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INNOVATIVE SEXUALLY TRANSMITTED INFECTION PREVENTION-INTERVENTION FOR AFRICAN-AMERICAN ADOLESCENT GIRLS

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ABSTRACT

The purpose of this study is to determine whether implementation of an innovative STI prevention intervention design affects participants' knowledge of sexually transmitted infections and sexual self-efficacy. The population this research focuses on is African-American adolescent girls. The participants included in this study are aged 13-19. This particular population is disproportionately infected by sexually transmitted diseases, so it is vital that intervention programs be tailored to fit their culture- and gender-specific needs in order to achieve maximum results. However, current interventions for African-American girls could be improved. The researcher has designed an innovative STI prevention intervention that draws from current, best-evidence interventions. The researcher has hypothesized that: (1) participants that complete the intervention will have increased STI knowledge; and, (2) upon completion of the intervention, participants will have greater sexual self-efficacy.

Innovative Sexually Transmitted Infection Prevention- Intervention for African American Adolescent Females

African-American adolescent females are among the highest risk population for contracting a sexually transmitted infection (STI; Crepaz et al., 2009). This particular population

experiences a combined increase of potential risk because they are adolescent, female, and African American; data show that groups tend to be disproportionately infected by STIs (Centers for Disease Control and Prevention [CDC], 2000; CDC, 2012; Crepaz et al., 2009; Sales et al., 2011). Engaging in risky sexual behaviors further increases the risk of contracting an STI. For the purpose of this study, *sexual risk-taking behaviors* refers to the frequency of vaginal intercourse, number of sexual partners, or frequency of condom use. Several intervention programs have been designed to decrease sexual risk-taking behavior in African-American females (CDC, 2013; Crepaz et al., 2009). However, these programs alone do not sufficiently address the unique risks African-American adolescent girls face.

African Americans continue to be disproportionately affected by STIs such as HIV, gonorrhea, genital herpes, chlamydia, and syphilis (CDC, 2000; CDC, 2012; Raiford, Seth, & DiClemente, 2012). African Americans account for 63% of all gonorrhea cases, which is 30 times higher than the infection rate of Caucasians (CDC, 2000). African Americans also represent 65% of HIV diagnoses (Raiford et al., 2012). Similarly, the Centers for Disease Control and Prevention (2012) report that African-American females age 15-19 accounted for 7,719 cases per 100,000 females of chlamydia, as well as 39.7% of primary and secondary syphilis cases. This is 23 times the rate that white women of the same age group experience syphilis (CDC, 2012). The high prevalence of STIs in a population that accounts for less than 12% of the United States population is alarming, so it is critical to understand the factors that contribute to their high risk (Crepaz et al., 2009).

Demographics including age, socioeconomic status, and education account for the large disparity of STI between races. “Social and economic conditions, such as high rates of poverty, income inequality, unemployment, low educational attainment, and geographic isolation can make it more difficult for individuals to protect their sexual health” (CDC, 2012). Lower socioeconomic status (SES) has been associated with less parental involvement, which can result in adolescents engaging in higher sexual risk-taking behaviors (Sionean et al., 2001). Neighborhoods

characterized with lower SES also have higher prevalence rates of STIs within the pool of potential sexual partners (Sionean et al., 2001). With 1/3 of black men incarcerated or on probation, and higher death rates for young black males, heterosexual black females may have fewer options for black sexual partners (Aidmora & Schoenbach, 2005). This creates a power imbalance in favor of men. Limited male options and difficulty sustaining a mutually monogamous relationship (due to males' excess options) may influence black women's tolerance of concurrent sexual partnerships (Aidmora & Schoenbach, 2005). Furthermore, in a meta-analysis of behavioral interventions, Crepaz et al. (2009) reported that several studies suggest that insufficient power in African-American females' relationships lead them to lack control over condom use. Engaging in risky sexual behaviors, with little parental guidance, in areas where STIs are more prevalent can significantly increase the risk of contracting an STI.

As a demographic factor, age also contributes to potentially hazardous biological predispositions faced by teens who engage in sex at an earlier age. Biological factors such as cervical ectopy and an immature immune system contribute to younger female adolescents' increased susceptibility to contracting an STI (Sales et al., 2011). An underdeveloped nervous system is another biological factor accounting for adolescents' increased risk (Casey et al., 2008). Decision-making in an adult brain involves a cognitive-control network that favors rational outcomes, and a socioemotional network that favors reward-based outcomes. The cognitive-control network regulates behaviors of the socioemotional network, producing fewer impulsive decisions. However, since neither of these systems is fully matured in adolescents' brains, they are prone to higher impulsivity and less able to make good judgments (Casey, Jones, & Hare, 2008; Sales et al., 2011). These claims are supported by another study (Bachanas et al., 2002, p. 526) that stated, "Younger teens who are having sex seem especially vulnerable, as developmentally they are least equipped cognitively and emotionally to handle the demands of communicating with their partners about condom use and delaying intercourse."

Self-efficacy is a main component in Bandura's Social Cognitive Theory, which defines it as "the belief that one can take the necessary steps to produce desired outcomes" (Bandura, 1982; Jemmott & Jemmott III, 1992). Bandura (1982, p. 123) stated:

Self-efficacy judgments, whether accurate or faulty, influence choice of activities and environmental settings. People avoid activities that they believe exceed their coping capabilities, but they undertake and perform assuredly those that they judge themselves capable of managing. Judgments of self-efficacy also determine how much effort people will expend and how long they will persist in the face of obstacles or aversive experiences. When beset with difficulties people who entertain serious doubts about their capabilities slacken their efforts or give up altogether, whereas those who have a strong sense of efficacy exert greater effort to master the challenges. (p. 123)

Self-efficacy has three effects on behavioral outcomes, according to Social Cognitive Theory: those with stronger self-efficacy are (1) more likely to attempt a behavior, (2) put forth more effort to perform a behavior, and (3) exhibit more persistence in their attempts to succeed (Bandura, 1982; O'Leary, Jemmott, & Jemmott III, 2008).

In the present study, sexual self-efficacy is the confidence to engage in safe sex practices in relation to partner communication, sex refusal, and condom use (Sales et al., 2011). Perceived self-efficacy is a significant mediator in the success of intervention programs and, therefore, a strong predictor of sexual behavior change in adolescents (Jemmott & Jemmott III, 1992; O'Leary, Jemmott, & Jemmott III, 2008). "Perceived self-efficacy has been shown to affect whether people consider changing their behavior, the degree of effort they invest in changing, and long-term maintenance of behavioral change" (Jemmott & Jemmott III, 1992, p. 273). In the multivariate mediation analysis study

that revealed self-efficacy to be a significant mediator, O'Leary et al. also reported expected partner reaction and partner approval of condom use as significant mediators (O'Leary, Jemmott, & Jemmott III, 2008). However, results indicated self-efficacy to be the strongest mediator, implying that women's determination for condom use took precedence over anticipated partner reactions (O'Leary, Jemmott, & Jemmott III, 2008). Increased self-efficacy is best achieved through skill-building activities such as role-play and practice in applying condoms on lifelike models (O'Leary, Jemmott, & Jemmott III, 2008). In the current study, increased self-efficacy is a primary goal, thus there are multiple skill-building opportunities within the intervention to help strengthen participants' confidence in practicing safe-sex behavior.

Unfortunately, little that can be done to change one's demographics, therefore intervention programs focus on addressing modifiable factors associated with risky sexual behavior. Previous studies have identified many factors that are correlated to increased sexual risk-taking behavior. Among the factors, the following are generally more statistically significant correlates: low self-efficacy, substance use and power abuse (Bachanas et al., 2002; Raiford et al., 2012; Spitalnick et al., 2007).

Raiford et al. (2012) reported that girls who perceived themselves as having less power in their relationship, and girls who reported partner abuse, were more likely to test STI-positive. Furthermore, in a meta-analysis of behavioral interventions, Crepaz et al. (2009) suggest that insufficient power in African-American females' relationships lead them to lack control over condom use. These findings demonstrate the importance of promoting self-worth in intervention programs for young girls.

In a study that analyzed several factors of risky sexual behavior, substance use was reported as the highest correlating factor in the risky sexual behavior of African-American adolescent girls. Thus, girls who reported high rates of substance abuse also reported engaging in high rates of risky sexual behaviors (Bachanas et al., 2002). Despite the reported increase in risky behavior associated with substance use, the topic of substance use is absent or under-emphasized in intervention programs

for youth (CDC, 2013). In reviewing the Centers for Disease Control and Prevention's Compendium of Evidence-Based HIV Behavioral Interventions (2013), I found only one "best-evidence" intervention targeted for African-American youth that listed reduction in substance abuse to be a primary goal.

Focus on Youth (FOY) plus ImPACT targets high-risk African-American youth aged 12-16 living in low-income urban community sites (CDC, 2013). FOY+ImPACT is a skill-building intervention with theoretical basis in the Protection Motivation Theory (CDC, 2013). The intervention, designed to reduce substance use and sex risk behaviors of high-risk youth, is delivered to small groups of 5-12 participants (CDC, 2013). FOY delivers information on safe sex, drugs, alcohol, drug selling, and STDs through the use of games, discussions, and videos (CDC, 2013). The second part of the intervention, ImPACT, is delivered to individual youth and their parents and aims to increase parental monitoring and communication (CDC, 2013). This intervention explicitly discusses the role substance use plays in STI risk (CDC, 2013). However, it is designed for African-American girls *and* boys; therefore, it does not tap into the important gender-specific factors related to adolescent girls' increased risk (CDC, 2013).

An intervention program called Sistering, Informing, Healing, Living, and Empowering (SiHLE) tailored the program to fit the gender and cultural needs of African-American girls aged 14-18 (CDC, 2013). The SiHLE intervention is a skills training intervention intended to reduce risky sexual behavior. The intervention's theoretical constructs are derived from the Theory of Gender and Power, and Social Cognitive Theory (CDC, 2013). The intervention emphasizes ethnic and gender pride and increases participants' awareness of HIV risk reduction strategies (CDC, 2013). Through the use of role-play, lectures, and demonstrations, the intervention enhances confidence in initiating safer-sex conversations and sexual refusal (CDC, 2013). Thus, the intervention increases participants' sexual self-efficacy (CDC, 2013). Additionally, the intervention facilitators demonstrate

proper condom use and emphasize the importance of healthy relationships (CDC, 2013). However, SiHLE does not incorporate discussion about substance use (CDC, 2013).

Both of the previously described interventions may benefit from incorporating strategies from multiple sources and theoretical foundations, which is what this study will attempt to do. The researcher has designed an STI prevention intervention for African-American adolescent girls which incorporates the most important concepts from the currently existing interventions SiHLE and FOY+ImPACT. The intervention's primary goals are to increase participants' protective factors, (1) STI knowledge and (2) sexual self-efficacy. Increasing participants' STI knowledge and self-efficacy provides them with the necessary foundation to engage in safer sex practices in order to decrease their risk of contracting an STI.

METHOD

Participants

Participants in this study will be sexually active (within the last 60 days), African American, adolescent girls, aged 13-19. The researcher will recruit 20 participants from a Detroit public health clinic for youth, Oakwood Inkster Teen Health Center. Participants will be recruited using nonprobability convenience sampling, due to the private nature of the health clinic. Contact information and a brief description of the study will be posted on flyers in the waiting room. Prospective participants who contact the researcher will be told the purpose of the study and be invited to participate if they fit inclusion criteria (heterosexually active, African American, female, aged 13-19). Participants attempting to become pregnant, currently pregnant, and married women will be excluded from the study. If a participant is interested in joining the study she will be given an informed consent form (participants 18 and over). Participants under the age of 18 will be given an informed assent form, as well as an informed consent form for their parents/guardians to fill out and return. The researcher will seek IRB approval from Eastern Michigan University prior to data collection.

MEASURES

Demographics

A questionnaire will be completed by participants, prior to the intervention, which seeks the following demographic data: age, education, household monthly income, and poverty level. Participants will also be asked whether they have or have had an STI.

Sexually Transmitted Infection

Participants will provide self-collected vaginal swab specimens pre-intervention. Specimens will be sent to a laboratory to screen for chlamydia, gonorrhea, and trichomonas. The specimen will be screened for bacterial pathogens using BDProbeTec ET Chlamydia trachomatis and Neisseria gonorrhoeae Amplified DNA Assays. Trichomonas vaginalis will be identified by a noncommercial real-time polymerase chain reaction assay (Sales et al., 2011). A participant testing positive for one or more STIs will be noted as “STI positive.” Participants will be informed of any positive results and offered appropriate treatment of the sexually transmitted infection.

The following are self-administered surveys that participants will take pre- and post-intervention. These surveys will measure the participants’ STD knowledge and sexual self-efficacy. The researcher has hypothesized that implementation of the devised culturally and gender specific intervention will (1) increase STD knowledge and (2) increase sexual self-efficacy. The construct of the scales mentioned below will allow the researcher to determine the effectiveness of the intervention.

STI/HIV Knowledge

Participants’ HIV and STI related knowledge will be assessed using the HIV Knowledge Questionnaire (HIV-K-Q; Carey, Morrison-Beedy & Johnson, 1996). HIV-K-Q is a 45-item, true-or-false scale designed to measure knowledge of transmission, risk reduction strategies, and consequences of infection. Sample items include “Taking a test for HIV 1 week after having sex will tell a person if he or she has HIV,” and “Showering, or washing

one's genitals after sex keeps a person from getting HIV." Responses are coded so that higher scores signify greater HIV knowledge, and lower scores indicate less HIV knowledge. HIV-K-Q is reported reliable (internally consistent with $\alpha = .91$), and valid (Carey, Morrison-Beedy, & Johnson, 1996).

Sexual Self-Efficacy

Sexual self-efficacy will be assessed using The AIDS Prevention Self-Efficacy Scale (Kasen, Vaughan, & Walter, 1992). The 22-item scale measures the participants' confidence to refuse sexual intercourse, question potential sexual partners and use condoms. Sample items include "How sure are you that you would be able to say NO to having sex with someone you have known for a few days or less?"; "How sure are you that you would be able to ask your boyfriend about sexual relations that he has had in the past?"; and "How sure are you that you would be able to use a condom correctly?" Items are measured on a five-point scale with responses ranging from "(1) not at all sure" to "(5) very sure." Possible scores range from 22 to 110, with higher scores indicating higher self-efficacy to perform HIV-preventive behaviors. Internal consistency (Cronbach's $\alpha .76-.81$) has been reported in adolescent populations for The AIDS Prevention Self-Efficacy Scale (Kasen, Vaughan, & Walter, 1992).

PROCEDURE

The intervention is broken into 3 sessions, lasting approximately 4 hours each. Each is a small group session designed to promote bonding and discussion of shared experiences. Groups will consist of 5-10 participants led by a highly trained, African-American female facilitator. The facilitator will actively involve participants in discussions, games, videos and role play. The facilitator will deliver information in a non-judgmental way and establish a positive environment that empowers participants. The sessions will provide education about the risks and realities of STIs, build skills necessary to engage in safer sex practices, and improve confidence in carrying out those skills. An incentive of \$20 will

be provided to participants for attending the first session, and \$15 will be provided for each subsequent session. The intervention design was derived from an unnamed STI preventive behavioral intervention (Shain, Piper, Newton, et al., 1999), SiHLE, FOY+ImPACT, and intervention mapping strategies described by Tortolero, Markham, Parcel, et al. in 2005.

After agreeing to participate in the study, the initial pre-intervention visit will consist of collecting baseline data. Participants will complete the self-administered questionnaires. Participants will then be instructed by a trained professional on how to collect vaginal fluid using a lifelike model of a vagina. The self-collected vaginal swabs will be delivered to a nearby laboratory and tested for chlamydia, gonorrhea, and trichomonas. Participants will then choose a date to begin the intervention.

Session 1: Inform.

The first session of the intervention focuses on informing participants about risks and facts related to sexually transmitted infection. The session will teach girls about the transmission of STIs, how to detect symptoms (pictures), and behavior that increases the risk of contracting an STI. Participants will be informed of their increased risk of acquiring an STI as African-American



Figure 1. "Black Iris" by Georgia O'Keeffe.

adolescent females. Risk will be discussed as a problem related to biologic susceptibility and poverty, not skin color. The lecture will include power point slides and pictures to simplify difficult concepts. Participants will also be shown "Black Iris", by Georgia O'Keeffe (Figure 1). which metaphorically resembles the beauty of female genitalia. Showing participants the art is

designed to increase their self-esteem and allow them to view their bodies in a more positive light. The session will end with a video of real people with AIDS to demonstrate the potential effects of getting an STI and its impact on relationships. Trivia questions on important concepts will be administered throughout to keep participants engaged.

Session 2: Intervene

The focus of Session 2 is on teaching participants preventive strategies to engage in, and situations to avoid, in order to decrease their risk of infection. This session will consider barriers of condom use, including explicit discussions of gender and power abuse in relationships, and the danger of substance use. Participants will learn what to ask partners about current behavior and history. The facilitator will define and discuss power imbalanced relationships, dating violence and challenges of dating older males. Participants will be taught the risks associated with substance use (alcohol and illicit drugs), including damaging health effects and higher sexual risk behavior. This session seeks to increase participants' sense of self-worth and self-esteem through open discussions regarding participants' individual experiences.

Session 3: Empower

The final session provides skill-building opportunities to apply the knowledge gained in earlier sessions. Participants will learn about correct condom use and practice condom application on plastic penis models. Session 3 aims to increase communication skills in regard to sex negotiation and condom use through role-play with a male facilitator. The facilitator will discuss triggers of unsafe sex, and participants will brainstorm strategies to get out of situations they feel may result in unsafe sex. Participants will set goals for themselves and discuss limitations they foresee in regards to reaching their goals. The facilitator will address these concerns and end the session by providing information about local resources, and encourage participants to share information and build peer support.

Upon completion of the intervention participants will retake The HIV Knowledge Questionnaire and The AIDS Prevention Self-Efficacy Scale to assess the effectiveness of the program. Participants will also be debriefed, during which their concerns will be addressed. During the debriefing process they will be given informative brochures, condoms, and a list of referrals (counseling, STI testing centers and additional community resources) to encourage continued safe-sex practices.

PLAN FOR ANALYZING RESULTS

The researcher will analyze the demographic characteristics and report participants' mean age and years of education. The range of household monthly income will be reported, as well as the average number of participants above and below the poverty level. Total cases of positive STI results will be recorded. Data on participants who miss an intervention session or do not complete the study will be excluded from analyses.

The first hypothesis in this study is that participants who complete the intervention will be more knowledgeable about sexually transmitted infections. The researcher will test this hypothesis using a directional one-tailed *t*-test with a significance level of .001. A directional test was chosen because the researcher hypothesizes an increase in STI knowledge. The mean of scores will be assessed for the pre-intervention and post-intervention data drawn from The HIV Knowledge Questionnaire. A difference score will be calculated by subtracting one set of the pair of scores from the other. A calculation using the difference score will determine an estimate of the standard deviation. The researcher will calculate obtained *t*-value by subtracting the mean of difference scores (0) from the difference score and dividing this value by the estimated standard deviation. The critical value for $df= 19$ and $p= .001$ is 3.579. If the obtained *t*-value is higher than 3.579, the researcher will accept the hypothesis as true.

The second and final hypothesis in this study was that upon completion of the intervention, participants will have higher sexual self-efficacy. Researchers will test this hypothesis using a

directional one-tailed *t*-test with a significance level of .001. A directional test was chosen because the researcher hypothesizes an increase in sexual self-efficacy. The mean of scores will be assessed for the pre-intervention and post-intervention data of The AIDS Prevention Self-Efficacy Scale. A difference score will be calculated by subtracting one set of the pair of scores from the other. A calculation using the difference score will determine an estimate of the standard deviation. The researcher will calculate obtained *t*-value by subtracting the mean of difference scores (0) from the difference score and dividing this value by the estimated standard deviation. The critical value for $df= 19$ and $p= .001$ is 3.579. If the obtained *t*-value is higher than 3.579, the researcher will accept the hypothesis as true. Thus, the intervention increased participants' sexual self-efficacy.

DISCUSSION

This study attempts to assess potential improvements in STI prevention-interventions designed for African-American adolescent girls. Prevalence rates among young black women continue to rise, and it is vital that we address the issue in a manner best suited for their culture- and gender-specific needs. The researcher designed a unique intervention that aims to do just that. This study is a plan for future implementation, but in the meantime, current interventions should consider the concerns and possible solutions laid out in this intervention.

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