1 Day	1 to 2 Days	3 to 4 Days	5 to 7 Days	Total
Gonorrhea	Negative	151 (40.9%)	105 (28.5%)	67 (18.2%)	46 (12.5%)	369 (100%)
	Positive	16 (59.3%)	8 (29.6%)	2 (7.4%)	1 (3.7%)	27 (100%)
Total		167 (42.2%)	113 (28.5%)	69 (17.4%)	47 (11.9%)	396 (100%)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Table 45

OR 95% CI in P-values For Positive Gonorrhea Results

	OR	95% Wald Confidence Intervals		*P*-value
Depressed	0.945	1.357	0.658	0.7601
Lonely	1.141	2.110	0.949	0.0884
Cried	1.190	1.828	0.775	0.4264
Sad	1.704	2.740	1.058	0.0284
All Depressive Symptoms	1.086	0.9606	1.227	0.1866

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CHAPTER 5

CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

High rates of STD infections in marginalized populations, such as African Americans, coupled with disproportionate rates of depressive symptoms in all women lay a heavy burden on publicly funded STD clinics. This study identified the relationship between depressive symptoms and sexual risk behaviors and assessed the association of depression status on sexually related negative health outcomes among African-American women. Findings from the study are discussed here, and recommendations are made based on the results that can lead to further research and support prevention efforts for risky sexual behaviors and reduction of STDs among African American women.

Conclusions from the Data Analyses

The purpose of this study was to investigate four major hypotheses. Each hypothesis and study conclusion is discussed here.

The first hypothesis stated that women who had a history of interpersonal victimization would be more likely to have higher depressive symptom levels in the past week than women who did not have a history of interpersonal victimization. A statistically significant difference was found for being forced to have sexual intercourse with regard to each depressive symptom studied. A statistically significant difference was found for being hit, slapped, or physically hurt by a boyfriend or spouse with regard to each depressive symptom studied. Overall, women in the study sample who had a history

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

of interpersonal victimization were more likely to experience a higher level of depressive symptoms in the past week.

The second hypothesis stated that women who had a higher depressive symptom level in the past week would be more likely to have a higher number of alcohol drinking events in the past 30 days than women who did not have higher depressive symptom levels. Statistically significant difference was found for each depressive symptom, with the exception of crying, with regard to number of alcohol drinking events in the past 30 days. When all of the depressive symptoms were combined to form one variable, statistical significance was also found. The mean number of alcohol drinks events in the past 30 days increased as the level of each depressive symptom increased.

The third main hypothesis was that women who had higher depressive symptom levels would be more likely to participate in risky sexual behaviors than women who did not have higher depression levels. A statistically significant difference was found for a higher level of loneliness and sadness in the past week with relation to having more sexual partners; a higher level of depression and crying in the past week were not statistically significant. When all the depressive symptoms were combined to form one variable, statistical significance was also found. The mean number of sexual partners since becoming sexually active displayed a general increase as the level of each depressive symptom increased. A statistically significant difference was found for each depressive symptom level in the past week with regard to substance use before sex. When all of the depressive symptoms were combined to form one variable, statistical significance was also found. A statistically significant difference was only marginal for depression levels, but not found for any of the other depressive symptoms in relation to

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

lower rates of protected sex. When depressive symptoms were combined to form one variable, statistical significance also was not found. The mean rate of protected sex did not show a main trend as depressive symptom level increased.

The fourth hypothesis stated that women with a higher depressive symptom level in the past week would be more likely to have had or currently have an STD infection than women who did not have a higher depressive symptom level in the past week. A statistically significant difference was found for a higher level of depression, loneliness, and sadness with regard to STD history; a higher level of crying in the past week was not found to be statistically significant. A statistically significant difference was only marginal for sadness levels, but not found for any of the other depressive symptoms in relation to positive chlamydia results. A statistically significant difference was found for sadness levels, but not found for any of the other depressive symptoms in relation to positive gonorrhea results.

In conclusion, women who reported depressive symptoms in the past week were more likely to experience interpersonal victimization, have a higher number of alcohol events in the past 30 days, participate in risky sexual behaviors (e.g., a higher number of sexual partners, or substance use before sex) and have a history of STDs. A lower rate of protected sex and positive result for chlamydia and gonorrhea showed no association with depressive symptoms reported in the past week.

Correlation of Study Results to Previous Research

Results from this study are generally similar to other research investigating STD prevention among African American women.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Orr et al.'s (1994) study showed that high levels of depressive symptoms were associated with risk factors for possible HIV infection among predominately black women in urban health centers. Women with high levels of depression were also more likely to participate in risky sexual behaviors. Erbelding et al. (2001) found that high rates of depressive symptoms existed, especially in women that were comparable to hospitalized medical patients. Results of this study imply that depressive mood syndromes may decrease the effectiveness of risk reduction counseling in clinical STI clinics. Champion et al. (2002) found that women with an STI who were abused were more likely to report psychological distress symptoms than women who were not abused. Erbelding et al. (2004) investigated the prevalence of psychiatric disorders in STD clinic patients and their association with STD risk. Disorders of substance abuse and dependence were most common with axis I disorders; antisocial personality disorder were most common with axis II disorders (Erbelding et al., 2004). Erbelding et al.'s study demonstrated the importance of investigating psychiatric disorders, as they may negatively affect HIV/STD prevention outcomes.

Other research studies at the 2003 International STD Conference examined the prevention of STDs and risky sexual behaviors in minority women, specifically focusing on the effects of depressive symptoms, substance abuse, and interpersonal victimization. Champion (2003) found that abused women were more likely to have an STD history, concurrent relationships, partners who had sex with others, less contraceptive use, and to partake in substance abuse. Another study by Champion et al. (2003) examined the relationship of DSM-IV-TR diagnoses, somatization, genitourinary symptomatology, health-seeking behavior, and sexual risk behaviors among abused minority adolescent

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

women with STDs. Certain themes that were identified related to sexual risk of STD, symptomatology, somatization, DSM-IV diagnoses, history of physical or sexual abuse, and health seeking behaviors.

Recommendations for Future Research

Findings from this study will be helpful to clinicians and public health researchers interested in reducing risky sexual behaviors and STD infections in African American women, especially in relation to mental health issues. It will allow researchers to investigate what other factors influence risk behaviors and how those risk behaviors can be addressed. When undertaking this study, several limitations appeared. These limiting factors are discussed here to assist future investigators to design, implement, and evaluate more effective studies and continue to foster research in this important area.

First, the SOLUTIONS intervention used a cross-sectional study design, which does not allow for causal or temporal associations to be made about depressive symptoms and risky sexual behaviors. This study was conducted using secondary data analysis, which did not allow for manipulation of data items (e.g., "How many times in a day during the past week did you feel depressed?"). A longitudinal research design could provide a better understanding of the influences of depressive symptoms and allow for data items to be revised. Repeated measures would allow for observing patterns of depressive symptoms over time, as opposed to a short period of time.

Second, the study results may not be generalized to other similar populations. The present study had a population of all African American women and was conducted only

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

in a STD clinic. Future research should include similar populations in different settings, since STD patients may be more likely to have participated in risky sexual behaviors.

Furthermore, a control group of women from another health care setting was not studied. Future studies should include control groups to strengthen the quality of the data, thus supporting the association between depressive symptoms and risky sexual behavior.

A final limitation of the study was the self-reported responses by the participants. Since the data collected were based on self-report, participants may have been less than truthful in their answers so as not to appear promiscuous or risk-taking. They may have not remembered certain events, thus underestimating or overestimating their answers. Participant responses may have also been influenced by the presence of the research interviewer in the room. However, a number of studies support computer-based assessments for the collection of sensitive information, such as behaviors associated with sexual practices, the promotion of disclosure of high-risk activities (Paperny, 1997; Turner et al., 1998), and the viability and ease of navigation of ACASI technology with this specific population of STD patients (Bellis et al., 2002).

Implications for STD Prevention Practitioners

Findings from this study can contribute to more effective interventions with African American women who are STD clinic patients. The current results indicate that STD prevention interventions should recognize mental health influences on sexual behavior and implement user-friendly, interactive technology. Further, the following strategies should also be incorporated when addressing the influence of mental health issues on risky sexual behavior in the African American community:

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

1. Collaboration with community-level programs that address mental health needs. For example, trained facilitators could provide support groups for victims of sexual abuse. Also, open houses or drop-in centers where women could provide each other with social support might help address loneliness and depression. Research by Schuman et al. (2001) support the need for social support for women with or at risk for HIV.

2. Training clinical staff. STD clinicians and clinical staff should be trained to identify mental health problems for patients. If mental health services are not available on-site, clinical staff could provide referrals as needed. Rost, Nutting, Smith, and Werner (2000) found that training primary care physicians and nurses improved the detection and management of major depression.

3. Integrate mental health services into STD clinical services. Counseling could then be provided as a part of prevention interventions, and patients who may have mental health problems could be provided with immediate assistance. This was examined and supported by research on integrating medical and mental health services for HIV-positive pregnant and non-pregnant women (Dodds et al., 2000).

4. Maintain health communication initiatives in the clinic. Making printed materials, such as pamphlets, available in the waiting room, would give patients information that would educate them about mental health issues and provide resources for counseling and treatment. Research conducted by DeJong, O'Donnell, San Doval, and Juhn (1996) support the need for health communication in improving clinic-based patient education.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

5. Faith-based communities can also play a major role in dealing with mental health issues and reduction of risky sexual behaviors. These communities provide leadership, moral support and resiliency for many African Americans and research supports the active role of faith-based leaders in HIV/AIDS prevention programs (Williams, Ekundayo, Udezulu and Omishakin, 2003).

Study Summary

African American women continue to be disproportionately affected by STD infection. Public health researchers and clinicians working in STD prevention need to be aware of the association between mental health, social and environmental factors, and an individual's ability to adopt and maintain behavior change. In order for STD clinics to advocate for the inclusion of mental health services, more studies validating the association between mental health problems and negative health outcomes need to be conducted. Addressing mental health problems is an integral part of health promotion and should be a part of prevention for risky sexual behaviors.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIST OF REFERENCES

Abma, J. C., Chandra, A., Mosher, W. D., Peterson, L. S., & Piccinino, L. J. (1997). Fertility family planning and women's health: New data from the 1995 National Survey of Family Growth. *Vital and Health Statistics, 23*(19), 1-114.

American Psychiatric Association (APA). (1998). Practice guidelines for the treatment of patients with panic disorder. *American Journal of Psychiatry, 155*(Suppl. 12)1-34.

APA. (2000). *Diagnostic and statistical manual of mental disorders*, (text revision). Washington, DC: Author.

Bachanas, P. J., Morris, M. K., Lewis-Gess, J. K., Sarett-Cuasay, E. J., Sirl, K., Ries, J. K., et al. (2002). Predictors of risky sexual behavior in African American adolescent girls: Implications for prevention interventions. *Journal of Pediatric Psychology, 27*(6), 519-530.

Beck, A., & Beamesderfer, A. (1974). Assessment of depression: The depression inventory. *Psychological Measurements in Psychopharmacology, 7*, 151-169.

Bellis, J. M., Grimley, D. M., & Alexander, L. R. (2002). Feasibility of a tailored intervention targeting STD-related behaviors. *American Journal of Health Behavior, 26*(5), 378-385.

Beltrami, J., Wright-DeAguero, L., & Fullilove, M. (1997). Substance abuse and the spread of sexually transmitted diseases: commissioned paper for the IOM Committee on Prevention and Control of STDs. Washington, DC: Institute of Medicine.

Centers for Disease Control and Prevention (CDC). (1998). *Sexually transmitted disease surveillance, 1997.* Atlanta, GA: U.S. Department of Health and Human Services.

CDC. (2001). *Tracking the hidden epidemics: Trends in STDs in the United States 2000.* Atlanta, GA: U.S. Department of Health and Human Services.

Cates, W. (1999). Estimates of the incidence and prevalence of sexually transmitted diseases in the United States. *Sexually Transmitted Disease, 26*(Suppl.), S2-S7.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Champion, J. D. (2003). STD Risk and Health Seeking Behavior Among Abused Minority Adolescent Women. [Abstract]. 2003 International STD Conference. Ottawa, Ontario, Canada.

Champion, J. D., Shain, R. N., Piper, J., & Perdue, S. T. (2002). Psychological distress among abused minority women with sexually transmitted diseases. *Journal of the American Academy Nurse Practitioners, 14*(7), 316-324.

Champion, J. D., Shain, R. N., Piper, J., Perdue, S. T., Korte, J., Guerra, F., et al. (2003). Physical or Sexual Abuse and Minority Adolescent Women with STD. [Abstract]. 2003 International STD Conference. Ottawa, Ontario, Canada.

DeJong, W., O'Donnell, L., San Doval, A. D., & Juhn, G. (1996). The status of clinic-based STD patient education: the need for a commitment to innovation in health communication. *Journal of Health Communication, 1*(1), 51-63.

DiClemente, R. J., Wingood, G. M., Crosby, R. A., Sionean, C., Brown, L. K., Rothbaum B., et al. (2001). A prospective study of psychological distress and sexual risk behavior among black adolescent females. *Pediatrics, 108*(5), E85.

Dodds S., Blaney N. T., Nuehring E. M., Blakley T., Lizzotte J. M., Potter J. E., et al. (2000). Integrating mental health services into primary care for HIV-infected pregnant and non-pregnant women: Whole Life--a theoretically derived model for clinical care and outcomes assessment. *General Hospital Psychiatry, 22*(4), 251-260.

Doljanac, R. F., & Zimmerman, M. A. (1998). Psychosocial factors and high risk sexual behavior: Race differences among urban adolescents. *Journal of Behavioral Medicine, 21,* 451-465.

Erbelding, E. J., Hummel, B., Hogan, T., & Zenilman, J. (2001). High rates of depressive symptoms in STD clinic patients. *Sexually Transmitted Diseases, 28*(5), 281-284.

Erbelding, E. J., Hutton, H. E., Zenilman, J. M., Hunt, W. P., & Lyketsos, C. G. (2004). The prevalence of psychiatric disorders in sexually transmitted disease clinic patients and their association with sexually transmitted disease risk. *Sexually Transmitted Diseases, 31*(1), 8-12.

Gunn, R. A., Montes, J. M., Toomey, K. E., Rolfs, R. T., Greenspan, J. R., Spitters, C. E., et al. (1995). Syphilis in San Diego County 1983–1992: Crack cocaine, prostitution, and the limitations of partner notification. *Sexually Transmitted Diseases, 22,* 60-66.

Institute of Medicine (IOM). Eng, T.R., & Butler, W.T., (Eds.) (1997). The Hidden Epidemic: Confronting Sexually Transmitted Diseases. Washington, DC: National Academy Press.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Keller, S., Bartlett, J., Scheifler, S., Johnson, R., Pinner, E., & Delancey, B. (1991). HIV-related sexual behavior among a healthy inner-city heterosexual adolescent population in an endemic of HIV. *Journal of Adolescent Health, 12,* 44-48.

Lowry, D., & Schindler, J. (1993). Prime time TV portrayals of sex, Safe sex and AIDS: A longitudinal analysis. *Journalism Quarterly, 70,* 628-637.

Miller-Johnson, S., Winn, D., Coie, J., Maumary, G., Hyman, C., Terry, D., et al. (1999). Motherhood during the teen years: A developmental perspective on risk factors for childbearing. *Development and Psychopathology, 11,* 81-100.

National Mental Health Association (NMHA). (2004). Clinical Depression and African Americans. Alexandria, Virginia: Author.

Orr, S. T., Celentano, D. D., Santelli, J., & Burwell, L. (1994). Depressive symptoms and risk factors for HIV acquisition among black women attending urban health centers in Baltimore. *AIDS Education and Prevention, 6*(3), 230-236.

Paperny, D. M. (1997). Computerized health assessment and education for adolescent HIV and STD prevention in health care settings and schools. *Health Education and Behavior, 24,* 54-70.

Radloff, L. S. (1977). The CES-D scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement, 1,* 380-401.

Rost, K, Nutting, P. A, Smith, J., & Werner, J. J. (2000). Designing and implementing a primary care intervention trial to improve the quality and outcome of care for major depression. *General Hospital Psychiatry, 22*(2), 66-77.

Schuman P., Ohmit S. E., Moore J., Schoenbaum E., Boland R., Rompalo A., et al., HERS Group. (2001). Human Immunodeficiency Virus Epidemiology Research Study. Perceived need for and use of mental health services by women living with or at risk of human immunodeficiency virus infection. *Journal of the American Medical Women Association, 56*(1), 4-8.

Shrier, L. A., Harris, S. K., Strenberg, M., & Beardslee, W. R. (2001) Associations of depression, self-esteem and substance use with sexual risk among adolescents. *Preventive Medicine, 33,* 179-189.

Shrier, L. A., Harris, S. K., & Beardslee, W. R. (2002). Temporal associations between depressive symptoms and self-reported sexually transmitted disease among adolescents. *Archives of Pediatric and Adolescent Medicine, 156,* 599-606.

Turner, C. F., Ku, L., Rogers, S. M., Lindberg L. D., Pleck J. H., & Sonenstein F. L. (1998). Adolescent sexual behaviors, drug use and violence: Increased reporting with computer technology. *Science, 280,* 867-873.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

US Department of Health and Human Services (USDHHS). (2000). *Healthy People 2010: Understanding and improving health* (2nd ed.). Washington, DC: Author.

USDHHS. (1999). *Mental health: A report of the Surgeon General—Executive summary.* Rockville, MD: Author.

USDHHS. (2001). Mental health: Culture, race, ethnicity supplement to mental health: A report of the Surgeon General. Rockville, MD: Author.

Warren, B. J. (1994). Depression in African-American women. *Journal of Psychosocial Nursing and Mental Health Services, 32*(3), 29-33.

Weissman, M. M., & Klerman, J. K. (1992). Depression: Current understanding and changing trends. *Annual Review of Public Health, 13,* 319-339.

Williams, P. B., Ekundayo, O., Udezulu, I. E., & Omishakin, A. M. (2003). An ethnically sensitive and gender-specific HIV/AIDS assessment of African American women: a comparative study of urban and rural American communities. *Family and Community Health, 26*(2), 108-123.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

APPENDIX A

DATA COLLECTION INSTRUMENT

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

Control Group Questionnaire

Sociodemographic Characteristics

GENDER

"What is your gender?"

1=Female
2=Male

AGE

"How old are you?"

Enter number

RACE

"How would you describe yourself?"

1=African-American or Black
2=Caucasian
3=Hispanic or Latino
4=Asian, Pacific Islander or Filipino
5=American Indian, Alaskan Native or Native Hawaiian

EMPLOYMENT

"Are you currently…?"

1=Employed
2=Unemployed and looking for work
3=Unemployed and not looking for work
4=Retired
5=A homemaker
6=A student

GRADE (Educational Level)

"What's the highest grade you've completed?"

1=8th or lower
2=9th
3=10th
4=11th
5=High school diploma
6=Equivalency exam
7=College degree

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

MARITAL

Are you currently…?

1=Married
2=Single
3=Separated
4=Divorced
5=Widowed

HCPLAN

"Do you have any kind of health care plan?"

1=No
2=Yes

PAYSHC

"Is your health care plan paid by..?"

1=Your employer
2=Your parent's employer
3=You or someone else
4=Medicaid, Medical Assistance, or any other state-funded plan

MD12MO

"Other than today, have you been to a doctor or clinic for any reason in the last 12 months?"

1=No
2=Yes

WHYGO

"What was your reason for seeking care?"

1=You were sick or had a new problem
2=You had a regular scheduled visit
3=It was an unscheduled check-up

REASON

"Why did you come into the clinic today?"

1=Because you have symptoms
2=Because you were told that someone you had sex with was infected
3=because you just wanted to get checked out

Psychological Distress

"Please tell me how often you felt these emotions during the past week."

FDEPRESSED

"You felt depressed."

1=Less than one day
2=1 to 2 days
3=3 to 4 days
4=5 to 7 days

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

FLONELY

"You felt lonely."

1=Less than one day
2=1 to 2 days
3=3 to 4 days
4=5 to 7 days

FCRIED

"You cried"

1=Less than one day
2=1 to 2 days
3=3 to 4 days
4=5 to 7 days

FSAD

"You felt sad"

1=Less than one day
2=1 to 2 days
3=3 to 4 days
4=5 to 7 days

Interpersonal Victimization

HURT

"During the past 12 months, did your boyfriend, girlfriend, or spouse ever hit, slap or physically hurt you?"

1=No
2=Yes

FORCED

"Have you even been forced to have sexual intercourse when you did not want to?"

1=No
2=Yes

Substance use

BEFORESEX

"Do you usually drink alcohol or use drugs before having sex?"

1=No
2=Yes

Risky Sexual Behavior

NUMPART

"How many partners have you had sex with in the past year?"

Enter number

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

RCONUSED

"In the last month, when you've had sex with your main partner, how many times was a condom used?

Enter number

RCONNOT

"In the last month, when you've had sex with your main partner, how many times was a condom not used?"

Enter number

OCONUSED30

"In the last month, when you had sex with someone you don't think of as a main partner, how many times was a condom used?"

Enter number

OCONNOT30

"In the last month, when you had sex with someone you don't think of as a main partner, how many times was a condom not used?"

Enter number

HADSTD

"Have you ever been told by a doctor or a nurse that you had an STD?"

1=No

2=Yes

Current STD Infection

CHLAMYDIA

Current Ct

1=No

2=Yes

GONORRHEA

Current GC

1=No

2=Yes

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL FORM

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM

Institutional Review Board for Human Use

Form 4: IRB Approval Form
Identification and Certification of Research
Projects Involving Human Subjects

The Institutional Review Board for Human Use (IRB) has an approved Multiple Project Assurance with the Department of Health and Human Services and is in compliance with 21 CFR Parts 50 and 56 and ICH GCP Guidelines. The Assurance became effective on January 1, 1999 and the approval period is for five years. The Assurance number is M-1149.

Principal Investigator:	WILLIAMS, MAKEDA
Co-Investigator(s):	
Protocol Number:	**X030630004**
Protocol Title:	*Study of Depression and Sexual Risk Behaviors among African-American Women Attending an Urban STD Clinic*

The IRB reviewed and approved the above named project on 8-6-03. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This Project will be subject to Annual continuing review as provided in that Assurance.

This project received EXPEDITED review.

IRB Approval Date: 8-6-03

Date IRB Approval Issued: 8-6-03

Marilyn Doss

Marilyn Doss, M.A.
Vice Chair of the Institutional Review
Board for Human Use (IRB)

Investigators please note:

The IRB approved consent form used in the study must contain the IRB approval date and expiration date.

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.

470 Administration Building
701 20th Street South
205.934.3789
Fax 205.934.1301
irb@uab.edu

The University of
Alabama at Birmingham
Mailing Address:
AB 470
1530 3RD AVE S
BIRMINGHAM AL 35294-0104

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM
DOCTOR OF PHILOSOPHY

Name of Candidate Makeda Jeri Kimberly Williams

Graduate Program Health Education and Health Promotion

Title of Dissertation Depression and Sexual Risk Behaviors Among African American Women Attending an Urban STD Clinic

I certify that I have read this document and examined the student regarding its content. In my opinion, this dissertation conforms to acceptable standards of scholarly presentation and is adequate in scope and quality, and the attainments of this student are such that she may be recommended for the degree of Doctor of Philosophy.

Dissertation Committee:

Name	Signature
Diane M. Grimley, **Chair**	
Carol E. Cornell	
Susan L. Davies	
David M. Macrina	
Sharina D. Person	

Director of Graduate Program

Dean, UAB Graduate School

Date

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.