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Women's HIV Prevention Study (Whips): A Proposal to Pilot Test an HIV Intervention for Older African American Women Living with HIV

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WOMEN'S HIV PREVENTION STUDY (WHIPS): A PROPOSAL TO
PILOT TEST AN HIV INTERVENTION FOR OLDER AFRICAN
AMERICAN WOMEN LIVING WITH HIV

by

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DEDICATION

This dissertation is dedicated to three very important people. To my angel Carter Alexander Cherry, although you are not around to see the completion of this journey, I know that you have been watching over me to the end. I hope that I have made you very proud.

To the love of my life and my constant rock Sabrina Cherry. You have been my constant source of inspiration and motivation. Through all the long drives, late nights, hours of studying, many pages of writing papers, and days of preparing for exams, especially the qualifier, you were there and never hesitated to help me persevere. With all the help of proofreading, editing, fixing tables, typing references, talking through ideas, preparing me for exam questions, listening to me practice presentations, and just being a supportive shoulder and ear, you've worked just as hard as I have to get me to this point. I don't know how I could have done it all without you and I'm so grateful and appreciative that I didn't have to. I love you so very much and getting to the end of this journey would not mean as much if I didn't have you by my side to share in the celebration.

And finally, to my son Kareem Yearwood. I am so very proud of the man you have grown to be. I hope I have set some good examples for you to follow and I hope you have learned from the mistakes that I have made. Always know that you can achieve anything in life that you set your mind to as long as you stay motivated and disciplined.

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ABSTRACT

Despite improvements in treatments over the past 30 years, HIV /AIDS continues to be a major public health threat, particularly among sub-populations such as African American women. Midlife and older adults (those aged 40 years and over) are fast becoming a growing concern for HIV/AIDS infections, particularly older African American women. There has been limited research targeting midlife and older African American women living with HIV that aimed to reduce their transmission of HIV and promote them becoming prevention advocates. In response to this gap in the literature, a culturally tailored intervention guided by the IMB Model of behavior change that aimed to reduce sexual risk transmission, increase perceived social support and promote women becoming prevention advocates, was developed and pilot tested. A total of 58 African American women age 40 years and over were screened, enrolled, completed informed consent and randomly assigned to receive an 8-hour group intervention session or a time-matched control session. Study participants completed assessments at baseline, 1-month and 3-months later. Measures included demographic variables, self-reported sex behaviors by partner HIV status, HIV knowledge, HIV risk reduction intentions, HIV risk reduction self-efficacy, HIV risk reduction acts, perceived social support, and intentions to prevent HIV in others. Analysis included a repeated measures factorial ANOVA to detect differences between groups and over time. We found no significant difference between the groups and no intervention effect on the variables of HIV risk reduction

intentions, HIV risk reduction self-efficacy, HIV risk reduction acts perceived social support or intentions to prevent HIV in others. HIV knowledge scores changed over time, however no intervention effect was detected. Results also indicated that 83% (n=48) of the women reported having a male sex partner in the previous three months. Women in our study reported having unprotected vaginal sex with partners who were HIV +, HIV-, and whose HIV status was unknown at the time of sexual activity. At three month follow-up there were no significant differences found between the groups on the mean number of unprotected or protected sex acts and no intervention effect was found. Although there were no significant findings from this pilot, there is still much to be learned about the sexual health behaviors of midlife and older African American HIV+ women. Future research with this population might benefit from exploring the use of more gender focused theoretical models to understand the health behaviors of women. Future research with this population should also examine other psychosocial variables related to sex behaviors such as social and sexual networks.

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CHAPTER I. INTRODUCTION

As we enter the third decade of the HIV/AIDS epidemic less attention has been given to this issue in the United States even though the prevalence of HIV infection continues to be a growing problem in many populations in this country. Although race and gender are not risk factors for HIV/AIDS, both have disproportionately impacted African American women (Prather, Fuller, King, Brown, Moering, Little, and Phillips, 2006). African American women represent only 14% of the US female population, yet they account for over 67% of all HIV sero-positive women and over 52% of women with AIDS in the US (Stampley, Mallory, and Gabrielson, 2005). As rates of HIV/AIDS infection in women continue to climb heterosexual African American women remain particularly vulnerable. Heterosexual contact is by far the primary transmission route in US women of all ethnicities, accounting for 75% of African American , 72% of Hispanic, and 65% of white women living with HIV/Aids in 2007 (Weeks, Li, Coman, Abbott, Sylla, Corbett, and Dickson-Gomez, 2010).

Since the beginning of the epidemic, much of the HIV prevention efforts aimed at women have targeted women of child-bearing age, however a growing body of research indicates that older adults, particularly older African American women are becoming infected with HIV/AIDS (Winningham, Corwin, Moore, Richter, Sargent, and Gore-Felton, 2004, Tufts, Wessess, and Kearney, 2010). In 2000, 25% of all women diagnosed with AIDS were aged 45 years or older at the time of their diagnosis - up from 17% in 1994 (Nuendorfer, Harris, Britton, and Lynch, 2005). In 2002, HIV infection became the

fourth leading cause of death for African American women aged 45-54 years (Mallory, Harris, and Stampley, 2009). Recent CDC surveillance (CDC, 2007) estimates that persons aged 50 and over account for 15% of new HIV/AIDS diagnosis, 24% of persons living with HIV, and 29% of persons living with AIDS. While some women over 50 who are living with HIV were previously living with HIV and have aged into this population group, the majority of HIV and AIDS infections among women older women are new infections (Jacob and Kane, 2009). These data suggest that as the population of midlife and older adults living with HIV/AIDS in the United States continues to rise, risk-reduction interventions for HIV-infected older African American women are needed to help curtail the spread of HIV.

1.1 Specific Aims

African American women 40 years and older living with HIV/AIDS may have prevention needs that extend beyond those of their younger counterparts. Older women are well versed in being care-givers and as such, may have greater difficulty disclosing their HIV status to their family and relationship partners. Studies have shown a correlation between disclosure of HIV status and engaging in safer sex practices (Serovich, et al.2007, Kalichman et al. 2001) which suggests that older women who have difficulty disclosing their HIV status may be less likely to practice safer sex behaviors thus increasing their risk of HIV transmission and infection with other STI's. Additionally, because of their life stage these women may need enhanced skills to discuss issues of sexuality, sexual risk reduction and negotiating safer sex. The SHARE Project research group recently collected data from 110 HIV positive women over 40 - most of whom were African American - and found that half of these women reported current

sexual activity, with 22% reporting unprotected sexual intercourse in the previous 3 months. Data showed that these women reported having sexual partners that are HIV negative and of unknown status, highlighting the need for a tailored risk-reduction intervention.

There are very few published interventions targeting HIV/AIDS prevention for HIV+ African American women over 40. The proposed study pilots an intervention for midlife African American women with HIV that aims to reduce sexual risk, enhance decision making skills that lead to disclosure of HIV status, and enhance skills to become HIV prevention advocates. The proposed study will bring women together in small groups to learn and practice skills that will help them to increase disclosure of their HIV status, reduce high-risk sexual behavior, and increase social support to cope with their HIV status. Additionally, the proposed study will prepare and encourage women to become HIV prevention advocates for both younger and older African American women at high-risk for HIV infection. The study aims to answer the following research questions:

- 1) Will women in the experimental program report less risky sexual behavior (i.e. more protected sexual acts, less unprotected sexual acts), than those in the comparison program following the intervention?
- 2) Will women in the experimental program report higher rates of perceived social support than those in the comparison program following the intervention?

The specific aims are to:

Aim 1. Examine the impact of a pilot intervention with older African American HIV + women on high-risk sexual behaviors and self-reported social support.

Aim 2. Examine the impact of the intervention on intentions to engage in activities that promote HIV prevention in others.

Aim 3. Examine the association of changes in scores on the Information-Motivation-Behavioral skills (IMB) constructs and changes in reported acts of protected and unprotected sex of women participating in the intervention.

CHAPTER II. BACKGROUND AND SIGNIFICANCE

2.1 Sexual Activity and Older Adults

Since the beginning of the epidemic, more than 119,000 adults over the age of 50 have been diagnosed with AIDS in the United States (CDC, 2006). The prevalence of HIV/AIDS among midlife and older adults continues to dramatically increase, making them a vulnerable at-risk sub-population. Once thought to be a disease of gay men, intravenous drug users, and young people, HIV/AIDS is becoming more evident in older populations (Bielski, 1999). Much of the HIV prevention efforts have targeted men who have sex with men (MSM), youth, and women of child-bearing age, which may influence many to mistakenly believe that older adults are not at risk for HIV/AIDS. A common American myth is that older people are neither interested in nor participate in sex (Bielski, 1999). There is evidence that midlife and older adults are engaging in sexual activity, including behaviors that may place them at risk for HIV (Mallory, Harris and Stampley, 2009; Lovejoy et al., 2008; Sormanti & Shibusawa, 2007; Paranjape et al., 2006; Neundorfer et al., 2005; Binson, Pollack and Catania, 1997).

Schensul, Levy, and Disch (2003) conducted a study to examine the influence of individual, contextual, and social network features on HIV prevalence and risk behavior among midlife and older adults living in senior housing in low-income neighborhoods in urban areas. Structured interviews were completed with 389 residents aged 50 years or older and assessed health status, drug use, sexual partnerships, sexual behavior, HIV knowledge and attitudes, and attitudes toward potentially high-risk sexual behaviors.

Results indicate that 60% of men and 24% of women reported engaging in sexual activity in the previous six months. Regarding penetrative or high-contact sexual practices, 38% of the sample reported engaging in vaginal sex in the previous six months, while 18% reported engaging in oral sex, and 3% reported anal sex (Schensul, Levy, & Disch, 2003). Among those in the sample who reported sexual activity in the previous six months, 66% reported having only 1 sex partner during that period (typically neither a spouse nor an apartment cohabitant), 17% reported 2 partners, and 17% reported 3 or more partners, however, only 20% said they regularly used condoms.

2.2 HIV Risk Patterns in Older Women

Midlife and older women are engaging in sexual activity, including behaviors that place them at risk for HIV infection. As early as 1997, Binson, Pollack, and Catania examined AIDS-related risk behavior and safer sex practices among midlife and older women using data from the National AIDS Behavioral Surveys (NABS) and the NABS urban sample (which focused on 23 major metropolitan areas considered high-risk cities). They examined behaviors of women aged 40 to 75 and found that 8% had engaged in behaviors that might expose them to HIV (Binson, Pollack, and Catania, 1997). The authors found that 75% of women in the national sample and 66% of those in the high-risk cities sample reported engaging in sexual relations in the past 6-months. They further report that over 90% in the national sample and 75% in the high-risk cities sample had never used condoms.

Since that time, others have also found that midlife and older women engage in high-risk sexual practices. For example, Sormanti and Shibusawa (2007) recruited women aged 50-64 from primary health clinics and a hospital emergency department who

completed questionnaires that examined sexual practices and HIV prevention behaviors. Results indicate that of the 623 participants who reported being in a heterosexual relationship, 73% reported having vaginal sex in the past six months, with only 12% of those reporting always using a condom. In this sample, 81% reported never using a condom, and the remaining 7% reported inconsistent condom use (Sormanti and Shibusawa, 2007). Similarly, Lindau, Leitsch, Lundberg, and Jerome (2006) conducted a cross-sectional survey with women aged 58-93 to assess sexual attitudes, behavior, and communication about sexuality and HIV/AIDS among older women. They found that almost a third of the women (27%) reported having a sexual partner in the last month and 38% had at least one sexual partner in the past year. Of the women who were sexually active, only 28% used a condom at their last sexual act (Lindau, Leitsch, Lundberg, and Jerome, 2006).

Further evidence of these trends can be found in a cross-sectional study of inner-city women 50 and older conducted by Paranjape and colleagues (2006) to understand the effect of relationship factors on safer sex practices among older women living in a high HIV incidence region. Of the 155 sample participants in a current relationship, 81% were sexually active however, only 13% of those women used condoms frequently (Paranjape et al., 2006). Similarly, Winningham and others (2004) conducted a cross-sectional study of African American women 50 and older living in rural communities to understand HIV risk behaviors among this population. The authors found that 67% of the women had at least one sex partner in the past five years, and of these, more than half (59.5%) reported at least one HIV sexual risk behavior (Winningham et al., 2004). Additionally, 15%

reported they had exchanged sex for an item of value, and 11% reported that they had sex with someone who was HIV positive.

When studies compared risk patterns for African American and White women, African American women were disproportionately at risk (Sormanti and Shibusawa, 2007, Paranjape et al., 2006, Lindau et al., 2006, Binson, Pollack, and Catania 1997). For example, Lindau et al. (2006) found that African American women were more likely than Whites to have had a sexual partner in the past year (59% vs. 27%) , while Binson, Pollack, and Catania (1997) report that African American women were more likely than White women to report an HIV risk factor (13.6% vs. 6.6%). When examining condom use among African American and White women, Paranjape and colleagues (2006) reported that more White women than African American women used condoms (33% vs 27%), whereas Sormanti and Shibusawa (2007) found that White women were 60% more likely than African American women to use condoms.

2.3 Factors Associated with High Risk Behavior in Older Women

Several factors such as lack of HIV risk information, limited skills to communicate about safer sex, and low rates of confidence in using condoms have been found to influence risk taking behaviors of midlife and older women. Compared to younger women, these women may need additional education and skills training that prepare them for rapidly changing rules governing sexual and intimate relationships. These women may benefit from information about HIV transmission and risk, communication skills that specifically target sexual risk and safer sex, and skills that could enhance condom use among older women. For example, regarding knowledge of sexual transmission and prevention of HIV, a survey conducted by Henderson et al.

(2004) found that a majority of the 564 respondents (65%) scored poorly, answering four or fewer questions correctly out of a possible nine; the mean knowledge score was 3.7. When asked about where they had received information about HIV, the most frequently identified source was television (85%), followed by friends (54%), family (51%), and the newspaper (51%), while only 38% reported receiving information from a health professional (Henderson et al. 2004). Similarly, Landau and others (2006) found that only 55% of midlife women reported having discussed sex and HIV prevention with a health care provider, with most of these conversations being initiated by the patient and not the care provider.

Communication with sex partners and potential sex partners about safer sex practices may also be a challenge for midlife women. Winningham and colleagues (2004) report that women who engaged in a higher number of risk activities had less self-efficacy in condom usage and were less comfortable in communicating with their partner about sex than those with lower HIV risk. Likewise, Crosby, Yarber, and Meyerson (2000), found that African American women were less likely than women of other races to ask about a partner's sexual history and less likely to ask if the partner had HIV. Qualitative studies conducted with midlife and older women examining influential HIV risk factors, have also found communication with sex partners a recurring theme among these women (Rich, 2001; Neundorfer, Harris, Britton, and Lynch, 2005; Mallory, Harris, and Stampley, 2009). Lastly, condom use in midlife and older women has been found to be associated with condom use self-efficacy (Paranjape et al. 2006; Winningham et al. 2004) and women's perception of being at risk for HIV (Sormanti and Shibusawa, 2007; Zablotsky and Kennedy, 2003).

The imbalance of power in gendered relationships is a factor that increases sexual risk of HIV infection for women including midlife and older women. According to the Theory of Gender and Power (Connell, 1987), there are three social structures: sexual division of labor, sexual division of power, and the structure of cathexis that work together to define and explain the heterosexual relationship between men and women and have an influence on women's health. Women have historically had disadvantaged legal status, inequities in compensation for work outside the home, and less access to equitable employment opportunities and positions of power in social institutions, however, researchers in HIV prevention and gender studies have recognized that gender roles which dictate how sexual encounters are negotiated often means that women have unequal power in sexual decision making thus increasing their risk for HIV infection (Dworkin, Beckford, and Ehrhardt, 2007; Harvey & Bird, 2004; Rich, 2001; Soet, Dudley, and DiIorio, 1999; Amaro, 1995). For example, Amaro (1995) notes that although the major prevention method to reduce sexual transmission of HIV is a traditional male condom, the risk reduction behavior for men is wearing the condom, whereas the behavior for women is persuading the male partner to wear a condom, or in some cases, deciding not to have sex when the male partner refuses to wear a condom. In a qualitative study conducted by Rich (2001) women expressed their limited power to negotiate condom use as a barrier to HIV prevention and Amaro (1995) found that in nearly 75% of 69 women-only focus groups, the issue of power and gender roles emerged as a central barrier to risk reduction. Further evidence of gender roles and unequal power in sexual decision making can be seen in a study conducted by Soet, Dudley, and DiIorio (1999) who found that women who perceived themselves as having less power in

intimate relationships were less confident in their abilities to negotiate sex, use condoms successfully, and discuss safer sex.

However, unequal power does not mean that women are completely powerless in intimate relationships and the ability to reduce sexual risks. In their qualitative analysis of women attending an HIV prevention intervention, Dworkin, Beckford and Ehrhardt (2007) found that women in the experimental and control groups (63% and 58% respectively) felt they should determine the pace of sexual encounters, indicating their belief that women have power in sexual decision making. As an alternative to the male condom, the female condom has been on the market for more than a decade and has recently gained renewed recognition as a risk reduction method that empowers women to make decisions about sexual risk taking (Chicago Tribune, 2010). Additionally, Harvey and Bird (2004) and Amaro (1995) point out that power in relationships is not exclusively defined as “power over” that is expressed as control, but also includes “power to” which provides the capacity to act purposefully to make decisions. Thus a risk-reduction intervention for older African American women with HIV should include relevant HIV information, enhance communication skills, and address the power dynamics of male-female relationships.

Another factor that may be associated with risk of HIV transmission in older women is the effects of menopause. Although research is currently limited, this seems to be an emerging issue concerning HIV transmission and midlife women. Menopause is characterized by the transition in a woman’s life from a reproductive period marked by regular ovulation and menstrual cycles to a period marked by significant changes in hormone levels and a lack of menstrual cycles (Fan, Maslow, Santoro, and Schoenbaum,

2008). A literature review conducted by Kojic, Wang, and Cu-Uvin (2007) found that women infected with HIV tend to experience an earlier onset of menopause with a median age at onset of 46 years compared to 51 years for women not infected with HIV. During the menopausal transition women experience many common symptoms including hot flashes, night sweats, mood lability, thinning of vaginal tissue, vaginal dryness, sleep disturbances, memory loss, and depression. However, thinning of vaginal tissue and vaginal dryness are of most concern as risks for HIV infection because these symptoms may increase vaginal tearing during intercourse and increase risk for transmission (Bach, 1995).

Kojic, Wang, and Cu-Uvin (2008) found in a sample of 120 HIV infected mostly African American postmenopausal women aged 40-57 years that 53% reported experiencing vaginal dryness which is higher than the prevalence of about 15% among African American women not infected with HIV. Although there is scarce data on condom use by menopausal HIV positive women, one study examining changes in condom use for women passing through menopause (n=1177) that included HIV positive and negative women found that women self-reported using condoms 74% of the time pre-menopausal compared to 70% of the time post-menopausal (Massad, Evans, Wilson, Golub, Goparaju, Howard, Greenblatt, Weber, and Schilder, 2008).

2.4 Behaviors of Midlife and Older Women with HIV

Although limited, research has shown that midlife and older individuals infected with HIV are engaging in high risk behaviors and could potentially benefit from interventions that provide prevention education and risk reduction skills building. Lovejoy and colleagues (2008) reported that 72% of heterosexual men and 21% of

heterosexual women were sexually active in the previous three months and that 35% of the heterosexually active women did not use condoms regularly, a study with 290 HIV-infected adults 50 years of age and older. Similarly, Illa and others (2008) examined the behaviors of 210 men and women aged 45 and over and reported that 87% of the men and all the women (100%) reported engaging in vaginal sex in the previous six months, while 20% of men and 5% of women engaged in anal sex. Almost 20% of the sexually active participants reported not using condoms consistently, and 61% of women reported having had sex with at least one partner whose HIV status was negative or unknown.

Research with older HIV positive women has also shown that these women fulfill important roles as caregivers (Wight, LeBlanc, and Aneshensel, 1998; Plach, Stevens, and Keigher, 2005) and may have an increased need to practice self-care and gain support for managing their health in the face of HIV infection (Clark, Lindner, Armistead, and Austin, 2003; Parker and Aggleton, 2003; Owens, 2003). Because these women may often care for children and grandchildren, some of whom are also HIV infected, they may likely put the care and needs of others above themselves. A study conducted by Wight, LeBlanc and Aneshensel (1998) found that on average these women devoted over 20 hours per week to caring for others, yet almost two thirds reported experiencing at least one chronic physical symptom, concluding that women were too busy managing the care of others to take adequate care of themselves. Jones and colleagues (Jones et al. 2003) found that among a sample of African American women with HIV, family stress -including the dual challenges of parenting and managing their own health care needs -predicted a decline in women's self-reported health. Similarly, in a qualitative study of African American women with HIV conducted by Owens (1993),

women reported that family-related stress greatly contributed to their concerns about not maintaining their health. Midlife African American women living with HIV may benefit from an intervention that stresses the importance of striking a balance between caring for others and practicing self-care particularly with respect to physical and sexual health.

2.5 The Role of Social Support

Social support is an important factor in helping promote and maintain positive behavior change. For individuals living with HIV/AIDS having a supportive network can be an intricate part of helping to manage their infection as well as maintain healthy behaviors that reduce the risk of transmitting the virus to others. Research has highlighted several key areas in which social support can be particularly important in HIV prevention and health maintenance behaviors. Carlos and colleagues (2010) conducted a study examining the relation between peer support for condom use and unprotected anal sex in a sample of 1,648 Black and Latino MSM and found that men in both racial groups who reported low peer support of condom use had higher odds of reporting unprotected anal intercourse. Similarly, a study was conducted with 461 African American and Latina women to examine the social influences of adopting and using the female condom. The results revealed that among peer level influences, having positive peer or network influences supporting the use of female condoms was associated with having ever used a female condom and having used a female condom in the last 30 days (Weeks, Li, Coman, Abbott, Sylla, Corbett, and Dickson-Gomez, 2010).

Social support has also been found to be an important aspect in areas such as disclosure and overall mental health. Focus groups conducted with 104 HIV positive individuals to assess perceptions of disclosing one's HIV serostatus to others found that

disclosure of one's HIV + status to others depends on social relationships and support, fear, and stigma, with social relationships and support being the predominant theme (Bairan, Jones-Taylor, Blake, Ahers, Sowell, Mendiola, 2007). Likewise, Kalichman and others (2003) conducted interviews with 331 HIV positive men and women to examine patterns of HIV status disclosure and social support and results indicated that rates of disclosure across various types of relationships were related to social support and lower levels of general social support were associated with depressive symptoms. Research conducted by McDowell and Serovich (2007) with 125 HIV+ women and 232 HIV+ men that compared the ways in which perceived and actual social support affect mental health concluded that for women, gay men, and straight/bisexual men perceived social support versus actual social support was significantly more predictive of mental health. However for HIV+ women, perceived support from family was paramount. Similar to other chronic illnesses, social support can buffer the stress associated with living with HIV/AIDS and can promote a sense of emotional well-being (Kalichman, Di Marco, Austin, Luke and DiFonzo, 2003). Midlife and older HIV + women who are experienced at providing support for the family structure may be in critical need of increased social support to help them manage their illness, as well as promote HIV risk-reduction behaviors.

2.6 Interventions for HIV Positive Midlife African American Women

Although prevention interventions have targeted individuals living with HIV (Kalichman et al. 2001; Wingood and DiClemente, 2004), African American women (DiClemente and Wingood, 1995), and midlife HIV positive adults (Illa et al. 2008), to date there has been little published research targeting midlife African American women living with HIV. Mize, Robinson, Bocking, and Scheltema (2002) conducted a meta-

analysis of the effectiveness of HIV prevention interventions for women in the US. The authors evaluated findings across five ethnic groupings (all ethnicities combined, African American, White, Hispanic, and Mixed Ethnicity group) on three HIV-related sexuality outcome variables (HIV/AIDS knowledge, self-efficacy and sexual risk reduction behavior). Results indicate that HIV interventions appear effective at improving knowledge about HIV/AIDS and increasing sexual risk-reduction behaviors for all ethnicities, however findings for self-efficacy are less consistent for African American women (Mize, Robinson, Bockting, and Scheltema, 2002). A meta-analysis of 354 HIV prevention interventions conducted by Albarracin and colleagues (2005) found the effective interventions can have intervention contact time ranging between 90 minutes and 12-hours, however the most effective interventions were those that contained attitudinal arguments, educational information, behavioral skills arguments, and behavioral skills training. Studies have shown (Kalichman et al. 2001; Wingood and DiClemente, 2004), that an 8-hour HIV group intervention can effect behavior change that is sustained over time, however these studies have followed participants for at least 12 months.

The CDC has comprised a compendium of best-evidence HIV behavioral interventions. A review found that among the 41 interventions outlined as best practices 20 specifically target heterosexual adults, 11 specifically target women, 3 specifically target African American women, 4 specifically target HIV positive individuals, while none specifically target HIV positive African American women (CDC, 2009). Among the 3 interventions that target African American women, each aim to reduce HIV risk behaviors and each include a skills-building component to risk reduction. However, all

were designed for HIV negative women and therefore do not deal with some issues that are specifically relevant for women living with HIV. Two of these interventions were designed for women who actively use substances and as such, the skills-building components have a heavy focus on reducing substance use behaviors that increase risk for HIV. Of the 4 interventions targeting HIV positive individuals, 3 were designed for mixed-gender populations (although men and women attended the interventions separately) with one of the three specifically targeting individuals with a history of childhood sexual abuse, while women in the others made up less than a third of the study sample. Although it doesn't specifically target African Americans, there is one CDC evidence-based intervention designed for HIV positive women. The intervention includes skills building activities to reduce HIV transmission, including communication and condom use skills. However the intervention targets women of child-bearing age and does not address HIV disclosure.

A literature review conducted by Stampley, Mallory and Gabrielson (2005) revealed four reports specifically targeting African American women aged 40-65 and five reports including this population that also included men and other ethnic/racial minorities. Most of these studies were descriptive correlation or cross-section surveys (Stampley, Mallory and Gabrielson, 2005). Finally, Cornelius, Moneyham and LeGrand, (2008) found that some aspects of an HIV prevention curriculum designed for younger and adapted for older African American women were effective with older African American women, but other aspects were considered irrelevant or inappropriate for older African American women. These data demonstrate that interventions targeting African American women can be effective, are needed, and must be designed specifically to meet

the needs of midlife women living with HIV. The proposed study will pilot an intervention targeting midlife women infected with HIV and could greatly contribute to the scientific literature regarding this growing and vulnerable sub-population. Although the proposed pilot study can apply to women of other ages, it will be based on an underlying theme of “self-care” uniquely tailored for midlife and older women who may find themselves in multiple care-giving roles.

2.7 Preliminary Studies

Our research team has been conducting ongoing HIV behavioral research with individuals infected with HIV for more than a decade. The principal investigator of the research group Seth Kalichman, Ph.D., and the student investigator for the proposed research Charsey Cherry, DrPH (candidate) have extensive experience conducting National Institutes of Health (NIH) funded AIDS behavioral intervention research. Through our Atlanta-based research site we have recruited more than 1800 HIV positive research participants for a variety of studies. Two previous studies are particularly relevant as a foundation for the proposed research.

Study 1): In a randomized controlled trial, we tested a behavioral intervention designed to reduce HIV transmission risk behaviors. The intervention model was grounded in Social Cognitive Theory, emphasizing the importance of building behavioral skills, enhancing self-efficacy for practicing risk-reduction behaviors, promoting intentions to change risk behaviors, and developing strategies for behavior change. Participants were 233 HIV-positive men and 99 HIV-positive women who were recruited from infectious disease clinics and AIDS services, and were randomly assigned to receive either a 5-session group intervention focused on strategies for practicing safer sexual

behavior, or a 5-session, contact-matched health maintenance support group. Participants completed measures at baseline, immediate post-intervention, 3 months and 6 months following the intervention. Measures included demographic and health characteristics, measures of self-efficacy, behavioral intentions, and behavioral change strategies relevant to risk reduction, and individual interviews to ascertain the HIV status of their sexual partners and rates of sexual practice. Results showed that participants in the intervention to reduce risk of HIV transmission demonstrated significantly less unprotected intercourse and greater condom use at follow-up than those in the control group.

Study 2): We conducted a randomized clinical trial to test an integrated behavioral intervention designed to enhance using HIV treatment as prevention by improving medication adherence, reducing risks for other sexually transmitted diseases, and minimizing risk compensation beliefs. Participants were 310 HIV positive men and 126 HIV positive women who were randomly assigned to the intervention condition which consisted of 5-120 minute group sessions with 2-30 minute individual sessions, or a time-matched control condition. Participants completed measures at baseline, and 3, 6, and 9 month follow-ups. Measures included demographic and health characteristics, sexual risk behaviors, sexually transmitted infection history, and adherence and prevention strategies and risk compensation beliefs. HIV treatment adherence was also monitored with monthly unannounced telephone-based pill counts. Main outcome analysis indicated that participants in the integrated transmission risk reduction intervention demonstrated increased antiretroviral therapy adherence and less unprotected intercourse with non-seroconcordant partners at 3 and 6 month follow-ups as well as fewer new sexually transmitted infections diagnosed over the 9 month follow-up period (adjusted odds

ratio=3.0; $p < .05$; 95% confidence interval = 1.01, 9.04). The integrated intervention participants also reduced their behavioral compensation beliefs.

2.8 Informal Interviews with Midlife and Older HIV+ Women

To further guide the development of this intervention and as a motivational influence to pursue this research, the student investigator has conducted informal interviews with approximately six HIV positive African American women aged 50 years and older. Most of these interviews were informal conversations (usually initiated by the women) with women who were participants in one of the studies conducted at the research site, however one interview was done as part of the requirements for the course EDRM 740 Qualitative Research Education. During these interviews many of the women spoke about the difficulty of balancing the desire to nurture dating relationships with the reality of having to disclose their HIV status. They also described the challenges of caring for children and grandchildren and often putting their own needs last. Additionally, many of them spoke of desire to “tell their story” and help prevent others from becoming infected with HIV. These conversations, along with the student investigator’s intervention work guided the development components of this pilot study, particularly the component of prevention advocacy and the theme of self-care.

CHAPTER III. RESEARCH DESIGN AND METHODS

3.1 Theoretical Model

The proposed pilot intervention will be conceptually guided by the Information-Motivation-Behavioral Skills (IMB, Fisher & Fisher, 1992) model of risk preventive behavior. The IMB model proposes that information and motivation activate behavioral skills to ultimately enact risk reduction behaviors (see figure 1). According to the model, information that is directly relevant to HIV transmission and HIV prevention is a prerequisite of risk behavior change. Motivation to engage in HIV preventive behavior - which is a function of attitudes towards performance of HIV preventive acts, social norms regarding performance of such acts, and perceptions of personal vulnerability to HIV - is a second determinant of HIV risk behavior change (Fisher & Fisher, 1992). This construct can be operationalized as behavioral intentions and has been successfully measured as such in other HIV prevention interventions (Belcher, Kalichman, Topping, Smith, Emshoff, Norris, & Nurss, 1998; Kalichman, Rompa, Cage, DiFonzo, Simpson, Austin, Luke, Kyomugisah, and Buckles, 2001). Behavioral skills for performing HIV preventive acts and self-efficacy for performing the acts are a third critical determinant of HIV risk behavior change. Information and motivation are thought to affect the use of risk reduction behavioral skills that are necessary for initiating and maintaining patterns of HIV risk behavior change. The model further proposes that risk reduction information and motivation may each have direct effects on HIV risk reduction behavior change, thus they are regarded as independent constructs in the model.

The information component often encompasses education about HIV, such as modes of transmission, methods of prevention and methods of the disease process. The information component can include other educational information relevant to risk reduction behavior change, for example information regarding HIV testing in a primary prevention program or information on self-care in a secondary prevention program. The motivational component typically includes education and activities that aim to motivate individuals to engage in risk reduction behaviors. The motivational component of the pilot intervention is likely to attempt to promote positive attitudes towards HIV prevention behaviors, such as positive attitudes towards condom, and increase intentions to engage in these behaviors. The behavioral skills component of the model focuses on strategies that enhance behavioral skills that lead to enacting HIV prevention behaviors, such as using condoms, not sharing IV drug use equipment and disclosure of one's HIV status.

The IMB model was selected over the Theory of Reasoned Action (TRA) and Social Cognitive Theory (SCT), two theoretical frameworks often used to guide HIV prevention interventions, because the model has a strong focus on skill acquisition and readily incorporates key constructs from both theories. The Theory of Reasoned Action (Fishbein and Ajzen, 1975) purports that in order for behavior change to occur one must have an intention to change and those intentions are influenced by two major factors: attitudes toward the behavior and normative beliefs about the behavior. The major constructs of TRA are attitudes and subjective norms, yet aspects of these constructs are also intricately laced within the IMB model as part of the motivational component. The premise of Social Cognitive Theory (Bandura, 1977) is that behaviors are dynamic, and

influenced by both personal factors (including cognition) and environmental factors (reciprocal determinism) and that behavior is learned through direct experience or by modeling others' behaviors through observation. Key constructs of SCT are self-efficacy, outcome expectations, and skill acquisition, while the IMB model also places a high value on the constructs of self-efficacy and skill acquisition.

The IMB model recognizes that an important factor in behavioral skill acquisition leading to behavioral skill enactment is the construct of self-efficacy - a person's belief about his/her ability and confidence in performing a particular behavior and belief that it can be done even under difficult circumstances. The model utilizes constructs that have been used in a number of HIV prevention interventions and found to be effective mediators of behavior change. For example, a meta-analysis of HIV prevention intervention effectiveness conducted by Mize et al. (2002) found that among HIV-related sexuality outcome variables, interventions were most effective for women regardless of ethnicity when they targeted HIV/AIDS knowledge, self-efficacy, and sexual risk-reduction behavior. Similarly, a meta-analysis conducted by Albarracin and colleagues (2005) containing a sample of 354 HIV prevention interventions and 99 control groups found that the most effective interventions were those that contained attitudinal arguments, educational information, behavioral skills arguments, and behavioral skills training. Additionally, the authors report that attitudinal arguments, information, self-management skills training, and HIV counseling and testing exerted more positive impact among females than among males, and that attitudinal arguments, behavioral skills arguments, and condom provision were associated with significant increases in condom use (Albarracin et al., 2005). The IMB model has rapidly gained acceptance as a

conceptual model for guiding HIV risk reduction interventions and has been used with various populations including women (Belcher et al, 1998, Carey et al., 2000), and individuals infected with HIV (Kalichman et al., 2001), where these particular interventions have included large proportions of African Americans.

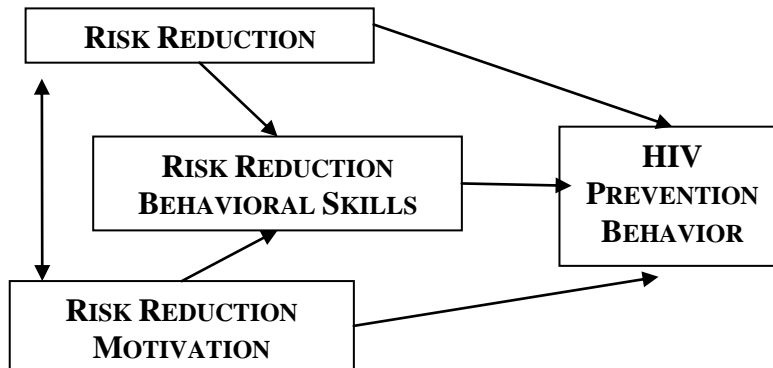


Figure 3.1: Information Motivation Behavioral Skills Model

3.2 Intervention Strategies

The proposed plan for reaching the intended outcomes is to deliver an education and skills-enhancing interactive pilot intervention to women in small groups using a format that involves discussions, structured activities, skills modeling, skills practice and feedback, and goal setting activities. The pilot intervention will invite African American women aged 40 years and older who are living with HIV to participate in a series of small-group educational workshops that will be held in a community research setting in Midtown Atlanta. The workshops will be 4 sessions that will last 120 minutes per session. The workshops will consist of 8-10 participants per session lead by a co-facilitation team of two health educators. The program will use an experimental design where women will be randomly assigned to receive the experimental intervention or a control intervention. The control intervention will be a standard health education program that will be time matched on the number and duration of sessions. The goal is to recruit

30 women to participate in the pilot experimental intervention and 30 to participate in the control intervention.

Intervention sessions will be held twice a week on non-consecutive days (i.e. Monday/Wednesday). This format has been successfully used in other small group HIV prevention interventions and allows for processing of information and practicing new skills while minimizing participant attrition that can occur from weekly sessions. Using the Information-Motivation-Behavioral Skills (IMB) model, intervention facilitators will review information about HIV prevalence in older African American women, HIV transmission, and consequences of unprotected sexual activity (STD co-infection/HIV re-infection). The education sessions will use flip charts, visual materials to illustrate key concepts, educational DVDs, and interactive activities to dispute myths, misconceptions, and misinformation.

Motivational activities will be used to sensitize participants to their potential risks for STD co-infection and HIV re-infection, to increase their intentions to refuse unprotected sexual activity and/or use condoms, to recognize sexual risk reduction as a strategy of self-care, and to reduce negative attitudes towards condom use and disclosing their HIV status. Interactive activities will be used to motivate women to increase their intentions to disclose their HIV status, use condoms, become HIV prevention advocates, promote positive attitudes towards disclosing their HIV status, and promote positive attitudes towards practicing safer sexual activities.

The behavioral skills-building component will focus on behavioral self-management skills and sexual communication skills related to deciding when and how to disclose their HIV status, sexual risk-reduction, and becoming prevention education

advocates. Participants will discuss barriers and benefits to disclosing a positive HIV status. Participants will also discuss potential risk behaviors and personal cues related to sexual risk situations. Facilitators will aid participants in identifying environmental and cognitive-affective cues that influence individuals to engage in high-risk situations. Using role-plays and other interactive methods, participants will be instructed in methods of rearranging their environment and strategies to reduce their risks. Using anatomical models, participants will be instructed on proper use of female and male condoms and allowed to practice condom application on the models with corrective feedback from facilitators. Using digital video vignettes and role-plays, participants will enhance communication skills to increase HIV disclosure and reduce sexual risks including assertiveness, sexual negotiation, and refusal skills. Participants will be instructed on and practice - with feedback from facilitators - techniques of effective communication of feelings, interpersonal assertiveness, refusal to engage in unprotected sex, and negotiating safer sexual activities.

3.3 Intervention Sessions

Session 1 HIV Education, Caregiving and Self-Care, Women and Power

Session one will focus on the information and motivation elements of the IMB model and will aim to educate participants on the goal of living healthy with HIV, the dangers of continuing to engage in high-risk sexual behaviors, and the importance of caring for self while caring for others. The session will also aim to motivate women to practice self-care and engage in risk-reduction activities. The session will use participant discussions, interactive activities, educational/motivational videos and educational posters to provide information about HIV risk behaviors and the importance of self-care.

The education will include a description of how HIV is transmitted, prevalence of HIV infection in African American women, myths regarding transmission, discussions of how t-cell and viral load information influence risk taking behaviors, and strategies used to avoid continued transmission of HIV. The session will also include information on the gender power imbalance and the influence it has on women's risk for HIV and their decisions to provide care to others and themselves. The session will use a video clip of black women coming together for a common cause to illustrate the power of women working collectively and motivate women to prepare to make positive changes while supporting each other.

Session 2 Disclosure and Communication

Session two will continue the use of information and begin incorporating behavioral skill components of the IMB model. This session will examine the advantages and disadvantages of disclosing one's HIV status. Participants will be encouraged to discuss how HIV disclosure/non-disclosure can influence sexual risk-taking behaviors. Using video vignettes, modeling by facilitators, and role-play with feedback from facilitators, participants will engage in communication skills enhancing activities to increase disclosure of HIV status. The session will aim to help participants identify factors that encourage and those that discourage women to disclose their HIV status. Participants will engage in activities and discussions that illustrate how disclosing one's HIV status is part of self-care and can reduce stress and anxiety. The activities will also demonstrate that the power to decide to disclose one's HIV status is within each woman's control, thus building on the theme of women and power. Participants will be instructed on how to balance the advantages and disadvantages of disclosure decisions and will use

role plays with feedback from facilitators to practice these behavioral skills. The communication skill activity will focus on three key components of effective communication that will be applied to disclosing one's HIV status: *Who are you communicating with, when is the best time to communicate and what is the intended message?* These key components will also serve as the model for other communication skill activities. This session will begin the process of helping participants to set goals to help them incorporate and practice behavioral skills.

Session 3 Risk Reduction Behavioral Self-Management

In this session participants will continue the process of self-care by enhancing risk reduction behavioral self-management and continuing to practice communication skills. The session will engage women in discussions and interactive activities that showcase how self care includes taking steps to reduce the sexual risk of HIV re-infection and STD co-infection. Participants will engage in discussions to identify and overcome barriers to condom use and engage in activities that promote condom use. Condom use will focus specifically on the female condom, but will also include the male condom. Participants will be introduced to the female condom as an option that gives women the power to choose using a condom during sexual intercourse. Women will be instructed on how to use the female condom and will use anatomical models to practice these skills. Women will also be instructed on how to properly use male condoms. Women will also engage in discussions to identify safe intimate acts that are alternatives to penetrative sex such as erotic massage and mutual masturbation. Participants will use video vignettes and role-play to practice communicating/negotiating safer sex with potential sex partners, including refusing to engage in unsafe sexual practices. Safer sex communication will use

the model of the three key components of effective communication identified in session two to guide the sexual communication practice. Participants will be provided female condoms at the end of the session and informed that female and male condoms will be made available to them upon request free of charge throughout the duration of the study.

Session 4 Social Support and Prevention Advocacy

In this session participants will continue to engage in skills-building activities, particularly communication skills, and prepare to use these skills to promote positive self and community health. Participants will engage in discussions about the benefits of obtaining social support in the management of HIV as a part of self care and will engage in activities that highlight the link between social support and positive health outcomes. Participants will discuss and be guided in how to identify and seek out positive social support networks. Participants will use the communication model components from the previous sessions to guide practicing communication to request support from family and friends. Options for obtaining social support will include joining existing support groups such as HIV and substance abuse support, starting a new support group such as a crafting or exercise groups, as well as seeking support from family members. Participants will be led in discussions about the power they possess to help curtail the HIV epidemic in other African American women. Participants will discuss the benefits of engaging in HIV prevention advocacy, including preventing the further spread of HIV among African American women of child-bearing age, as well as, midlife and older women. Participants will engage in activities and discussions that will help them identify and seek opportunities to engage in prevention advocacy. Options to engage in prevention education activities will include opportunities such as speaking to women individually

from their own neighborhoods and families, and conducting small educational forums in churches, beauty shops, schools and other social locations where African American women gather. Participants will practice - with feedback from facilitators - communication skills that will help them conduct peer-lead prevention education. This communication practice will be guided by the communication model components outlined earlier as part of the communication skills enhancing activities. A summary of the group session goals, intervention activities, and outcome measures is provided in Table 1.

Table 3.1 Summary of Session Goals, Intervention Activities and Outcome Measures.

Session	Goals	Intervention Activities	Outcome Measures	Theoretical Construct
1	Provide accurate HIV information for older women. Motivate women to engage in self-care and HIV risk reduction	Information videotapes and posters. Interactive educational activities. Group discussions.	HIV/AIDS Knowledge Behavioral intentions	Information Motivation
2	Identify pros and cons of HIV disclosure. Enhance disclosure decision making skills. Enhance communication skills for disclosure.	Group discussions. Video vignette's Facilitator modeling and role plays.	Disclosure skills self-efficacy. Behavioral intentions	Behavioral skills Motivation
3	Sexual Risk Reduction Sexual communication and negotiation skills building.	Condom demonstration and application. Safer sex education. Video vignettes and role plays.	Risk reduction self-efficacy. Behavioral intentions. Behavioral skills enactments. Protected sex acts.	Behavioral skills Motivation
4	Identify benefits of social support. Promote advocacy for HIV prevention among peers.	Interactive educational activities. Role plays.	Perceived social support Intravention intentions.	Motivation

3.4 Control Sessions

Session 1 Health Information and Health Goals

Session one of the control group will focus on helping participants understand the value of finding and evaluating health information and the importance of setting health goals. Participants will be engaged in a discussion and interactive activity of setting health goals. Group members will then be engaged in an interactive activity and discussion highlighting resources used by participants in other studies conducted by this research group to find health related information. Facilitators will guide participants through a skills building activity to enhance skills to evaluate sources of health related information.

Session 2 Cancer Awareness

In this session participants will be engaged in an interactive educational activity and discussion about various Cancer's and their impact on women. Participants will then be shown an educational video on Skin Cancer followed by a short discussion and skills building activity to practice skin self-exams. Group members will view an educational video on Breast Cancer followed by a short discussion and skills building activity using anatomical models to practice breast self-exams.

Session 3 Nutrition and HIV

In this session participants will be asked to record on index cards what they had for dinner the previous night to begin the process of understanding the importance of nutrition for individuals living with HIV. Participants will be shown an educational video about nutrition and nutritional issues for individuals living with HIV. Group members will be guided through an educational discussion about various nutrients and how to

maintain a balanced diet. Participants will be asked to compare the meal they ate for dinner the previous night to the food pyramid and the guidelines set by the USDA as a practical way to examine their nutritional intake. Participants will be given Food Diary sheets which let them track their nutritional intake for full a week and encouraged to use them to keep track of and compare what they eat and to make healthier food choices when they deem it necessary. The group will then view a short video clip from the movie “The Nutty Professor 2: The Klumps.” The video uses humor to depict a family making several healthy choices while dining out.

Session 4 Nutrition (cont.) and Physical Activity

In this session participants are asked to share if they had begun completing the food diary since the last session and what if anything they had learned about their eating habits thus far. The group will be engaged in a motivational activity that highlights what other HIV positive individuals were doing to improve their health and stay healthy. The activity will showcase answers from surveys completed by previous participants regarding health improvement activities. Participants will be led through a discussion and exercise on how to read and understand food labels, followed by an exercise where participants are given examples of a meal consisting of various food items and asked to share how they can make the meal healthier using only those food items. To begin the discussion of the importance of physical activity, participants will be given index cards and asked to record physical activities they had engaged in within the past week. The group will be engaged in a discussion about the importance of physical activity/exercise. Participants will be shown an exercise video for people with HIV by people with HIV and engage in a practice of the upper body exercises. Participants will be asked to share

with the group what was recorded on the index cards they completed earlier concerning the physical activity they had engaged in during the previous week. Participants will be encouraged to keep track of their daily physical activity by completing the Activity Diary that is located on the reverse side of the Food Diary sheets they were given in the previous session. Women will be asked to set a goal to stay healthy as a close-out of the intervention sessions.

3.5 Research Setting

The proposed research will be conducted in Atlanta, GA. The largest number of cumulative AIDS cases occurs in the southeastern region of the United States. According to the Georgia Department of Human Resources (DHR, 2008), Georgia ranks 8th among states in cumulative number of AIDS cases and over 70% of the AIDS cases in Georgia are in metropolitan Atlanta. Among women infected with HIV/AIDS in Atlanta, more than 60% are African American (DHR, 2008). The student investigator has worked on HIV prevention interventions in Atlanta since 1993. Since 2001, he has been a part of a community-based research team (Southeastern HIV/AIDS Research and Evaluation (SHARE) Project) that conducts behavioral research with individuals with HIV/AIDS, under the supervision of Principle Investigator Seth Kalichman, Ph.D. The SHARE Project has an established infrastructure to conduct the proposed research, including dedicated research space and the ability to recruit and retain research participants.

3.6 Recruitment

Potential study participants will be recruited using passive and active recruitment strategies that have been effective in recruiting participants in similar interventions.

Passive recruitment will include placing flyers in locations where individuals living with

HIV/AIDS seek services such as AIDS Service Organizations (ASO) and medical clinics providing services to HIV infected individuals. Active recruitment will include attending workshops and forums for individuals living with HIV and engaging in face-to-face interactions and group presentations inviting potential participants to be screened for enrollment into the project. In addition, individuals who are enrolled in the project and those who participated in previous similar research will be encouraged to refer others for screening and enrollment. For individuals who participated in previous research the SHARE Project has an established four-month “cool-off” period whereby participants are prevented from being screened for eligibility for another intervention for at least four months after completion of an intervention study to prevent cross-contamination of possible intervention effect. Additionally, the SHARE Project has an established policy that individuals can be current participants in only one research intervention.

3.7 Screening and Entry Criteria

Individuals will be asked to complete a short screening questionnaire to determine their eligibility for participation. Eligibility criteria will include: a) being an African American woman; b) 40 years of age or older; c) being HIV positive; d) being sexually active in the previous 6-months; and e) consenting to all study procedures. The screening questionnaire will be administered by a member of the research team. The screening questionnaire will include “dummy” questions such as: *Do you wear eyeglasses for reading; Do you smoke cigarettes; and Do you exercise daily*, so that individuals are less likely to determine eligibility requirements. Individuals who meet the eligibility criteria will be asked to provide proof of their HIV status at the time of enrollment. Proof of HIV status will include a picture ID and one of the following: a) medication bottle of a known

anti-retroviral prescribed to the participant; b) patient ID card from a local HIV care clinic; or c) lab results indicating infection with HIV.

3.8 Enrollment and Informed Consent

Individuals who meet the eligibility criteria and are interested in participation will be enrolled in the study and given an appointment to complete the intake procedures. The intake procedure will begin with informed consent that will be administered by a member of the research team. Following informed consent, participants will complete a baseline questionnaire. After completing the baseline questionnaire, participants will be randomly assigned to either the four session experimental condition or the time-matched control condition and given an appointment to attend their first group session. Following the baseline and randomization, participants will be asked to provide tracking and locator information that will be used to help maintain their participation in the study through final follow-up.

3.9 Randomization

Participants will be randomly assigned to an intervention condition. An online randomization generator will be used to determine the assignment of participants to conditions. Random assignment will occur following the baseline assessment to assure that recruitment/enrollment and assessment staff remains blind to and thus unbiased by condition assignments.

3.10 Incentives

Participants will be reimbursed for their time commitment of completing all study related activities. Participants will receive \$20 for completing the baseline assessment, \$10 each session for attending the group sessions, and \$25 each assessment for

completing the post and follow-up assessment for a total of up to \$110 for completing all study activities. Participants will be provided incentives upon completion of each study activity.

3.11 Measures

The proposed pilot intervention will assess outcomes over a short period of time to determine intervention effectiveness. Participants will be assessed at baseline, 1-month following the intervention, and 3-months following the intervention. Participants will be assessed on theoretical mediators of outcomes, intervention outcome variables, and correlate and control variables. Data collection will include measures of: demographic characteristics and sexual risk history, constructs of the IMB model, Information: HIV risk-related knowledge, Motivation: intentions to change risk behavior, intentions to engage in prevention advocacy, Behavioral Skills: risk reduction skills self-efficacy and risk reduction skills enactments, Behavioral Outcomes: HIV risk and risk reduction behaviors, and Other Outcome Variables: social support (see table 2).

3.12 Demographic and Risk History Characteristics

Data will be collected from participants such as their age, ethnicity, education level, current employment status, income and living arrangements, relationship status, and STI treatment history (see Appendices A and B).

3.13 Information

HIV Risk-Related Knowledge

An 18-item true-false-don't know test will assess knowledge of HIV transmission and HIV prevention information (see Appendix C). The HIV Knowledge Questionnaire (HIV-KQ-18) was developed and administered to a sample of 1,019 low income men and

women with scores demonstrating internal consistency across samples (α 's =.79 -.89) and test-retest stability across two-week and three-month intervals with correlations of $r=.76$ and $r=.94$ respectively (Carey and Schroder, 2000) . The knowledge test will assess information concerning proper condom use, knowledge of HIV treatment and HIV transmission-related knowledge. Examples of these items include: “It is possible for a person with an undetectable viral load to transmit the virus to others” and “It is easier to get HIV if a person has another sexually transmitted infection”. Knowledge items will be scored for the number of correct responses with “don't know” responses being scored as incorrect. Knowledge test items have been adapted and used in previous research with this same population and test-retest correlations in that research were $r =.90$ for transmission knowledge and $r =.78$ for prevention knowledge (Kalichman, Rompa, Cage, DiFonzo, Simpson, Austin, Luke, Buckles, Kyomugisha, Benotsch, Pinkerton, and Graham, 2001).

3.14 Motivation

Behavioral Intentions

Participants will respond to an 8-item scale assessing personal intentions to engage in risk reducing behaviors (see Appendix D). Example items include “I will discuss safer sex with my next sex partner” and “I will refuse to have sex if my partner does not want to use a condom” anchored on 6-point scales ranging from 1= Will definitely do, to 6= Will definitely not do. Theories of behavior change postulate a close temporal relationship between intentions to change behavior and changes in actual behavior (Ajzen & Fishbein, 1980). Fisher and Fisher (1992) suggest the use of behavior intention items to assess motivation to change within the IMB framework. The scale was

constructed by Kalichman and Nachimson and administered to a sample of 266 HIV positive men and women where analysis demonstrated internal consistency of $\alpha = .83$ and test-retest stability across intervals with correlations of $r = .75$ at one month and $r = .81$ at three month (Kalichman and Nachimson, 1999). This scale has been used with the target population in other research conducted by this research group (Kalichman, Cherry, Kalichman, Amaral, White, Pope, Swetzes, Eaton, and Cain, 2011; Kalichman, Rompa, Cage, DiFonzo, Simpson, Austin, Luke, Buckles, Kyomugisha, Benotsch, Pinkerton, and Graham, 2001).

Intravention Intentions

To measure intentions to engage in HIV prevention advocacy, participants will respond to a 6-item sub-scale assessing efforts to protect others from HIV (see Appendix I). Example items include “I will talk with someone about getting tested for HIV” and “I will advise someone to use condoms” anchored on a 6-point scale ranging from 1= Will definitely not do to 6= Definitely will do. The sub-scale is part of a 110-item instrument measuring “intravention” efforts among 11 domain-specific subscales. The scale was developed by Friedman and colleagues (2004) and administered to a sample of 57 community recruited residents where analysis demonstrated internal consistency of the subscale of $\alpha = .84$ and correlation with the full scale of $r = .96$. This sub-scale has been used with the target population in other research conducted by this research group (Kalichman, Simbayi, Cloete, Clayford, Arnolds, Mxoli, Smith, Cherry, Shefer, Crawford, and Kalichman, 2009).

3.15 Behavioral Skills

Risk Reduction Skills & Self-efficacy

Based on Social Cognitive Theory (Bandura, 1997), a measure of self-efficacy for enacting risk reduction behaviors has been developed and tested for use with this population (Kalichman & Rompa, 2000; Kalichman, Rompa, DiFonzo, Simpson, Kyomugisha, Austin, and Luke, 2001). The measure allows participants to judge their capability across domain relevant activities and levels of situational demands (see Appendix E). The measure uses six risk scenarios for practicing unsafe sex that vary in circumstances, partner relationships, affective states, and setting. For each scene participants are asked to rate their confidence to perform specific risk reduction acts, such as discussing safer sex in that situation, refusal of unsafe sex when pressured by the partner in the scene, or initiating condom use. The measure assesses self-efficacy beliefs using an ascending scale of capability to perform relevant actions, with responses on an 11-point scale, 0 = Can not do, 5 = Moderately certain I can do, and 10 = Certain I can do. Three self-efficacy scores are derived by summing items across the 6 scenes. The self-efficacy scales were administered to a sample of 212 HIV-positive men and 130 HIV-positive women and internally consistent alpha's were $\alpha = .89$ and $\alpha = .93$ respectively (Kalichman et al., 2001). This scale has been used with the target population in our previous research (Kalichman, Cherry, Kalichman, Amaral, White, Pope, Swetzes, Eaton, and Cain, 2011).

Risk Reduction Skills Enactments

Participants will be asked to report their use of behavioral strategies to reduce HIV transmission risks (see Appendix F). Skills enactments will be placed in 1-month

and 3-month retrospective time frames for consistency with the assessment point. Example items include “I discussed using condoms with a sex partner”, “I made sure that I had condoms with me every time I had sex”, and “I avoided using alcohol and drugs before sex” responded to in frequency of times each strategy was practiced in the past 30 and 90 days. These measures were used in previous research with this population and showed that rates of skill enactments were sensitive to changes resulting from a behavioral intervention whereby intervention participants’ rates of skill enactments changed between baseline, 3-month, and 6-month follow-up intervals and these changes were significantly different than rates of those in the control condition (Kalichman, Rompa, DiFonzo, Simpson, Kyomugisha, Austin, and Luke, 2001).

3.16 Behavioral Outcomes

Unprotected and Protected Sexual Behaviors

Participants will be asked to report the number of times in the past 90 days (30 days for 1-month follow-up) they engaged in sexual intercourse (vaginal, anal, and oral), the number of times that male or female condoms were used during sexual intercourse, and the number of sex partners they had (see Appendix G). Acts of protected and unprotected sexual behaviors will be assessed using a partner-by-partner interview within the assessment measure. The proportion of vaginal and anal intercourse occasions protected by condoms will be calculated by using the formula $\text{condom protected acts} / \text{total acts}$. Behavioral assessments will be conducted using a calendar method to ask about specific risk behaviors with specific partners during the retrospective time period. This measure of self-reported sexual behavior has been successfully used in previous research with this target population (Kalichman, Cherry, Kalichman, Amaral, White, Pope,

Swetzes, Eaton, and Cain, 2011; Kalichman, Rompa, Cage, DiFonzo, Simpson, Austin, Luke, Buckles, Kyomugisha, Benotsch, Pinkerton, and Graham, 2001).

Social Support

The proposed research will use a measure consisting of 15-items assessing perceived social support (Brock, Sarason, Sarason, and Pierce, 1996). The Interpersonal Support Evaluation List ^Short Form is a 15-item self-report measure derived from an original 40-item Interpersonal Support Evaluation List to test for perceptions of interpersonal social support among individuals (see Appendix H). The scale includes three sub-scales that are categorized as tangible support, appraisal support, and belonging support. Items from this widely used scale include availability of support and validation of support, such as “There are several people that I trust to help me solve problems” and “I feel a strong emotional bond with at least one other person”. The original scale was administered to a sample of 602 university undergraduates and test score analysis showed an internal consistency of $\alpha = .94$ and test-retest stability across 4-week intervals with correlations of $r = .90$ and $r = .83$ respectively (Sarason, Levine, Basham, and Sarason, 1983). The 15-item scale has been used in previous research with this target population where scores were shown to be internally consistent $\alpha = .89$ (Kalichman, Rompa, DiFonzo, Simpson, Kyomugisha, Austin, and Luke, 2001).

3.17 Data Collection Procedures

Participants will complete self-report measures using audio computer assisted self-interview (ACASI) assessment technology at baseline and follow-up assessments. ACASI assessment is quickly becoming the standard for collecting self-report data when conducting behavioral research. Research suggests that the use of ACASI increases

participants' understanding of questions, honesty when answering sensitive questions and the fidelity of skip patterns (Perils et al., 2004). The student researcher has worked with a research team that has successfully used ACSAI assessments to collect self-report data from samples that include those in the proposed target population (Kalichman, Cherry, Kalichman, Amaral, White, Pope, Swetzes, Eaton, and Cain, 2011).

Table 3.2: Measurement Summary

Construct	Instrument	Author(s)	# of Items	Response Format	Reliability	WHIPS
HIV Risk Knowledge	HIV-KQ-18 (adapted)	Carey & Schroder (2002)	18	True, False, DK format. Knowledge scored derived by # of correct responses	$\alpha = .79$	$\alpha = .61$
Behavioral Intentions		Kalichman & Nachimson (1999)	8	6-point likert scale ranging from 1= definitely will do to 6=will definitely not do. Variable derived by summing items and computing mean scores	$\alpha = .83$	$\alpha = .63$
Risk Reduction Self-efficacy		Kalichman & Rompa (2000)	16	11-point ascending scale ranging from 0=cannot do to 10=Certain I can do. Variable derived by summing items and computing mean sub-scale scores	$\alpha = .89$	$\alpha = .53$
Risk Reduction Skills Enactments		Kalichman et.al. (2001)	8	Endorsement of the item and reporting # of times used. Variable derived by computing mean # of times skills were enacted		$\alpha = .64$
Unprotected and Protected Sexual Acts			4	Reporting # of protected and # of unprotected sex acts. Variable derived by mean # of protected and unprotected acts		
Social Support	ISEL-Short Form	Brock et.al. (1996)	15	May be Nominal or Interval	$\alpha = .89$	$\alpha = .59$
Intravention Intentions	Intravention	Friedman et.al. (2004)	6	6-point likert scale ranging from 1= definitely will do to	$\alpha = .84$	$\alpha = .57$

				6=will definitely not do. Variable derived by summing items and computing mean scores		
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3.18 Data Analysis Plan

Data will be analyzed to test for differences between the intervention and control groups on main outcomes (see table 3). Measures assessing HIV knowledge, behavioral intentions and intervention intentions are analyzed as continuous variables such that scale items are scored and mean scores are calculated. Risk reduction skills self-efficacy is analyzed as a continuous variable by summing items to obtain self-efficacy scores for 1) discussing safer sex, 2) refusal to have unsafe sex, 3) initiating condom use, and 4) disclosing HIV status. Risk reduction skills enactments will be assessed by the frequency of times participants practiced each strategy in the past 30 and 90 days. Mean rates for strategy enactments will be calculated for each of the intervention conditions. Unprotected and protected sexual behavior will be analyzed by calculating group mean rates of these behaviors based on the reported number of times participants engaged in sexual intercourse with and without condoms. Although the scale assessing social support is usually analyzed as a continuous variable, it can also be analyzed as a categorical variable across three categories: low, medium, and high. This measure will be analyzed as a continuous variable.

To determine results for Aim1 (Examine the impact of a pilot intervention with older African American HIV+ women on high-risk sexual behaviors and self reported social support), we will conduct Analysis of Variance (ANOVA) to determine group differences in mean scores for risk reduction self-efficacy, risk-reduction skills

enactments, disclosure of HIV status, unprotected and protected sexual behaviors and perceived social support at baseline. Repeated measure factorial ANOVA's will also be performed to test for group by time interactions on differences in scores for risk reduction self-efficacy, risk reduction skill enactments, disclosure of HIV status, reported acts of unprotected and protected sex, and perceived social support between post-intervention and baseline (i.e. Time 2-Time 1), and between follow-up and baseline (i.e. Time 3-Time 1).

To determine results for Aim 2 (Examine the impact of the intervention on intentions to engage in activities that promote HIV prevention in others), we will conduct an ANOVA to determine group differences in mean scores for intervention intentions at baseline. Repeated measure factorial ANOVA's will also be performed to test for group by time interactions on differences in intervention intention scores between post-intervention and baseline, and between follow-up and baseline. To determine results for Aim 3 (Examine the association between changes in scores on the Information-Motivation-Behavioral skills (IMB) constructs and changes in reported acts of protected and unprotected sex of women participating in the intervention), we will conduct multiple regression to; 1) examine the association between changes in HIV knowledge scores and changes in reported acts of unprotected and protected sex; 2) examine the association between changes in behavioral intention scores and changes in reported acts of unprotected and protected sex; and 3) examine the association between changes in risk reduction self-efficacy scores and changes in reported acts of unprotected and protected sex from baseline assessment (Time 1) to follow-up assessment (Time 3). We will also conduct a multiple regression to examine the association between changes in HIV

knowledge, behavioral intention, and risk reduction self-efficacy scores simultaneously and changes in reported acts of unprotected and protected sex. A Bonferroni adjustment will be made to account for multiple comparisons made within each set of analysis.

Assumptions underlying the selected statistical analysis will be tested. The assumptions of the ANOVA include; 1) Level of measurement (dependent variable is assessed on an interval or ratio level, and the independent variable is assessed on a nominal level), 2) Independent observations (each observation is not dependent on another observation in any group, 3) Random sampling (scores on the dependent variable represent a random sample draw from the population), 4) Normal distribution (the distribution observed for the dependent variable approximates normal distributions) and 5) Homogeneity of variance (populations represented by the various groups should have equal variances on the dependent variable. The assumptions of the repeated measures factorial ANOVA include the assumptions outlined above plus; 1) Sphericity (each variance on the diagonal of the matrix should be equal to every other variance on the diagonal, and each covariance off the diagonal should equal zero, and 2) Symmetry condition (symmetry condition includes the sphericity condition and that the difference-variable covariance matrices obtained for the various groups (under the between-subjects factor) should be equal to one another. The assumptions for Multiple regression include those outlined above for the ANOVA plus; 1) Linearity (the relationship between the dependent variable and each independent variable should be linear), 2) Errors of prediction (errors of prediction should be normally distributed and the distribution should be centered at zero), 3) Absence of error (the independent variables should be measured without error), and 4) Absence of specification errors (specification errors generally

refers to situations in which the model represented by the regression equation is not theoretically tenable).

3.19 Potential Limitations

The proposed research has several potential limitations and steps have been taken to reduce or minimize these limitations. One limitation is that the study relies on self-reported behavior that is subject to participants responding in a socially desirable manner. To reduce this limitation, measures will be collected using Audio Computer Assisted Self Interview (ACASI). As stated earlier, this method of collecting self-reported data has been shown to reduce the potential for socially desirable responses because participants are not required to interact with another individual and can feel more secure about the confidentiality of their response. Another possible limitation is that participants are asked to retrospectively report on behaviors, making them susceptible to recall bias. To reduce this limitation we have minimized the recall period to a timeframe that allows evidence of behavior change and reduces participant burden. A third limitation is the potential for participant attrition over the course of the study. To reduce attrition during the intervention phase, the intervention is designed such that sessions meet twice a week thus reducing a prolonged commitment to session schedules. Additionally, participants will be given reminder calls prior to attending the first group session and immediately following any missed sessions. To reduce attrition for the follow up participants will be mailed reminder letters 2-weeks prior to and receive reminder calls 2-days prior to the scheduled assessment, in addition to receiving appointment cards to return for the assessment. Finally, the SHARE project has an established infrastructure that has allowed us to retain

approximately 85% of study participants over various studies with multiple assessment intervals.

Table 3.3: Analysis Summary

AIM	Outcome Measure	Independent Variable	Dependent Variable	Analysis
1) Examine the impact of the intervention on high risk sexual behaviors and self-reported social support	Risk reduction self-efficacy scores	Assignment to group condition	Risk reduction self-efficacy	Repeated ANOVA to determine mean group scores and to test for group by time interactions on differences in scores between post intervention and baseline, and between follow-up and baseline
1) Examine the impact of the intervention on high risk sexual behaviors	Reported Risk reduction skill enactments	Assignment to group condition	Risk reduction skill enactments	Repeated ANOVA to determine mean group scores and to test for group by time interactions on differences in scores between post intervention and baseline, and between follow-up and baseline
1) Examine the impact of the intervention on high risk sexual behaviors	Reported acts of protected and unprotected sex	Assignment to group condition	Reported acts of protected and unprotected sex	Repeated ANOVA to determine mean group scores and to test for group by time interactions on differences in scores between post intervention and baseline, and between follow-up and baseline
2) Examine the impact of the intervention on intentions to engage in activities that promote HIV prevention in others	HIV prevention behavior intentions Scores	Assignment to group condition	HIV prevention behavior intentions	Repeated ANOVA to determine mean group scores and to test for group by time interactions on differences in scores between post intervention and baseline, and between follow-up and baseline
2) Examine the impact of the intervention on intentions to engage in activities that promote HIV prevention in others	Intravention intention scores	Assignment to group condition	Intravention intentions	Repeated ANOVA to determine mean group scores and to test for group by time interactions on differences in scores between post intervention and baseline, and between follow-up and baseline
3) Examine the association between changes in scores on the IMB constructs and changes in reported acts of	Association between changes in HIV knowledge scores and changes in	Changes in HIV knowledge scores	Changes in reported acts of unprotected and protected sex	Multiple regression to examine the association between changes in HIV knowledge scores and changes in reported acts of unprotected and protected sex

protected and unprotected sex of intervention participants	reported acts of protected and unprotected sex			
3) Examine the association between changes in scores on the IMB constructs and changes in reported acts of protected and unprotected sex of intervention participants	Association between changes in behavioral intention scores and changes in reported acts of protected and unprotected sex	Changes in behavioral intention scores	Changes in reported acts of unprotected and protected sex	Multiple regression to examine the association between changes in behavioral intention scores and changes in reported acts of unprotected and protected sex
3) Examine the association between changes in scores on the IMB constructs and changes in reported acts of protected and unprotected sex of intervention participants	Association between changes in risk reduction self-efficacy scores and changes in reported acts of protected and unprotected sex	Changes in risk reduction self-efficacy scores	Changes in reported acts of unprotected and protected sex	Multiple regression to examine the association between changes in risk reduction self-efficacy scores and changes in reported acts of unprotected and protected sex

3.20 Logistics

Human Subjects

The proposed research will involve the participation of human subjects and as such the research team will follow all guidelines for research with human subjects set forth by the Institutional Review Board (IRB) of the University of South Carolina and the University of Connecticut. To protect participants in our study from adverse events, and to keep participants informed of any developments in the intervention or control protocol that may pose unforeseen harm, the research team will collaborate closely with the IRB through all phases of the research. Research staff on-site as well as the investigators will discuss all adverse events in detail. The on-site research staff will immediately report the occurrence of any suspected adverse events to the Project Manager and PI's. The

Research Project Managers will immediately generate a written incident report and will inform all members of the research team, and notify the IRB of any adverse events.

Should an unforeseen cost or negative consequence of participation be discovered, the IRB will be notified and appropriate changes to the protocol and/or consent forms will be made. See Appendix I for a draft of the participant consent form.

Table 3.4 Project Timeline

Intervention Activity	Month(s)
IRB Study Approval	1-2
Development of intervention materials	1-2
Recruitment and enrollment	3-5
Post and Follow-up assessment	4-8
Data analysis and manuscript preparation	8-10
Manuscript Finalization and Dissertation defense	10-12

Table 3.5 Project Budget

Item	Expense
Intervention materials	\$500
Participant incentives (\$110 x 60 participants)	\$6600
Total	\$7100

CHAPTER IV. MANUSCRIPT

This chapter describes the results of the study written in two manuscripts that will be submitted to separate peer reviewed journals. Manuscript one describes the results of Research question # 2 and aim #2 and will be submitted to *Women and Health*.

Manuscript two describes the results of research question #1 and Aim #1 and will be submitted to *Health, Education and Behavior*.

PSYCHOSOCIAL VARIABLES OF THE IMB MODEL AND MIDLIFE
AND OLDER AFRICAN AMERICAN HIV POSITIVE WOMEN:
RESULTS OF THE WOMEN'S HIV PREVENTION STUDY (WHIPS)
PILOT INTERVENTION¹

¹ Cherry, C., Saunders, R. P., Bell, B., Annang, L., and Lindley, L. To be submitted to *Women and Health*.

Abstract

Despite improvements in treatments over the past 30 years, HIV /AIDS continues to be a major public health threat, particularly among sub-populations such as African American women. Midlife and older adults (those aged 40 years and over) are fast becoming a growing concern for HIV/AIDS infections, particularly older African American women. There has been limited research targeting midlife and older African American women living with HIV that aimed to reduce their transmission of HIV and promote them becoming prevention advocates. In response to this gap in the literature, a culturally tailored intervention guided by the IMB Model of behavior change that aimed to reduce sexual risk transmission, increase perceived social support and promote women becoming prevention advocates, was developed and pilot tested. A total of 58 African American women age 40 years and over were screened, enrolled, completed informed consent and randomly assigned to receive an 8-hour group intervention session or a time-matched control session. Study participants completed assessments at baseline, 1-month and 3-months later. Measures included demographic variables, self-reported sex behaviors, HIV knowledge, HIV risk reduction intentions, HIV risk reduction self-efficacy, HIV risk reduction acts, perceived social support, and intentions to prevent HIV in others. Analysis included a repeated measures factorial ANOVA to detect differences between groups and over time. We found no significant difference between the groups and no intervention effect on the variables of HIV risk reduction intentions, HIV risk reduction self-efficacy, HIV risk reduction acts, perceived social support, or intentions to prevent HIV in others. HIV knowledge scores changed over time, however no intervention effect was detected. Although there were no significant findings from this

pilot, there is still much to be learned about the sexual health behaviors of midlife and older African American HIV+ women. Future research with this population might benefit from exploring the use of more gender focused theoretical models to understand the health behaviors of women. Future research with this population should also examine other psychosocial variables related to sex behaviors such as social and sexual networks.

Introduction

Despite improvements in treatment over the past three decades, HIV/AIDS still remains a major public health threat, particularly among sub-populations such as African American women. According to the Centers for Disease Control and Prevention (CDC) in 2011 rates of HIV infection were 42% for African Americans compared to 12% for Hispanics/Latinos, 4% for Whites and 3% for Asians (CDC, 2013) and the impact is far greater for African American women . African American women account for 64% of new HIV infections among women (CDC, 2013) and are 15 times more likely than their white female counterparts to be HIV-infected (Perkins, Voisin, and Stennis, 2013).

Midlife and older adults (those aged 40 and over) are fast becoming a growing concern for HIV/AIDS infections, particularly older African American women (McCord, 2014). CDC estimates that persons aged 50 and older account for 15% of new HIV/AIDS diagnosis (CDC, 2011). In 2008, HIV/AIDS was the leading cause of death for black women in the 25-34 years age group, the third leading cause of death for black women aged 34-44 years, and the fourth leading cause of death for black women aged 45-54 years (Kennedy & Jenkins, 2011). Older black women living with HIV infection are an underserved population because their health promotion and prevention needs are different from those of younger, childbearing women (DeMarco & Chan, 2013). Despite the fact

that older women represent a growing risk group for HIV, they have been rarely targeted by public health campaigns designed to prevent HIV/AIDS and are often excluded from many prevention studies (Echenique, et.al, 2013).

African American women are being included in primary prevention studies that aim to increase condom use and reduce the risks for women to contract HIV and other STD's (Sapiano, et.al, 2013, Diallo et.al, 2010, Jones et.al, 2013) and to reduce risk and increase HIV testing (Hawk, 2013). With regard to research interventions targeting HIV infected individuals, African American women have been included in studies that focused on the reduction of HIV through secondary prevention (Kalichman, Rompa, and Cage, 2005), understanding the role of social support on the mental health of HIV+ individuals (McDowell and Serovich, 2007) and reducing internalized stigma for those living with HIV (Rao et. al, 2012). Research specifically targeting midlife and older adults living with HIV has focused on the effects of sex and race on health outcomes (Frontini, et.al, 2012), service utilization (Brennan-Ing et.al. 2014), and reduction of HIV transmission (Eschenique, et. al,2013). Yet, there has been scarce research targeting midlife and older African American women living with HIV that aimed to reduce their transmission of HIV and promote them becoming prevention advocates.

In response to this gap in the literature, a culturally tailored intervention aimed at midlife and older African American women was developed and pilot tested. The intervention aimed to reduce HIV sexual risk transmission, increase perceived social support and promote women becoming prevention advocates following the intervention. The focus of this study was to answer the research question “Will women in the experimental program report higher rates of perceived social support, HIV knowledge,

risk reduction self-efficacy, risk reduction intentions, risk reduction acts, and intentions to prevent HIV in others, than those in the comparison program following the intervention?”. This manuscript reports on outcomes of the psychosocial variables associated with risk reduction in the theoretical model used to guide the intervention, as well as the variables associated with preventing HIV in others.

Methods

Recruitment of Participants

The pilot study enrolled 56 African American women aged 40 years and older who were living with HIV. The research was conducted at a community-based research site in an urban metropolitan area in the Southeastern region. The research site has a long standing reputation for conducting research with individuals living with HIV infection. Participants were recruited through flyers that were placed in AIDS Service Organizations (ASO's) and medical facilities where individuals living with HIV seek services, as well as through word of mouth from individuals who had participated in other studies at the research site. Interested women were requested to call a central number to be screened for eligibility for the study. Women were eligible if they reported being 1) HIV positive, 2) racial/ethnic identified as African American, 3) aged 40 years or older, and 4) self-reported engaging in sexual activity in the previous six months. Eighty-six women screened; sixty-one of those were eligible and given appointments for a baseline assessment. Fifty-eight women completed baseline assessments.

Study Design

The study obtained institutional review board (IRB) approval from the University of Connecticut and the University of South Carolina. Women eligible for the study were

scheduled to complete the consent form and a baseline questionnaire (usually within two weeks of screening). The 58 women who completed baseline assessments were randomly assigned to one of the two study conditions (29 participants assigned to each) immediately following consent. Randomization was conducted using an on-line randomization generator (www.randomization.com). Following assignment to the group participants were given an information sheet that contained the dates and times for all the group sessions and were scheduled to complete their 1-month assessment and given an appointment card for that date. Participants were scheduled to complete their 3-month assessment and given an appointment card for that date upon completion of their 1-month assessment.

Participants were paid up to \$110 to complete all study activities, which included \$20 for the baseline assessment, \$10 per group session and \$25 each to complete the 1 month and 3 month assessments. In addition to receiving \$10 per group session participants were provided a dinner meal because of the late hour of the group meeting time. Meals were consistent every wave based on group session, for example session one consisted of the same meal for each condition and each wave. Participants were asked to attend the session 30 minutes prior to the start of group if they wanted to have dinner. For individuals who came to group session late because of unexpected circumstances (e.g. public transportation running late) to-go containers were made available so that they were able to enjoy a meal without causing a distraction to the group. All meals were home cooked by the investigator the week-end prior to the group sessions. Groups were co-facilitated by the investigator (an African American male) and an African American

female research assistant and health educator with seven years of experience conducting HIV behavioral interventions.

Intervention Sessions

Intervention sessions began the week following baseline assessment. The intervention condition consisted of 4 2-hour sessions that focused on HIV risk-reduction skills enhancement (including psychosocial variables of the theoretical model), promoting HIV prevention in others, and social support. The control group was time matched (4 2-hour sessions) and focused on promoting and practicing general health, nutrition, and physical activity. Groups were held twice a week either as a Monday/Wednesday pair, or a Tuesday/Thursday pair for two consecutive weeks. Intervention and control group sessions were conducted in the same two week time period with one condition starting on Monday, while the other started on Tuesday. Each two week block of groups was considered a wave and there were a total of three waves completed during the pilot. Group times were consistent for all groups, 4:30-6:30pm. To avoid the bias of having all the intervention sessions being conducted on the same day pair (e.g. Mon/Wed) the days in which condition sessions were held alternated per wave of participants. For example in wave one intervention sessions were held on Monday and Wednesday, while in wave two intervention sessions were held on Tuesday and Thursday. Seventy-five percent of participants attended 3 or more sessions and there were no differences in attendance found between groups.

Intervention Session Activities

Table 1 provides a summary of the session goals, activities, outcome measures and related theoretical constructs. Session one of the intervention condition included a

welcome and overview of the intervention, introduction of facilitators and group participants, an ice-breaker/team building activity, an educational activity about the impact of HIV on African American women, an activity and discussion about the role of women as caregivers and the importance of practicing self-care, an activity and discussion about gender power relationships, and a short video-clip highlighting black women empowering themselves. Session two included an interactive activity and discussion about HIV disclosure, a decision making skills-building activity using scripted scenario's, an interactive activity to highlight the importance of communication and a skills-building activity using the scripted scenario's to practice and enhance disclosure communication skills. Session three included an interactive educational activity about sexual risk, partner selection, and condom use, a short music video clip depicting two African American couples on dates and their subsequent decisions to use or not use condoms, a discussion about the positive aspects of using condoms, a skills building activity of practicing inserting female condoms and putting on male condoms, and a skills building activity to practice and enhance condom communication/negotiation skills. Session four included an interactive activity and discussion to highlight the importance of supportive relationships and networks, a skills building activity to enhance communicating support needs, an interactive activity and discussion about preventing HIV among others in their community, and an activity to identify and practice delivering prevention messages and teaching prevention skills to others in the community.

Session one of the control group included a welcome and overview of the intervention, introduction of facilitators and group participants, an ice-breaker/team building activity, a discussion and interactive activity of setting health goals, an

interactive activity and discussion highlighting resources available to find health related information, and a skills building activity to enhance skills to evaluate sources of health related information. Session two included an interactive educational activity and discussion about various Cancer's, an educational video on Skin Cancer, a discussion and skills building activity to practice skin self-exams, an educational video on Breast Cancer, and a discussion and skills building activity using anatomical models to practice breast self-exams. Session three included an activity that asked participants to record what they had for dinner the previous night, an educational video about nutrition and nutritional issues for individuals living with HIV, a discussion about various nutrients and how to maintain a balanced diet, an activity that compared participant recorded meals to the food pyramid and the guidelines set by the USDA, participants being encouraged to use them to keep track their nutritional using Food Diary sheets provided to them, and a short video clip for the movie "The Nutty Professor 2: The Klumps" depicting poor nutritional intake. Session four included participants being asked to share if they had begun completing the food diary, an educational activity that highlighted what other HIV positive individuals were doing to improve their health and stay healthy, a discussion and exercise on how to read and understand food labels, an exercise where participants were asked to share how they could make healthier meals that included specific food items, a discussion about the importance of physical activity/exercise, an exercise video for people with HIV by people with HIV, a group practice of the upper body exercises, and the participants being encouraged to keep track of their daily physical activity by completing the Activity Diary that is located on the reverse side of the Food Diary sheets they were given in the previous session.

Table 4.1 Summary of Session Goals, Intervention Activities and Outcome Measures

Session	Group	Goals	Intervention Activities	Outcome Measures	Theoretical Construct
1	Intervention	Provide accurate HIV information for older women. Motivate women to engage in self-care and HIV risk reduction	Information videotapes and posters. Interactive educational activities. Group discussions.	HIV/AIDS Knowledge Behavioral intentions	Information Motivation
	Control	Understand the importance of setting health goals Identify how to find and critically evaluate health information	Interactive educational activities. Group discussions	N/A	N/A
2	Intervention	Identify pros and cons of HIV disclosure. Enhance disclosure decision making skills. Enhance communication skills for disclosure.	Group discussions. Video vignette's Facilitator modeling and role plays.	Disclosure skills self-efficacy. Behavioral intentions	Behavioral skills Motivation
	Control	Understand the impact of various forms of Cancer Self-exam skills building	Interactive educational activities. Group discussions Educational video's Skills modeling and practice	N/A	N/A
3	Intervention	Sexual Risk Reduction Sexual communication and negotiation skills building.	Condom demonstration and application. Safer sex education. Video vignettes and role plays.	Risk reduction self-efficacy. Behavioral intentions. Behavioral skills enactments. Protected sex acts.	Behavioral skills Motivation
	Control	Understand the importance of maintaining proper nutrition	Interactive educational activities Group discussions	N/A	N/A

			Educational video's		
4	Intervention	Identify benefits of social support. Promote advocacy for HIV prevention among peers.	Interactive educational activities. Role plays.	Perceived social support Intravention intentions.	Motivation
	Control	Understand the importance of maintaining proper nutrition (cont.) Understand the importance of physical activity	Interactive educational activities Group discussions Educational video's Physical activity practice	N/A	N/A

Theoretical Framework

The study was guided by the Information-Motivation-Behavioral Skills (IMB, Fisher & Fisher, 1992) model of risk preventive behavior. The IMB model (Figure 1) proposes that information and motivation activate behavioral skills to ultimately enact risk reduction behaviors. According to the model, information that is directly relevant to HIV transmission and HIV prevention is a prerequisite of risk behavior change. Motivation to engage in HIV preventive behavior - which is a function of attitudes towards performance of HIV preventive acts, social norms regarding performance of such acts, and perceptions of personal vulnerability to HIV - is a second determinant of HIV risk behavior change (Fisher & Fisher, 1992). Behavioral skills for performing HIV preventive acts and self-efficacy for performing the acts are a third critical determinant of HIV risk behavior change. Information and motivation are thought to affect the use of risk reduction behavioral skills that are necessary for initiating and maintaining patterns of HIV risk behavior change. The model further proposes that risk reduction information and motivation may each have direct effects on HIV risk reduction behavior change, thus they are regarded as independent constructs in the model.

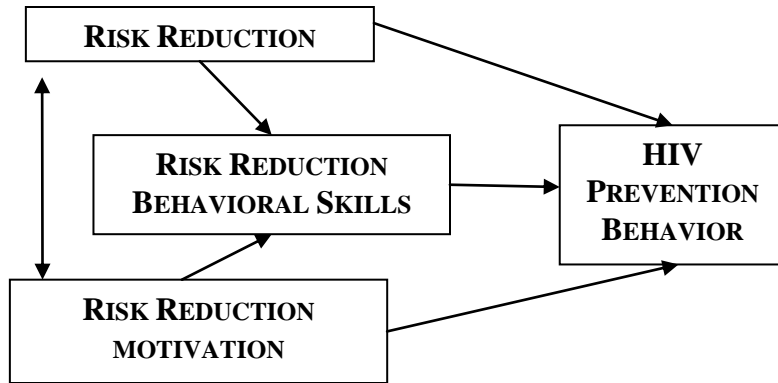


Figure 4.1 Information Motivation Behavioral Skills Model

Measures and Data Collection

Participants used Audio Computer Assisted Self-Interview (ACASI) to complete assessments at baseline, post-intervention (1-month), and follow-up (3-month). Data were collected during the period of March to August 2012. Data were collected on demographic characteristics including age, ethnicity, education level, employment status, income, relationships status, and living arrangements. HIV knowledge was assessed using an 18-item true-false-don't know scale. Participants were asked to respond to an 8-item scale assessing personal intentions to engage in risk-reducing behaviors. To measure intentions to engage in HIV prevention advocacy, participants responded to a 6-item subscale assessing efforts to protect others from HIV. Risk reduction self-efficacy was measured using six risk scenarios that allowed participants to judge their capability across domain relevant activities and levels of situational demands for practicing unsafe sex. Participants were asked report their use of behavioral strategies to reduce HIV transmission risks using a 10-item scale. Perceived social support was assessed using a 15-item scale assessing tangible support, appraisal support, and belonging support. Participants were allowed to complete the 1-month assessment up to two-weeks after the

original appointment date. Participants were allowed to complete the 3-month assessment up to two weeks prior and up to two weeks after the original appointment date. To ensure retention, participants were given reminder phone calls prior to each follow-up assessment appointment. Ninety-six percent (n=56) of participants completed the 1-month assessment and 100% (n=58) completed the 3-month assessment. All the scales that were used in this pilot study and been used in other interventions with individuals living with HIV and proven to be valid and reliable (Kalichman, et.al 2005, Mateu-Gelabert, et al, 2008). A summary of the measurement variables are provided in Table 2.

Table 4.2: Measurement Summary

Construct	Instrument	Author(s)	# of Items	Response Format	Reliability	WHIPS
HIV Risk Knowledge	HIV-KQ-18 (adapted)	Carey & Schroder (2002)	18	True, False, DK format. Knowledge scored derived by # of correct responses	$\alpha = .79$	$\alpha = .61$
Behavioral Intentions		Kalichman & Nachimson (1999)	8	6-point likert scale ranging from 1= definitely will do to 6=will definitely not do. Variable derived by summing items and computing mean scores	$\alpha = .83$	$\alpha = .63$
Risk Reduction Self-efficacy		Kalichman & Rompa (2000)	16	11-point ascending scale ranging from 0=cannot do to 10=Certain I can do. Variable derived by summing items and computing mean sub-scale scores	$\alpha = .89$	$\alpha = .53$
Risk Reduction Skills Enactments		Kalichman et.al. (2001)	8	Endorsement of the item and reporting # of times used. Variable derived by computing mean # of times skills were enacted		$\alpha = .64$
Social Support	ISEL-Short Form	Brock et.al. (1996)	15	May be Nominal or Interval	$\alpha = .89$	$\alpha = .59$
Intravention Intentions	Intravention	Friedman et.al. (2004)	6	6-point likert scale ranging from 1=	$\alpha = .84$	$\alpha = .57$

				definitely will do to 6=will definitely not do. Variable derived by summing items and computing mean scores		
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Analysis and Variables

Analyses were conducted using SAS 9.4. For the main outcome variables we first determined overall baseline means and then examined group mean scores for each condition at baseline, post-intervention, and follow-up. After examining group means, we conducted a repeated measures factorial ANOVA to test for group by time interactions on differences in scores between baseline and post intervention (Time 1 and Time 2), and between baseline and follow-up (Time 1 and Time 3). We checked for violations of the assumptions for the repeated measures factorial ANOVA including the normality of the dependent variables across the levels of the group variable using the Shapiro-Wilk test and the homogeneity of variance-covariance among the outcome variables by group level. The sphericity assumption of the ANOVA test was checked with Mauchly's sphericity test. In case of violation of the sphericity assumption, adjustments were made to the ANOVA results using the Huynh-Feldt corrections for violations of sphericity.

To calculate scores for HIV Knowledge we first recoded answers such that correct answers were coded 1 and incorrect or don't know answers were coded 0. Scores were then calculated by summing the total number of correct answers with a range of 0-20. Participants answered nine questions on a 6-point likert scale asking about their intentions to reduce sexual risks. To calculate Risk Reduction Intention scores we first recoded items such that higher scores indicated greater intentions. We then added the nine items to calculate scores that ranged between 9-54. Self-efficacy to reduce one's

sexual risks included six questions answered on an 11-point likert scale. To calculate risk reduction Self-Efficacy scores we first recoded items such that higher scores indicated a greater sense of self-efficacy. We then added the six items to calculate scores that ranged between 0-66.

To examine what behaviors participants practiced to reduce their sexual risks they were asked to respond Yes or No to ten items that might reduce ones' sexual risks. If participants endorsed an item they were then asked to indicate the number of times they had enacted the behavior during the assessment period (i.e. in the past month/three months). Total risk reduction acts was calculated by summing the number of endorsed items. Social Support was assessed with 15 items answered on a 4-point likert scale. To calculate Social Support scores we first recoded items such that higher scores indicated more support. We then added the 15 items to calculate scores that ranged from 15-60. Finally, to exam intentions to prevent HIV in others (intravention) participants answered six item on a 6-point ascending likert scale. To calculate intravention intention scores we added the six item to obtain scores that ranged between 6-36 with higher scores indicating greater intentions. Table 1 shows the group mean scores for all the outcome variables for each assessment point.

Results

Demographic Characteristics

A summary of the demographic characteristics of the 56 participants in this study with complete data can be found in Table 3. Because ethnicity was an eligibility criterion, all study participants were African American women. Participants ranged in age from 40-64yrs and the overall mean age was 47yrs (4.9 SD) with a mean age of 48.1 and 48.9 for

the intervention and control groups respectively. The mean education level for all participants was 12.3 (1.8) years with a mean education level of 12.0 (2.1) for the intervention condition and 11.8 (1.9) for the control condition. A majority of the participants (96%) were on disability or unemployed, with 96% of those in the intervention group and 96% of those in the control group falling into those categories. Most participants (71%) reported an annual income of less than \$10,000 with no significant differences found between the intervention and control groups (68% and 75% respectively). Very few participants (10%) reported being married, with a third (33%) reporting being single while 57% reported being in a relationship. One third (32%) reported currently living with a partner and there were no differences found between the intervention and control groups (36% and 29% respectively).

For most baseline demographics there were no differences reported between assignment to group condition, with the exception of relationship status. Although there were no group differences among women who reported being married (10% respectively) 29% of the women in the intervention group reported being single compared to 39% in the control group, while 61% of the women in the intervention group reported being in a relationship compared to 54% in the control group, however these differences were not found to be significant.

Table 4.3 Demographic Characteristics

Variable	Intervention		Control		Total	
	n*	Mean (SD) or percent	n*	Mean (SD) or percent	n*	Mean (SD) or percent
Education years	28	12.0 (2.1)	28	11.8 (1.9)	56	12.3 (1.8)
Age years	28	48.1 (4.3)	28	48.9 (5.4)	56	47.7 (4.9)
Income	28		28		56	
< \$10,000		68%		75%		71%

\$11,000-20,000		21%		21%		21%
\$21,000-30,000		7%		0%		4%
≥ \$30,000		4%		4%		4%
Employment	28		28		56	
Unemployed		32%		21%		27%
Working		4%		4%		4%
On Disability		64%		75%		69%
Student						
Relationship status						
Single		29%		39%		33%
In a relationship		61%		54%		57%
Married		11%		7%		10%
Divorced						
Living situation						
Live with partner		36%		29%		32%
Not live w/ partner		64%		71%		68%

Outcome Variables

Table 4 shows the group mean scores for HIV knowledge, risk reduction intentions, risk reduction self-efficacy, risk reduction acts, social support, and intravention intentions for each assessment point. Table 5 shows the ANOVA summary for each of the outcome variables. There were no differences found between groups at baseline on any of the outcome variables. ANOVA summary scores indicate a significant time effect for HIV knowledge, however the intervention effect (Group x Time interaction) was not significant. For all other outcome variables there was no significant effect found for time, nor was there a significant intervention effect.

Table 4.4 Outcome Variables Mean Scores x Assessment Point

Variable	Baseline		Post		3-Month	
	Intervention (N=29)	Control (N=29)	Intervention (N=28)	Control (N=28)	Intervention (N=29)	Control (N=29)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)

HIV Knowledge	13.3(3.9)	12.9(4.2)	15.2(2.4)	13.4(4.3)	14.2(3.6)	14.2(4.4)
Social Support	48.3(8.3)	48.6(7.1)	50.1(9.6)	48.9(5.9)	49.6(7.5)	48.0(6.6)
Risk Reduction Acts	5.5(1.8)	5.6(2.4)	5.2(1.8)	5.0(2.5)	4.9(1.9)	5.3(2.4)
Intravention Intent	27.5(9.6)	30.0(6.6)	29.2(9.2)	28.6(7.6)	27.0(9.4)	27.7(8.2)
Risk Reduction Intent	44.7(15.3)	41.1(16.9)	43.5(13.6)	43.6(13.3)	44.3(14.5)	39.8(16.2)
RR Self-Efficacy	49.4(11.0)	48.7(10.7)	48.7(11.0)	47.2(14.4)	48.4(14.4)	47.6(13.9)

Table 4.5 ANOVA Summary for Outcome Variables

Variable	Group (Between)			Time (Within)			Group X Time (Interaction)		
	(df)	F	Pr>F	(df)	F	Pr>F	(df)	F	Pr>F
HIV Knowledge (n=56)	(1,54)	1.28	0.26	(2,108)	6.53	0.002*	(2,108)	2.18	0.11
Social Support (n=56)	(1,54)	0.41	0.52	(2,108)	1.47	0.24	(2,108)	1.54	0.22
Risk Reduction Acts (n=53)	(1,51)	0.20	0.66	(2,102)	1.78	0.17	(2,102)	0.38	0.67
Intravention Intent (n=56)	(1,54)	0.19	0.66	(2,108)	0.90	0.41	(2,108)	0.54	0.58
Risk Reduction Intent (n=56)	(1,54)	0.59	0.44	(2,108)	0.48	0.62	(2,108)	1.00	0.37
RR Self-Efficacy (n=56)	(1,54)	0.13	0.72	(2,108)	0.68	0.51	(2,108)	0.04	0.96

*p<.05

Discussion

Baseline results of our study indicate that midlife and older African American women living with HIV displayed attitudes and behaviors that may increase their risk of transmitting HIV to others and becoming infected with other STI's and re-infected with HIV. These women reported engaging in a moderate number of risk reduction acts. Mean scores for intentions to reduce risk were also moderate. Participants were found to have a moderate level of HIV Knowledge and moderately high mean scores related to risk

reduction self-efficacy at baseline. However, there were no significant differences found at baseline between participants in either the experimental or comparison condition on mean scores for HIV knowledge, risk reduction self-efficacy, number of reported risk reduction acts, risk reduction intentions, intravention intentions, or perceived social support. There were also no intervention effects (group by time) found for any of the assessed variables.

Participants in our study showed increases in their HIV knowledge mean scores following the intervention, however there was no differences found between the two conditions, indicating that knowledge increased significantly in both groups. It is possible that there may have been interaction outside the group between participants in the two conditions such that women in the experimental condition influenced HIV knowledge of women in the control condition. Some women in the study lived in the same residential community and it is likely that women also attended other community-based programs together. It is also possible that the repetition of completing the assessment, particularly for HIV knowledge, influenced the knowledge level for participants in both conditions. Finally, because both groups attended multiple educational sessions that discussed aspects of living healthier with HIV, HIV related knowledge increased equally across both conditions. Other studies have had mixed findings. For example, in their study of older HIV positive adults Illa and colleagues (2010) found significant changes in knowledge score at the 6-month follow-up. In contrast, in their study of HIV positive African American women, Raiford, Wingood and DiClimente (2007) found no changes in HIV knowledge.

A lack of changes in self-efficacy scores for the women in the study could be that the intervention and subsequent follow-up period were relatively short. Other studies targeting older HIV positive adults and including self-efficacy as part of the intervention content found no improvement in self-efficacy 6-months following the intervention (Illa et al. 2010). Women in the intervention attended 4 sessions and were assessed twice following the intervention at 1-month and 3-months after the baseline assessment. It may be that women needed more time following the intervention to enact skills that would build risk reduction self-efficacy. Finally, self-efficacy scores may not have increased following participation in the intervention is that risk reduction self-efficacy may be tied to other influential factors that may not have been addressed in the intervention.

Similarly, a possible reason no changes were found in perceived social support mean scores is that participants may not have had enough time to nurture more supportive relationships following the intervention. This pilot had a very short follow-up period and cultivating new relationships takes time, especially relationships that provide needed and wanted support. According to research conducted by Brennan-Ing and colleagues (2014) older adults living with HIV seek services at a far greater rate than their counterparts not living with HIV with social support being one of the most sought services particularly among women. The women in this pilot may not have had ample time to cultivate such relationships. Another possible reason for the lack of impact on social support mean scores is that perceived social support for individuals living with HIV has been shown to be linked to disclosure of one's HIV status (Vyavaharker et al. 2011, Serovich, Craft & Reed 2012). Rates of HIV disclosure were not assessed in this study, thus women may not have felt confident seeking and maintaining social support if disclosing their HIV

status presented challenges. It is also that more focused time on social support was needed in the intervention session to have a significant impact on participants being able to successfully establish more supportive relationships.

It's possible that the intervention used measures that were not the most relevant for this population and contributed to the lack of findings on some of the variables of interest. For example, measurement of risk reduction acts ranged from keeping and discussing condoms, to discussing viral load and partner's HIV status, to deciding ahead of time what one would and would not do sexually. Many of the items in the risk reduction intentions scale were around influencing sex partners to agree to use or discuss using condoms. Items in the intravention scale measured intentions to prevent HIV in others that ranged from talking about HIV/AIDS to giving someone condoms to advising someone to get tested for HIV. Although each of these scales had proven validity and reliability (Kalichman, et.al 2005, Mateu-Gelabert, et al, 2008) they may not have been the most appropriate measures for older African American HIV positive women.

There is a growing body of research that suggest a link of one's sexual and social network to HIV prevention (Neblett et al. 2011, Grieb, Davey-Rothwell, and Latkin, 2012, Ivey et al. 2013, Bairan et al, 2007, Schensul, et al, 2003) . Women in this study were not assessed with regard to their sexual or social networks, however such assessments may have complimented the measures used to examine risk reduction acts, risk intentions, and intravention intentions. For example because of their life stage dating and navigating relationships while infected with HIV is more challenging and as such assessing their intentions to discuss and engage in risk reduction activities may have been impacted by their sexual and social networks. Also, women may have felt very

comfortable giving someone condoms, but not as comfortable advising someone to get tested for HIV or educating them on HIV, particularly if these persons were links in their social network and engaging in the activities may lead to them being in a vulnerable position of having to decide whether to disclose their HIV status. Finally, women in the intervention may have social networks that were comprised mostly of others who were already living with HIV leaving them less individuals to intervene with or that they had smaller social networks and thus felt that had exhausted the list of potential individuals in which they could intervene with.

Finally, this intervention was implemented by two co-facilitators neither of whom were representative of the target population of the participants and this may have impacted the fidelity of how the intervention was delivered and contributed to the lack of findings. Although both co-facilitators were of the same race as the participants and one was the same gender, that may not have been enough. When implementing interventions tailored for such a specific population it may be helpful to have at least one member of the facilitation team who is representative of the referent group with respect to race, gender, age, and HIV status.

Limitations

This study had several limitations, including a small sample size. The pilot had 58 participants randomly assigned to two study conditions containing 29 participants in each. Another limitation is analyses were from self-reported data which can be subject to recall bias and/or social desirability bias. A third limitation is the study had a short follow-up period.

Implications

Despite the fact that there was no impact found from this study, it may provide lessons for HIV prevention programs and research. Although the intervention was guided by a theory of behavior change that has been successfully used in risk reduction interventions for individuals living with HIV, it may be that for sub-populations that are as narrowly defined as this population, other theories of behavior change may be better suited. For example, other theories that may have been relevant to guide an intervention aimed at midlife and older African American women include the Empowerment Theory and the Theory of Gender and Power. Additionally, this intervention may have used measures that didn't capture the full essence of the risk reduction variables we attempted to assess.

Conclusion

This pilot study aimed to test whether an intervention culturally tailored for African American midlife and older living with HIV could increase their HIV knowledge, risk reduction self-efficacy, risk reduction intentions, risk reduction acts, social support, and help them promote HIV prevention in others. As we continue to work to stop the spread of HIV, public health prevention interventions must target those vulnerable populations at the center of the epidemic, individuals living with HIV with effective interventions. Older African American women living with HIV could potentially benefit from culturally tailored prevention interventions that would facilitate development of skills to cope with living with HIV, reduce their risk for HIV transmission, and become advocates to prevent HIV in others.

Future research with this population should include more qualitative data gathering to better understand the culturally relevant skills building needs of this population that would inform the development of culturally tailored skills building prevention interventions. Future research with this population should aim to appropriately assess the communication skills and needs of these women. Social support can be an essential element for individuals to cope with living with HIV and reducing their risk for transmission to others, as such future research with older HIV positive African American women should aim to help women seek and maintain supportive relationships, however should also examine the social networks of these women to determine how these networks enhance and denigrate support. Finally, future research with this population should assess levels of HIV disclosure among these individuals as disclosure may be the central component to cope with living with HIV, reducing risk for HIV transmission, becoming HIV prevention advocates, and seeking and maintaining supportive relationships.

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WHIPS: A PILOT INTERVENTION TO REDUCE THE SEXUAL RISK
BEHAVIORS OF HIV + MIDLIFE AND OLDER AFRICAN AMERICAN
WOMEN²

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Abstract

There continues to be a need for HIV prevention interventions that aim to reduce sexual risks among individuals for contracting HIV. Over the last several years there has been a focus on secondary prevention efforts, that is prevention with those individuals infected with HIV. There now exists within the population of African American women living with HIV a growing sub-population in need of targeted HIV prevention interventions, midlife and older African American women. A culturally tailored pilot intervention aiming to reduce the sexual risk of African American HIV+ women 40 years of age and older was conducted in an urban city in the Southeastern region of the U.S. a total of 58 women were recruited and randomly assigned to one of two study conditions that consisted of four 2-hour group sessions. Women completed computer assisted assessments at baseline, post-intervention, and 3-month follow-up. Participants were assessed on demographic variables, psychosocial variables related to HIV transmission, and sex behaviors by partner HIV status. Results indicate that 83% (n=48) of the women reported having a male sex partner in the previous three months. Women in our study reported having unprotected vaginal sex with partners who were HIV +, HIV-, and whose HIV status was unknown at the time of sexual activity. At three month follow-up there were no significant differences found between the groups on the mean number of unprotected or protected sex acts and no intervention effect was found. There is still much to be learned about the sex behaviors of HIV+ midlife and older African American women. Women in our pilot study reported engaging in sex behaviors that increase their risks of transmitting HIV, becoming re-infected with HIV and contracting a sexually

transmitted infection. Future research with this population should further explore the sexual practices of these women including anal and oral sex behaviors.

Introduction

Among new cases of HIV infection diagnosed in the U.S., the most common mode of transmission is through sexual contact (CDC, 2012). As such there continues to be a need for HIV prevention interventions that aim to reduce sexual risk among individuals for contracting HIV. Over the last several years there has been a growing body of research that has focused on secondary prevention efforts, that is prevention with those individuals infected with HIV (Eschenique et al., 2013, Kalichman et al, 2001, Psaros et al., 2012, Serovich, Craft and Reed, 2012, Wingood et al., 2007). The need for prevention interventions targeting individuals living with HIV exist because those newly infected through sexual contact were infected by an individual currently living with HIV. As many as one in three HIV positive people continue unprotected sexual practices after learning that they are HIV infected (Kalichman et al. 2001).

The need for interventions specifically targeting HIV positive persons is widely recognized since recent prevention efforts that are effective with HIV negative individuals are not effective within the HIV positive population (Illa et al. 2008). One such sub-population that remains in need of HIV prevention interventions are African Americans. From 2005-2008, HIV incidence rates among African Americans increased by 12%, accounted for over half (55.7%) of HIV diagnosis in the South and, among women accounted for 65.9% of HIV diagnosis (McCord 2014). African Americans and particularly African American women continue to be disproportionately infected by HIV.

More recently, sexual risk behavior has been recognized as a current and increasing problem area for older adults, calling for an increase in education and HIV prevention efforts in this population (McCord 2014). There now exist within the population of African American women living with HIV a growing sub-population in need of targeted HIV prevention interventions, midlife and older African American women, Despite the fact that older women represent a growing risk group for HIV, they have been rarely targeted by public health campaigns designed to prevent HIV/AIDS and are often excluded from many prevention studies (Eschenique et al. 2013).

Past and continued current risk factors for black women of all ages living with HIV infection include (1) 19% to 36% reporting inconsistent condom use and unprotected sex with their HIV negative and unknown-status partners; (2) having sex without disclosing their HIV status; (3) self-selected drug holidays, skipping follow-up appointments, and continuing addiction behaviors which can compromise adherence; (4) using passivity and avoidance behaviors (self-silencing) to supersede self-advocacy; and (5) using isolation and decreased interaction with peers (DeMarco and Chan, 2013). In contrast to the younger age groups, many individuals over 50 do not consider unprotected sex a high risk behavior because many are no longer concerned about contraception (Illa et al. 2008). Older African American women living with HIV infection are an underserved population because their health promotion and prevention needs are different from those younger, childbearing women (DeMarco and Chan 2013). Older HIV positive sexually active adults are less likely than younger adults to change their sexual behavior based on HIV knowledge (Illa et al. 2008).

This paper reports on the effects of a culturally tailored pilot intervention for midlife and older African American women living with HIV. The study aimed to reduce the sexual risks of sexually active African American women 40 years of age or older, and to address the research question “Will women in the experimental program report less risky sexual behavior (i.e. more protected sexual acts, less unprotected sexual acts), than those in the comparison program following the intervention?”

Methods

Participants

The pilot study included 58 African American women 40 years or older and living with HIV who were from an urban metropolitan area in the Southeastern region of the United States.

Recruitment and Screening

Participants were recruited through flyers that were placed in AIDS Service Organizations (ASO's) and medical facilities where individuals living with HIV seek services, as well as through word of mouth from individuals who had participated in other studies at the research site. The research was conducted at a community-based research site that has a long standing reputation for conducting research with the target population. Potential participants called a central number and were screened over the phone by a research assistant who completes screening surveys for several interventions conducted under the umbrella of the Southeastern HIV/AIDS Research and Evaluation (SHARE) Project research group. Central screening begins with several basic questions and then branches off with questions specific for eligibility criteria based on the intervention. Women answered a total of nine screening questions and were eligible for

the study based on their answers to the following three questions: What is your date of birth?, eligible if age was calculated to be 40 years or older, What is your race/ethnicity?, eligible if race was African American/Black, and Have you engaged in any sexual activity in the past six months?, eligible if answered Yes. Of the eighty-six women screened, sixty-one were eligible and given appointments for a baseline assessment.

Design

Once deemed eligible for the study, women were scheduled to complete the consent form and a baseline questionnaire (usually within two weeks of screening) and were randomly assigned to group condition immediately following consent and baseline assessment. Fifty-eight women completed baseline assessments and were randomized to one of the two study conditions. Randomization was conducted using an on-line randomization generator (www.randomization.com) and twenty-nine participants were assigned to each condition. Intervention sessions began the week following baseline assessment. The study obtained institutional review board (IRB) approval from the University of Connecticut and the University of South Carolina.

Participants were paid up to \$110 to complete all study activities, which included \$20 for the baseline assessment, \$10 per group session and \$25 each to complete the 1 month and 3 month assessments. In addition to receiving \$10 per group session participants were provided a dinner meal because of the late hour of the group meeting time. Meals were consistent every wave based on group session, for example session one consisted of the same meal for each condition and each wave. Participants were asked to attend the session 30 minutes prior to the start of group if they wanted to have dinner. For individuals who came to group session late because of unexpected circumstances (e.g.

public transportation running late) to-go containers were made available so that they were able to enjoy a meal without causing a distraction to the group. All meals were home cooked by the investigator the week-end prior to the group sessions.

The intervention condition consisted of four 2-hour sessions that focused on HIV risk-reduction skills enhancement and social support, or a time matched control group that focused on general health and nutrition. Groups were held twice a week for two consecutive weeks. Group sessions were either a Monday and Wednesday group or a Tuesday and Thursday group for each condition. Sessions were held such that the two conditions ran simultaneously with one condition meeting on Mon/Wed and the other condition meeting on Tue/Thu and both group conditions receiving sessions 1&2 in the same week and sessions 3&4 the following week. Each two week block of groups was considered a wave and there were a total of three waves completed during the pilot. Group times were consistent for all groups (4:30-6:30pm) and each time a new wave was started the day pair (e.g. Mon/Wed) on which the intervention condition was conducted alternated. For example, if during wave 1 the intervention sessions were conducted on Mon/Wed, during wave 2 the intervention sessions were conducted on Tue/Thu.

Data Collection Procedures

Participants completed self-report measures using audio computer assisted self-interview (ACASI) assessment technology at baseline and follow-up assessments. Data for this pilot study were collected between March and August 2012. Follow-up assessments occurred at 1-month post baseline and 3-months post baseline. After completing the baseline assessment participants were given an appointment card to return for their 1-month assessment. Participants were given a phone call reminder two days

prior to their scheduled 1-month assessment, to ensure retention rates. Participants were allowed to complete the 1-month assessment up to two-weeks after the original appointment date. After completing the 1-month assessment participants were given an appointment card to return for their 3-month assessment. Participants were given phone call reminders one-week prior and again the day before their scheduled 3-month assessment, to ensure retention rates. Participants were allowed to complete the 3-month assessment up to two weeks prior and up to two weeks after the original appointment date.

Measures

Data were collected on demographic characteristics including age, ethnicity, education level, employment status, income, relationships status, and living arrangements. To assess sexual behavior participants were asked to recall the number of sex partners they had during the assessment period (i.e. past three months) and asked of the total number of partners how many were HIV positive, how many were HIV negative, and how many whose HIV status was unknown to them. Participants were asked by partner type how many times (during the assessment period) they had vaginal sex using a condom, vaginal sex without a condom, anal sex using a condom, and anal sex without a condom. This measure of self-reported sexual behavior has been successfully used in previous research with this target population (Kalichman, Cherry, Kalichman, Amaral, White, Pope, Swetzes, Eaton, and Cain, 2011; Kalichman, Rompa, Cage, DiFonzo, Simpson, Austin, Luke, Buckles, Kyomugisha, Benotsch, Pinkerton, and Graham, 2001).

There were a total of 12 specific sex acts participants were asked to report on which included six items for vaginal sex and six items for anal sex. The questions were;

the number of times you had vaginal sex using a condom with 1) an HIV positive partner, 2) an HIV negative partner, 3) a partner whose HIV status you did not know; the number of times you had vaginal sex without a condom with 1) an HIV positive partner, 2) an HIV negative partner, 3) a partner whose HIV status you did not know; the number of times you had anal sex using a condom with 1) an HIV positive partner, 2) an HIV negative partner, 3) a partner whose HIV status you did not know; and the number of times you anal sex without a condom with 1) an HIV positive partner, 2) an HIV negative partner, 3) a partner whose HIV status you did not know. To calculate the outcome variables of the proportion of unprotected sex acts we began by adding the total number of unprotected sex acts (6) and divided by the total number of acts (12) and used the same formula (total protected acts divided by total number of acts) to calculate the proportion of protected sex acts. However, because of the listwise deletion step in the analysis and the number of zeros reported in the dataset we yielded a high number of dropped cases.

We decided to separate the unprotected and protected vaginal sex behavior from the unprotected and protected anal sex behavior and create four outcomes variables (Unprotected Vaginal Sex, Protected Vaginal Sex, Unprotected Anal Sex, Protected Anal Sex) but still using the same formula. We once again were left with a high number of dropped cases and the results were far worse for the anal sex behavior. We decided to discontinue analysis of the anal sex behavior because of the reported low frequency. The final unprotected sex variable outcome was created by totaling the items; the number of times you had vaginal sex without a condom with 1) an HIV positive partner, 2) an HIV negative partner, 3) a partner whose HIV status you did not know; and calculating the means. The final protected sex variable outcome was created by totaling the items; the

number of times you had vaginal sex using a condom with 1) an HIV positive partner, 2) an HIV negative partner, 3) a partner whose HIV status you did not know; and calculating the means.

Intervention Development Activities, Theoretical Framework and Activities

As formative work to guide the development of the pilot intervention the investigator conducted informal interviews with 6 African American women living with HIV and aged 45 years or older. The purpose was to better understand what women in this target population felt would be good to include in a pilot intervention tailored for them including education they felt would be beneficial and skills they would like to build on. Additionally, a 56 year old HIV positive African American woman with more than 20 years of experience as a peer counselor and health educator served as a consultant to the investigator and helped to develop all the activities in the experimental condition.

Intervention development consisted of using the theoretical model to guide the goal of each session and creating interactive activities using examples of activities used in previous interventions conducted by the investigator, to accomplish the session goals. The intervention was delivered by an African American male/female co-facilitation team, with the investigator serving as the male facilitator. Each facilitator had more than 8 years of experience delivering HIV behavioral interventions.

The pilot intervention was conceptually guided by the Information-Motivation-Behavioral Skills (IMB, Fisher & Fisher, 1992) model of risk preventive behavior. The IMB model proposes that information and motivation activate behavioral skills to ultimately enact risk reduction behaviors (see figure 1). According to the model, information that is directly relevant to HIV transmission and HIV prevention is a

prerequisite of risk behavior change. Motivation to engage in HIV preventive behavior - which is a function of attitudes towards performance of HIV preventive acts, social norms regarding performance of such acts, and perceptions of personal vulnerability to HIV - is a second determinant of HIV risk behavior change. Behavioral skills for performing HIV preventive acts and self-efficacy for performing the acts are a third critical determinant of HIV risk behavior change (Fisher & Fisher, 1992). Information and motivation are thought to affect the use of risk reduction behavioral skills that are necessary for initiating and maintaining patterns of HIV risk behavior change. The model further proposes that risk reduction information and motivation may each have direct effects on HIV risk reduction behavior change, thus they are regarded as independent constructs in the model.

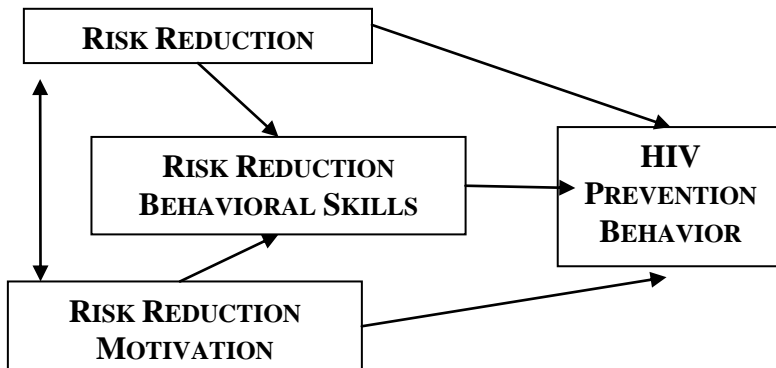


Figure 4.2: Information Motivation Behavioral Skills Model

Session one of the intervention group began with a welcome and overview of the intervention, introduction of facilitators and group participants, and an ice-breaker/team building activity. Participants then engaged in an educational/motivational activity about the impact of HIV on African American women followed by an activity and discussion about the role of women as caregivers and the importance of practicing self-care.

Participants were then led into an activity and discussion about gender power

relationships followed by a short motivational video-clip showing women empowering themselves by working together. The session ended with a re-cap of the session and preview of session two. Session two began with a welcome and recap of session one followed by an interactive activity and discussion about HIV disclosure as a part of self-care. Next, participants were guided through a skills-building activity using scripted scenario's to enhance skills-building around deciding whether to disclose one's HIV status. Participants were then engaged in an interactive activity to highlight the importance of communication followed by a skills-building activity using the scripted scenario's to practice and enhance disclosure communication skills. The session ended with a session recap and preview of session three.

Session three began with a welcome and recap of session two followed by an interactive educational activity about sexual risk, partner selection, and condom use. The group then viewed a short music video clip depicting two African American couples on dates that end with both couples engaging in sexual activity where one couple uses a condom and the other does not. Throughout the video subtle cues of the HIV status of video participants were displayed and the video ends showing the HIV status of the woman who had sex with a condom remaining negative, while the woman who did not use a condom converted from HIV negative to positive. Participants were then guided through a discussion about the positive aspects of using condoms highlighting how use of the female condom can empower women to increase sexual risk protection. Women were then engaged in a skills building activity of practicing inserting female condoms and putting on male condoms, followed by a skills building activity to practice and enhance condom communication/negotiation skills. The session ended with a recap and preview

of session four. Session four began with a welcome and recap of session three followed by an interactive activity and discussion to highlight the importance of supportive relationships and networks. Participants were then engaged in a skills building activity to enhance communicating support needs. Group members were then engaged in an interactive activity and discussion about preventing HIV among others in their community. Participants were then guided through an activity to identify and practice delivering prevention messages and teaching prevention skills to others in their community. The session ended with women being asked to set a goal to become a prevention advocate, a recap of the four sessions and a reminder of post assessment appointments. A summary of the group session goals, intervention activities, and outcome measures is provided in Table 1.

Table 4.6 Summary of Session Goals, Intervention Activities and Outcome Measures

Session	Goals	Intervention Activities	Outcome Measures	Theoretical Construct
1	Provide accurate HIV information for older women. Motivate women to engage in self-care and HIV risk reduction	Information videotapes and posters. Interactive educational activities. Group discussions.	HIV/AIDS Knowledge Behavioral intentions	Information Motivation
2	Identify pros and cons of HIV disclosure. Enhance disclosure decision making skills. Enhance communication skills for disclosure.	Group discussions. Video vignette's Facilitator modeling and role plays.	Disclosure skills self-efficacy. Behavioral intentions	Behavioral skills Motivation
3	Sexual Risk Reduction Sexual communication and negotiation skills building.	Condom demonstration and application. Safer sex education. Video vignettes and role plays.	Risk reduction self-efficacy. Behavioral intentions. Behavioral skills enactments. Protected sex acts.	Behavioral skills Motivation
4	Identify benefits of social support. Promote advocacy for HIV prevention among peers.	Interactive educational activities. Role plays.	Perceived social support Intravention intentions.	Motivation

Comparison Condition

Session one of the control group began with a welcome and overview of the intervention, introduction of facilitators and group participants, and an ice-breaker/team building activity. Participants were then engaged in discussion and interactive activity of setting health goals. Group members were next engaged in an interactive activity and discussion highlighting resources used by participants in other studies conducted by this research group to find health related information. Facilitators then guided participants through a skills building activity to enhance skills to evaluate sources of health related information. The session ended with a recap and preview of session two. Session two began with a welcome and recap of session one followed by an interactive educational activity and discussion about various Cancer's and their impact on women. Participants were then shown an educational video on Skin Cancer followed by a short discussion and skills building activity to practice skin self-exams. Group members were then shown a educational video on Breast Cancer followed by a short discussion and skills building activity using anatomical models to practice breast self-exams. The session ended with a session recap and preview of session three.

Session three began with a welcome and recap of session two followed by an activity that asked participants to record on index cards what they had for dinner the previous night. Participants were then shown an educational video about nutrition and nutritional issues for individuals living with HIV. Group members were then guided through an educational discussion about various nutrients and how to maintain a balanced diet. Participants were next asked to compare the meal they ate for dinner the previous night to the food pyramid and the guidelines set by the USDA as a practical way to

examine their nutritional intake. Participants were then given Food Diary sheets which let them track their nutritional intake for full a week and encouraged to use them to keep track of and compare what they eat and to make healthier food choices when they deem it necessary. The group was then shown a short video clip for the movie “The Nutty Professor 2: The Klumps.” The video used humor to depict a family making several healthy choices while dining out. The session ended with a recap and preview of session four. Session four began with a welcome and review of session three. Participants were then asked to share if they had begun completing the food diary since the last session and what if anything they had learned about their eating habits thus far. The group was then engaged in a motivational activity that highlighted what other HIV positive individuals were doing to improve their health and stay healthy. The activity showcased answers from surveys completed by previous participants regarding health improvement activities. Following the activity participants were led through a discussion and exercise on how to read and understand food labels. This was followed by an exercise where participants were given examples of a meal consisting of various food items and asked to share how they could make the meal healthier using only those food items. Next participants were given index cards and asked to record physical activities they had engaged in within the past week. The group was then engaged in a discussion about the importance of physical activity/exercise. Following the discussion participants were shown an exercise video for people with HIV by people with HIV and the group practiced the upper body exercises. Following the exercise practice participants were asked to share with the group what was recorded on the index cards they completed earlier concerning the physical activity they had engaged in during the previous week. Participants were encouraged to keep track of

their daily physical activity by completing the Activity Diary that is located on the reverse side of the Food Diary sheets they were given in the previous session. The session ended with women being asked to set a goal to stay healthy, a recap of the four sessions and a reminder of post assessment appointments.

Analysis

Analyses were conducted using SAS 9.4. For the main outcome variables we first determined overall baseline means and then examined group mean scores for each condition at baseline, post-intervention, and follow-up. To reduce the effects of possible spurious outliers in the reported protected and unprotected sex acts, particularly at the baseline and 1-month assessments, we winsorized data to the 95th percentile. After examining group means, we conducted a repeated measures factorial ANOVA to test for group by time interactions on differences in scores between baseline and post intervention (Time 1 and Time 2), and between baseline and follow-up (Time 1 and Time 3). We checked for violations of the assumptions for the repeated measures factorial ANOVA including the normality of the dependent variables across the levels of the group variable using the Shapiro-Wilk test and the homogeneity of variance-covariance among the outcome variables by group level. The sphericity assumption of the ANOVA test was checked with Mauchly's sphericity test. In case of violation of the sphericity assumption, adjustments were made to the ANOVA results using the Huynh-Feldt corrections for violations of sphericity.

Results

Of the 58 women who completed baseline questionnaires, 56 (96%) completed the 1-month assessment and 58 (100%) completed the 3-month assessment. For each

study condition 76% (n=22) of the participants attended three sessions or more and there were no differences found between the groups with regard to attrition. Participants ranged in age from 40-64yrs and the overall mean age was 47yrs (4.9 SD) with a mean age of 48.1 and 48.9 for the intervention and control groups respectively. The mean education level for all participants was 12.3 years (std) with a mean education level of 12.0 (2.1) for the intervention condition and 11.8 (1.9) for the control condition. A majority of the participants (96%) were on disability or unemployed, with 96% of those in the intervention group and 96% of those in the control group falling into those categories. Most participants (71%) reported an annual income of less than \$10,000 with no significant differences found between the intervention and control groups (68% and 75% respectively). Very few participants (10%) reported being married, with a third (33%) reporting being single while 57% reported being in a relationship. One third (32%) reported currently living with a partner and there were no differences found between the intervention and control groups (36% and 29% respectively). For most baseline demographics there were no differences reported between assignment to group condition, with the exception of relationship status. Although there were no group differences among women who reported being married (10% respectively) 29% of the women in the intervention group reported being single compared to 39% in the control group, while 61% of the women in the intervention group reported being in a relationship compared to 54% in the control group, however these differences were not found to be significant. Table 2 provides a summary of the demographic characteristics of the study participants based on the 56 participants with complete data.

Baseline Outcomes

At baseline 83% (n=48) of the women reported having a male sex partner in the previous three months which included 26 women in the intervention condition and 22 in the control condition. These women reported a total of 55 partners of which 62% (n=35) were of HIV negative or unknown status. When we examined specific sex acts reported by participants we found that of the women who reported sex partners, 27% (n=7) and 27% (n=6) of women in the intervention and control groups respectively reported engaging in unprotected vaginal sex with an HIV positive sex partner. We also found that 23% (n=6) of women in the intervention group and 32% (n=7) of the women in the control group reported engaging in unprotected vaginal sex with an HIV negative sex partner. Additionally, when asked about unprotected vaginal sex with a partner whose HIV status was unknown 8% (n=2) and 14% (n=3) of women in the intervention and control group respectively reported engaging in this behavior. The computer assisted assessment program was designed such that the reported number of sex partners could only be counted in one of the three HIV status types. Table 3 provides a summary of the reported number and types of partners at baseline.

Table 4.7 Demographic Characteristics

Variable	Intervention		Control		Total	
	n*	Mean (SD)or percent	n*	Mean (SD)or percent	n*	Mean (SD)or percent
Education years	28	12.0 (2.1)	28	11.8 (1.9)	56	12.3(1.8)
Age years	28	48.1 (4.3)	28	48.9 (5.4)	56	47.7 (4.9)
Income	28		28		56	
< \$10,000		68%		75%		72%
\$11,000-20,000		21%		21%		21%
\$21,000-30,000		7%		0%		4%
≥ \$30,000		4%		4%		4%
Employment	28		28		56	

Unemployed		32%		21%		27%
Working		4%		4%		4%
On Disability		64%		75%		69%
Student						
Relationship status						
Single		29%		39%		33%
In a relationship		61%		54%		57%
Married		11%		7%		10%
Divorced						
Living situation						
Live with partner		36%		29%		32%
Not live w/ partner		64%		71%		68%

Table 4.8 Baseline Reported # of Sex Partners

Variable	Total	Intervention	Control
# (%) Women reporting a sex partner	48 (83%)	26 (90%)	22 (76%)
# (%) HIV + Partners	20 (36%)	9 (29%)	11 (46%)
# (%) HIV – Partners	28 (51%)	16 (52%)	12 (50%)
# (%) Unknown status partners	7 (13%)	6 (19%)	1 (4%)

Table 4 summarizes the baseline unreported sex acts by individual items. Baseline assessment of unprotected anal sex with an HIV positive partner found that zero women in the intervention group reported engaging in this activity, compared to 9% (n=2) of women in the control condition reported engaging in this behavior. When asked about unprotected anal sex with an HIV negative sex partner, 4% (n=1) and 9% (n=2) of women in the intervention and control groups respectively reported engaging in this behavior. Finally, 4% (n=1) of women in the intervention group compared to 9% (n=2) of women in the control group reported engaging in unprotected anal sex with a partner whose HIV status was not known to them.

Table 4.9 Baseline Reported Unprotected Sex by Item

Variable	Intervention % (n) N=17	Control % (n) N=22
Unprotected Vaginal Sex w /HIV+ Partner	41% (7)	27% (6)
Unprotected Vaginal Sex w /HIV- Partner	35% (6)	32% (7)

Unprotected Vaginal Sex w /HIV Unknown Partner	12% (2)	14% (3)
Unprotected Anal Sex w /HIV+ Partner	0	9% (2)
Unprotected Anal Sex w /HIV- Partner	6% (1)	9% (2)
Unprotected Anal Sex w /HIV Unknown Partner	6% (1)	9% (2)

Intervention Outcomes

The mean number of protected sex acts reported by participants at baseline in the intervention condition was 4.0 (5.9 SD) compared to a mean of 3.9 (8.0 SD) reported by participants in the control group. Table 5 shows the mean number of protected sex acts reported by participants in each condition across the three assessment points. The Group x Time interaction was not significant, $F(2,108) = 1.71$, ns. Table 6 shows the ANOVA summary for the protected sex acts.

The mean number of unprotected sex acts reported at baseline by participants in the intervention condition was 1.5 (2.6SD) compared to a mean of 3.0 (5.6SD) reported by participants in the control condition. Table 5 shows the mean number of unprotected sex acts reported by participants in each condition across all assessment points. The Group x Time interaction was not significant, $F(2,108) = 0.17$, ns. Table 7 shows the ANOVA summary for unprotected sex acts.

Table 4.10 Mean Reported Sex Acts

	<u>Baseline</u>			<u>Post</u>			<u>3-Month</u>		
	<u>Intervention (N=29)</u>	<u>Control (N=29)</u>	<u>Total (N=58)</u>	<u>Intervention (N=29)</u>	<u>Control (N=29)</u>	<u>Total (N=58)</u>	<u>Intervention (N=29)</u>	<u>Control (N=29)</u>	<u>Total (N=58)</u>
<u>Variable</u>	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Protected Sex	4.4(5.9)	3.9(8.0)	3.9(6.9)	1.9(2.1)	5.0(9.3)	3.4(6.8)	4.1(7.0)	4.0(8.0)	4.1(7.5)
Unprotected Sex	1.5(2.6)	3.0(5.6)	2.2(4.4)	0.4(1.0)	2.4(6.2)	1.4(4.5)	1.7(3.5)	2.4(4.2)	2.0(3.9)

Table 4.11 ANOVA Summary Table for Protected Sex (LR Sex)

Source	df	SS	MS	F	Pr>F
Between Subjects					
Group	1	33.48	33.48	0.35	0.55
Residual between	54	5189.37	96.10		
Between Subject Total	55	5222.85			
Within Subjects					
Time	2	17.73	8.86	0.30	0.74
Group X Time Inter.	2	99.68	49.84	1.71	0.19
Residual within	108	3156.59	29.23		
Within Subject Total	112	3274.00			
Total	167	8496.85			

Note: N=56

Table 4.12 ANOVA Summary Table for Unprotected Sex (HR Sex)

Source	df	SS	MS	F	Pr>F
Between Subjects					
Group	1	118.34	118.34	4.38	0.04
Residual between	54	1458.94	27.02		
Between Sub. Total	55	1577.28			
Within Subjects					
Time	2	20.58	10.29	0.86	0.39
Group X Time Inter.	2	3.96	1.98	0.17	0.77
Residual within	108	1285.45	11.90		
Within Subject Total	112	1309.99			
Total	167	2887.27			

Note: N=56

Discussion

This study of HIV positive midlife and older sexually active African American women examined whether a culturally tailored intervention would increase the number of protected sex acts and decrease the number of unprotected sex acts reported by intervention participants. The study found that 83% (n=48) of participants reported engaging in sexual activity during the study assessment periods. Our results indicate no significant changes in the mean number of unprotected or protected sex acts reported by intervention compared to control participants between the baseline assessment and any of the two follow-up assessments. These findings are unexpected given results found by others conducting sexual risk reduction interventions guided by the IMB model and

targeting individuals living with HIV. For example, Tobin et al. (2012) conducted a culturally tailored HIV prevention intervention for African American men who have sex with men (MSM). The study found that among participants who reported having a sex partner at the 3-month follow-up the intervention condition was associated with marginally greater odds of reporting 100% condom use with male partners. Similarly, Eschenique and colleagues (2012) conducted a risk reduction study with HIV positive adults aged 45 years and older and found that among the 109 women in the sample, those who received the intervention condition were less likely to have unprotected sex at the 6-month follow-up compared to women who did not receive the intervention condition.

Our findings yielded unexpectedly low frequencies of unprotected sex reported by women in this pilot. In fact, when we examined the number of women reporting sexual activity during each of the assessment points we found very low frequencies of reported sexual activity, suggesting women in this study may not have been consistently engaging in sexual activity. However, it is interesting that at baseline, women in our study reported engaging in sex with more partners whose HIV status was negative or not known to them than partners who were HIV positive. Of particular interest is the finding that of the women who reported engaging in sex at baseline, 9% of those reported engaging in unprotected anal sex with partners of all assessed HIV status. This issue should be explored more in future research as little is known about anal sex behavior among midlife and older African American women.

This study may have included women who were not highly sexually active due in part to the recruitment and screening of the sample. The sexual behavior eligibility criterion was reporting having engaged in sexual activity in the past six months.

However, the baseline assessment asked about engagement in sexual behavior in the previous three months. Women may have engaged in sexual activity in the previous six months but not the last three months. Also, because the eligibility criteria question was not specific to penetrative sexual activity, it's possible that women may have only been engaging in non-penetrative sexual activity such as oral sex, however we did not assess this behavior. Additionally, we may have benefited by assessing if women engaged in sexual activity using a condom at their last sex act, in addition to asking about the previous three months.

Participants in our study attended four 2-hour sessions that were conducted twice a week over a two week period. Future research interventions with this population should include a greater intervention dose or at least more time between sessions such as weekly sessions which may increase participants' ability to implement new skills and allow intervention staff to check-in with participants' and problem solve skill enactment. Also, our intervention sessions were conducted by a male/female co-facilitation team which may have impacted the fidelity in which the study was delivered. Future research interventions with this population could benefit by having a co-facilitation team that more closely mirrors the gender, age, and HIV characteristics of the study sample.

Finally, our study had a relatively short follow-up period and it's possible that women did not have adequate time to enact such strategy changes, particularly if they came into the study reporting low frequencies of unprotected sex.

Implications

Despite the lack of study effects, there are implications for public health research and prevention education campaigns. Our findings indicate that midlife and older

African American women living with HIV and engaging in sexual activity reported inconsistent condom use. Participants reported engaging in unprotected vaginal sex with HIV positive partners which could lead to HIV re-infection as well as co-infection with other sexually transmitted diseases. Women in this pilot study also reported engaging in sexual activity with sex partners whose HIV status was negative or unknown. This finding provides further evidence of the need for more targeted prevention interventions for this population. Additionally, these findings suggest that sexual risk remains an important issue for midlife and older African American HIV positive women.

Conclusion

This study may provide a framework for more comprehensive interventions targeting HIV positive midlife and older African American women. Future interventions with this population should include a more stringent recruitment and screening criteria particularly with regard to engagement in recent sexual activity. Our study assessed reported condom use in the previous three months at baseline and 3-month follow-up and in the previous 1-month at post. Future research with this population should also assess reported condom use at last sex act, particularly because women in this cohort may be engaging in low frequencies of sexual activity.

Future research with this population should further explore anal sex behavior of these women. This research should also assess oral sex behavior of African American women in this age cohort. Future interventions with this population should closely examine who delivers the intervention and the amount and time interval between dosing sessions. Additionally, future research should include a longer follow-up assessment period.

Our study has several limitations which must be noted. The study relied on self-reported behavior which can be subject to recall bias. This may be especially true for this population who were of an older age and being asked to recollect intimate behaviors that happened in the previous three months. Self-reported behavior may also be subject to social desirability which again may have presented a special challenge for this study population. Many of the women in this study had a history of participating in research at our research site, as well as women in this study were more than likely to live in communities and attend other educational and support workshops with other study participants, thus possibly increasing desire to provide socially acceptable responses to questions assessing intimate and sexual behavior. Finally, the study included a small sample size because of the pilot nature of the study. Despite these limitations, this study may contribute to the important issue of understanding the sexual behaviors of sexually active HIV positive midlife and older African American women.

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CHAPTER V. SUMMARY, IMPLICATIONS AND RECOMMENDATIONS

This chapter summarizes and discusses the results of Research Questions 1 and 2, and AIMS 1 and 2 as presented in Chapter IV. Additional results from Research Question 1 that were not reported in the manuscripts are provided. The outcome of AIM 3 not discussed in the manuscripts is also presented. In addition to a discussion of the findings, final conclusions and implications for future research are also presented.

5.1 Research Question # 1 and AIM #1

Research question 1) “Will women in the experimental program report less risky sexual behavior (i.e. more protected sexual acts, less unprotected sexual acts) than women in the comparison program following the intervention?” and part A of AIM 1). (Examine the impact of a pilot intervention with older African American HIV+ women on high risk sexual behaviors) and self-reported social support was addressed mostly in manuscript # 2, but also as part of manuscript #1.

We examined the mean number of protected vaginal sex acts reported by women in the intervention at baseline, post intervention, and 3-month follow up. Women in our intervention were asked to report the number of times they had engaged in sex without using condoms with HIV positive partners, HIV negative partners and partners whose HIV status was not known to them at the time sexual intercourse. We found that 83% (n=48) of the women in our study reported having engaged in sex with a male sex partner at baseline and these women reported a total of 55 sex partners. We found that among

these reported sex partners, 36% (n=20) were HIV positive, 51% (n=28) were HIV negative, and 13% (n=7) were of unknown HIV status, concluding that the majority of the partners reported by our participants were at increased risk of contracting HIV.

Women in the experimental condition reported a mean number of 1.5 (2.5 SD) unprotected sex acts compared to a mean of 3.0 (5.6 SD) reported by women in the comparison condition. They reported a mean number of 4.4 (.59 SD) protected sex acts compared to a mean of 3.9 (6.9 SD) reported by women in the comparison condition. When we examined these reported behaviors at 3-month follow-up we found that women in the experimental condition had a mean of 1.7 (3.5 SD) unprotected sex acts while the comparison condition reported a mean of 2.4 (4.2 SD) and the mean number of protected sex acts was 4.1 (7.0 SD) and 4.0 (8.0 SD) reported by the experimental and control groups respectively. When we examined baseline sex behavior by independent sex acts we found that of the women reporting engaging in sex at baseline, 27% of women in both conditions (n=7 and n=6 respectively) reported engaging in unprotected vaginal sex with an HIV positive partner, 23% (n=6) in the experimental and 32% (n=7) of those in the comparison condition reported unprotected vaginal sex with an HIV negative partner, and 8% (n=2) and 14% (n=3) of women reported engaging in unprotected sex with a partner whose HIV status was unknown in the experimental and comparison groups respectively.

ANOVA results for unprotected sex found no significant differences between the groups $F(1,54) = 4.38$, ns on the mean number of reported acts, and no intervention effect $F(2,108) = 0.17$. Similarly, ANOVA results for reported number of protected sex acts

found no differences between groups $F(1,54) = 0.35, ns$ as well as no intervention effect $F(2,108) = 1.71, ns$.

To further understand the implications of research question 1 and part A of AIM 1, we examined the conceptualized variables of the IMB model that are theorized to be mediators of behavior change. We examined the mean scores for HIV knowledge, risk reduction intentions, risk reduction self-efficacy, and risk reduction acts. The intentions to reduce sexual risks variable included 9 items answered on a six-point likert scale (1=definitely will not do; to 6=definitely will do) that were then added (with items recoded such that higher scores indicated greater intentions) to calculate scores that ranged between 9-54. Self-efficacy to reduce one's sexual risks included six questions answered on an 11-point likert scale (0=definitely cannot do; to 10=definitely can do). To calculate risk reduction Self-Efficacy scores we first recoded items such that higher scores indicated a greater sense of self-efficacy and then added the six items to calculate scores that ranged between 0-66.

Participants were asked to respond to 20 questions regarding their knowledge of HIV risks, transmission, and prevention with a response format that included Yes, No, and Don't Know. To calculate scores for HIV Knowledge we first recoded answers such that correct answers were coded 1 and incorrect or don't know answers were coded 0. Scores were then calculated by summing the total number of correct answers with a range of 0-20. To examine what behaviors participants practiced to reduce their sexual risks they were asked to respond Yes or No to ten items that might reduce ones' sexual risks. If participants endorsed an item they were then asked to indicate the number of times they had enacted the behavior during the assessment period (i.e. in the past month/three

months). Total risk reduction acts were calculated by summing the number of endorsed items.

At baseline the mean risk reduction intention score for the experimental condition was 44.7 (15.3 SD) compared to 41.1 (16.9 SD) for the comparison condition. The mean baseline scores for risk reduction self-efficacy was 49.4 (11.0 SD) and 48.7 (10.7 SD) for the experimental and control groups respectively. When we examined the baseline mean risk reduction acts we found a mean of 5.5 (1.8 SD) for the experimental group participants compared to 5.6 (2.4 SD) for comparison group participants. Finally, mean baseline knowledge scores were found to be 13.3 (3.9 SD) for those in the intervention condition compared to 12.9 (4.2 SD) for those in the comparison condition.

ANOVA results for risk reduction intentions, risk reduction self-efficacy, and risk reduction acts found no significant differences between the groups on any of these variables and no intervention effect on any of the variables. For the variable risk reduction acts, we further analyzed a single item from the scale “ I choose to abstain from having sex” using a repeated measure factorial ANOVA to examine the mean between groups and across time and found no significant difference between groups and no intervention effect. The ANOVA for HIV knowledge found that HIV knowledge scores changed over time, however there was no significant difference found between the groups and no significant intervention effect.

5.2 Implications

Our findings have implications for understanding the sex behaviors of HIV + midlife and older African American women. Women in our study reported engaging in unprotected vaginal sex with partners whose HIV status was positive, negative, and not

known to them at the time of sexual intercourse. These findings are consistent with others who have found that individuals living with HIV engaging in high risk sexual practices (Paranjape et al., 2006, Lovejoy et al., 2008, Kalichman et al., 2011). These behaviors increase the risk of HIV transmission and reinfection, as well as infection with other sexually transmitted infections (STIs). Moreover, women in our study reported more partners whose HIV status was negative or unknown than partners who were HIV +. These findings are in contrast to the findings of others who have conducted research with midlife and older HIV positive individuals and found more HIV positive partners than partners who were HIV negative or of unknown status (Illa et al., 2010, Kalichman et al., 2011). Of particular interest was the finding that of the women in our sample that reported engaging in sexual activity, 9% reported engaging in unprotected anal sex. In their study of midlife and older adults Schensul and colleagues (2003) found that 3% reported engaging in anal sex, providing further evidence that this is a behavior that may need to be further explored for individuals in this target population.

Participants in our study were found to have moderate levels of risk reduction intentions and risk reduction self-efficacy at baseline, although these levels were not found to significantly change over time. Others have found that risk reduction self-efficacy had improved following participation in an HIV intervention, however these studies included longer follow-up periods (Raiford et al., 2007, Illa et al., 2010, Kalichman et al., 2011). Women also reported engaging in a moderate level of risk reduction acts at baseline, despite the finding that these levels did not change over time. It is interesting that HIV knowledge changed over time for participants in our study, yet there was no intervention effect. In contrast, in their study of African American women,

Raiford, Wingood, and DiClemente (2007) found no changes in HIV knowledge. Our findings could indicate that regardless of the intervention condition, there was a benefit associated with attending an intervention with other HIV+ individuals that focused on living with HIV, or perhaps there was some interaction between participants in the two study conditions.

5.3 Recommendations

Future research with this population should include more stringent eligibility criteria as it relates to sexual behavior. Eligibility criteria should screen for sexual behavior that more closely match the timeframe in which sexual behavior is assessed at the baseline assessment. Future research should also further assess the anal sex behaviors of this population. Future interventions with this population should include more formative qualitative research to understand the risk reduction intentions and risk reduction self-efficacy of these women and further guide intervention development. Future interventions with this population should examine more closely the content of the comparison groups to ensure a distinguishable difference between HIV related educational information presented in the intervention conditions.

5.4 Research Question #2 and AIM #2

Research question 2) “Will women in the experimental program report higher rates of perceived social support than those in the comparison program following the intervention?” and AIM 2) Examine the impact of the intervention on intentions to engage in activities to promote HIV prevention in others was addressed in manuscript #1.

To examine perceived social support women were asked to respond to 15 items assessing perceived support that are categorized as tangible support, appraisal support,

and belonging support. Questions were answered on a 4-point likert scale ranging from 1= completely true to 4 = completely false. To calculate scores we first recoded the questions such that higher scores indicated more perceived social support and then added the 15 items to calculate scores that ranged between 15-60. Participants were asked to respond to six items assessing their intentions to prevent HIV in others (intravention) answered on a six-point likert scale (1 = definitely will not do – 6 = definitely will do). Scores were calculated by first recoding items such that higher scores indicated greater intentions to intervene and then summing the six items to calculate scores that ranged from 6-36.

At baseline women in the experimental group had a mean social support score of 48.3 (8.3 SD) compared to 48.6 (7.1 SD) for those in the comparison group. The mean baseline scores for intravention was 27.5 (9.6 SD) and 30.0 (6.6 SD) for the experimental and control groups respectively. ANOVA results for perceived social support and intentions to prevent HIV in others found no significant differences between the groups and no intervention effect for either of these variables.

5.5 Implications

Although this pilot intervention did not have a significant impact on changing the mean scores of participants on either perceived social support or intentions to prevent HIV in others, the findings may provide insight for future research with this population. Women in this study had moderately high mean scores on both perceived social support as well as intentions to prevent HIV in others. There is evidence that for individuals living with HIV/AIDS, having a supportive network can be an intricate part of helping to manage their infection as well as maintain healthy behaviors that reduce the risk of

transmitting the virus to others (Carlos et al., 2010, Weeks et al., 2010). To increase means scores for perceived social support would require that participants cultivate more supportive relationships which can require time. Midlife and older adults living with HIV and seeking supportive relationships may need more time than other adults to cultivate such relationships. According to research conducted by Brenna-Ing and colleagues (2014) older adults living with HIV seek services at a far greater rate than their counterparts not living with HIV, with social support being one of the most sought services particularly among women. It may be that the relatively short follow-up period did not allow adequate time for women in this study to nurture such supportive relationships.

It's also possible that seeking supportive relationships for individuals living with HIV is directly impacted by one's ability to disclose their HIV status and HIV status disclosure was not assessed in this study. Interviews and focus groups with HIV positive individuals conducted by Bairan and colleagues (2007), as well as Kalichman and others (2003) found that disclosure of one's HIV+ status to others depends on social relationships and support, which is further evidence that an intervention seeking to increase perceived social support should also assess the rates at which individuals are able to disclose their HIV status. Furthermore, our assessments did not ask women about their social networks and the people who made up those networks. There is a growing body of research that suggest a link of one's social network to HIV prevention and such assessments may have complimented the measures used to examine perceived social support and intentions to prevent HIV in others (Neblett et al., 2011, Grieb et al., 2012, Ivey et al., 2013).

Intentions to prevent HIV in others assessed how willing participants were to do activities ranging from talking with people about HIV/AIDS to talking with someone about getting tested or advising someone to use condoms. To increase intervention scores would require participants to feel comfortable performing such tasks. It's possible that women may have felt comfortable performing some tasks more than others. For example, Crosby and colleagues (2000) found that African American women were less likely than women of other races to ask about one's sexual history and a partner's HIV status. Similarly, Landau and others (2006) found that midlife women were not likely to initiate a discussion about sex and HIV prevention with a health care worker, a setting in which one might find it safer to initiate such discussions. It's also possible that performing certain tasks such as advising someone to get tested for HIV may leave an individual vulnerable to being asked whether they had been tested for HIV, which may in turn lead to issues of disclosure.

5.6 Recommendations

Future research with this population should include longer follow-up periods when assessing whether participants were able to cultivate an increased number of supportive relationships. Future research with this population should include more formal qualitative data collection on the nature of supportive relationship seeking for these individuals and its linkage to disclosure of one's HIV status. Future research should also include assessments of the participant's ability to disclose their HIV status to particular referents in their social network. Finally, future research with this population should examine additional items to assess participants' willingness to prevent HIV in others.

5.7 AIM # 3

AIM # 3) Examine the association of changes in scores on the Information-Motivation-Behavioral skills (IMB) constructs and changes in reported acts of protected and unprotected sex of women participating in the intervention, was not able to be undertaken for analysis in this study due to the lack of significant changes found in the reported acts of protected and unprotected sex of participants in this pilot study.

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APPENDIX A. DEMOGRAPHIC QUESTIONS

What is your date of birth?

_____/_____/_____
Month Day Year

Which best describes you?

White African American/Black Hispanic/Latina Asian/Pacific Islander Other

What is your current employment status?

Working On Disability Unemployed Student Other

What is the highest level of education you've completed?

Less than HS HS Diploma/GED Some College Graduated College

Which best describes your current yearly income?

\$0-\$10,000 \$11,000-\$20,000 \$21,000-\$30,000 over \$30,000

Which best describes your current relationship status?

Single In a relationship Married Living with partner/not married

APPENDIX B. STI HISTORY

Have you ever had a discharge or unexplained white or yellowish fluid from your genitals	Yes	No
How many times have you had a discharge or unexplained white or yellowish fluid from your genitals?		
What year did you last have a discharge or unexplained white or yellowish fluid from your genitals?		
Have you ever had a sharp or burning pain when you pass urine?	Yes	No
How many times have you had a sharp or burning pain when you pass urine?		
What year did you last have a sharp or burning pain when you pass urine?		
Have you ever had painful or unpainful sores on your genitals?	Yes	No
How many times have you had painful or unpainful sores on your genitals?		
What year did you last have painful or unpainful sore on your genitals?		
Have you ever been diagnosed with Chlamydia?	Yes	No
How many times have you been diagnosed with Chlamydia?		
In what year were you last diagnosed with Chlamydia?		
Have you ever been diagnosed with Gonorrhoea?	Yes	No
How many times have you been diagnosed with Gonorrhoea?		
In what year were you last diagnosed with Gonorrhoea?		
Have you ever been diagnosed with Syphilis?	Yes	No
How many times have you been diagnosed with Syphilis?		
In what year were you last diagnosed with Syphilis?		
Have you ever been diagnosed with Herpes?	Yes	No
How many times have you been diagnosed with Herpes?		
In what year were you last diagnosed with Herpes?		
Have you ever been diagnosed with Genital Warts?	Yes	No
How many times have you been diagnosed with Genital Warts?		
In what year were you last diagnosed with Genital Warts?		

Have you ever been diagnosed with Non-gonococcal Urethritis (NGU)?

Yes No

How many times have you been diagnosed with Non-gonococcal Urethritis?

In what year were you last diagnosed with Non-gonococcal Urethritis?

Have you ever been diagnosed with Trichomoniasis?

Yes No

How many times have you been diagnosed with Trichomoniasis?

In what year were you last diagnosed with Trichomoniasis?

APPENDIX C. HIV KNOWLEDGE MEASURE

HIV and AIDS are the same thing.	True	False	Don't Know
STD's like Syphilis and Gonorrhea increase HIV in sex fluids.	True	False	Don't Know
All condoms protect against the spread of HIV	True	False	Don't Know
All pregnant women infected with HIV have babies born with the HIV virus.	True	False	Don't Know
If you are HIV+ it is okay to have unprotected sex with another HIV+ person	True	False	Don't Know
A person with an undetectable viral load can also have AIDS	True	False	Don't Know
All HIV treatments work in the same way to stop the virus	True	False	Don't Know
Female condoms can protect against spreading HIV	True	False	Don't Know
Women are routinely checked for HIV during a PAP smear	True	False	Don't Know
Having a T-cell count below 200 means that a person has AIDS	True	False	Don't Know
T-cells are the same thing as CD4 cells	True	False	Don't Know
Condoms break only if they are used more than one time	True	False	Don't Know
It is possible for a person with an undetectable viral load to transmit the virus to others	True	False	Don't Know

An undetectable viral load means the virus is gone from the body	True	False	Don't Know
Using the withdrawal method will protect my partner if we don't use condoms	True	False	Don't Know
It is easier for a man to give HIV to a woman than it is for a woman to give HIV to a man	True	False	Don't Know
Having a high viral load is good?	True	False	Don't Know
Using a male and female condom together can provide double protection	True	False	Don't Know
When treatments for HIV work do they cause a decrease in viral load?	True	False	Don't Know
Any oil can be used to safely lubricate a latex condom	True	False	Don't Know

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident
How confident are you that you can practice safer sex even if you do not tell your partner that you are HIV positive?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

Stories

On the next few screens you will read some stories followed by some questions. The stories are similar, but some details have been changed in each story to make it different. For each of the four stories, imagine that you are in the story and rate how confident you are that you could perform the described action. Use your imagination to put yourself in each story, even if it is something that would be unlikely to happen to you. Please answer every question even if you are not currently sexually active.

Story 1: Version A

This has been a difficult week for you and you want to forget all of your problems for a while. You go out walking and meet up with some people you know. You go off with them and have a drink to relax. Even though you haven't had too much to drink, you feel it affecting you. One of your friends introduces you to someone you have seen before and felt attracted to in the past. This person seems to be making it clear that they want to have sex with you. You feel interested.

Keep this story in mind when you are answering the next four questions.

How confident are you that you could make an effective decision of whether to tell this person you are HIV positive in this situation?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

How confident are you that you could know whether it was safe to tell this person in this situation?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

How confident are you that you could bring up the need to practice safer sex in this situation?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

How confident are you that you could refuse to have unsafe sex in this situation even if your partner pressures you to be unsafe?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

Story 1: Version B

Just like in the previous story, imagine that this week has been difficult for you and you want to forget your problems. You go out walking and meet up with some people you know. You go off with them and have a few drinks. You get to feeling pretty buzzed when one of your friends introduces you to someone you have been attracted to in the past. This person seems to be making it clear that they want to have sex with you. You feel like you are a little drunk. You also feel interested in being with them. Keep this story in mind when you answer the next four questions.

How confident are you that you could make an effective decision of whether to tell this person you are HIV positive in this situation?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

How confident are you that you could know whether it was safe to tell this person in this situation?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

How confident are you that you could bring up the need to practice safer sex in this situation?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

How confident are you that you could refuse to have unsafe sex in this situation even if your partner pressures you to be unsafe?

0 1 2 3 4 5 6 7 8 9 10
Not at all confident Somewhat confident Very confident

APPENDIX F. RISK REDUCTION SKILL ENACTMENTS

I have kept condoms with me like in my pocket or my car.

How many times in the past 3 months?

I told a sex partner that we need to use a condom.

How many times in the past 3 months?

I told a sex partner I did not want to have sex unless we used a condom.

How many times in the past 3 months?

I discussed using condoms with a sex partner.

How many times in the past 3 months?

I discussed my viral load with a sex partner.

How many times in the past 3 months?

I found out my partner's H I V status ahead of time.

How many times in the past 3 months?

My partner and I agreed ahead of time what we would and would not do sexually together.

How many times in the past 3 months?

My partner withdrew his penis before cumming.

How many times in the past 3 months?

APPENDIX G. SEXUAL BEHAVIORS MEASURE

Have you ever had sex with a man? Yes No

Have you ever had sex with a woman? Yes No

In the past 3 months how many men have you had sex with? _____

Of the _____ men you had sex with in the past 3 months how many were HIV+?

Of the _____ men you had sex with in the past 3 months how many were HIV-?

Of the _____ men you had sex with in the past 3 months how many did you not know their HIV status?

How many times in the past 3 months have you had vaginal or anal sex where you and your partner did use a condom?

Of the _____ times in the past 3 months you had vaginal or anal sex where you did use a condom how many times were with a partner who was HIV+?

Of the _____ times in the past 3 months you had vaginal or anal sex where you did use a condom how many times were with a partner who was HIV-?

Of the _____ times in the past 3 months you had vaginal or anal sex where you did use a condom how many times were with a partner whose HIV status you did not know?

How many times in the past 3 months have you had vaginal or anal sex where you and your partner **did not** use a condom?

Of the _____ times in the past 3 months you had vaginal or anal sex where you **did not** use a condom how many times were with a partner who was HIV+?

Of the _____ times in the past 3 months you had vaginal or anal sex where you **did not** use a condom how many times were with a partner who was HIV-?

Of the _____ times in the past 3 months you had vaginal or anal sex where you **did not** use a condom how many times were with a partner whose HIV status you did not know?

APPENDIX H. SOCIAL SUPPORT MEASURE

There are several people that I trust to help me solve problems.

Completely True	Mostly True	Mostly False	Completely False
1	2	3	4

There is no one that I feel comfortable talking to about intimate personal problems.

Completely True	Mostly True	Mostly False	Completely False
1	2	3	4

There really is no one who can give me an objective view on how I am handling problems.

Completely True	Mostly True	Mostly False	Completely False
1	2	3	4

If I were sick and needed someone to take me to a doctor, I would have trouble finding someone.

Completely True	Mostly True	Mostly False	Completely False
1	2	3	4

If I needed a place to stay for a week because of an emergency, I could easily find someone who would put me up.

Completely True	Mostly True	Mostly False	Completely False
1	2	3	4

I feel that there is no one I can share my most private worries and fears with.

Completely True	Mostly True	Mostly False	Completely False
1	2	3	4

If I were sick, I could easily find someone to help me with my daily chores.

Completely True	Mostly True	Mostly False	Completely False
1	2	3	4

I feel a strong emotional bond with at least one other person.

Completely True Mostly True Mostly False Completely False
1 2 3 4

There is someone I can turn to for advice about handling problems with my family.

Completely True Mostly True Mostly False Completely False
1 2 3 4

When I need suggestions on how to deal with a personal problem, I know someone I can turn to.

Completely True Mostly True Mostly False Completely False
1 2 3 4

If I needed an emergency loan of \$100 there is someone I could get it from.

Completely True Mostly True Mostly False Completely False
1 2 3 4

If I go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment.

Completely True Mostly True Mostly False Completely False
1 2 3 4

It would be difficult to find someone who would lend me their car for a few hours.

Completely True Mostly True Mostly False Completely False
1 2 3 4

I have close relationships that provide me with a sense of emotional security and well-being.

Completely True Mostly True Mostly False Completely False
1 2 3 4

I lack a feeling of intimacy with another person.

Completely True Mostly True Mostly False Completely False
1 2 3 4

APPENDIX J. CONSENT FORM FOR PARTICIPATION IN A RESEARCH PROJECT

Principal Investigator:

Study Title: Women's HIV Prevention Study (WHIPS)

Invitation to Participate

You have been invited to take part in a research study about the health behaviors of women living with HIV/AIDS. The study is under the supervision of

Purpose

The purpose of this study is to see if participating in group discussions can help women living with HIV/AIDS to improve their health-related behaviors.

Procedures

As part of the study you will need to come to the SHARE Project office located at 1 Baltimore Place Suite 280, Atlanta, GA 30308, Phone (404) 892-3500.

At the initial interview you will be asked to bring in a picture id and proof of your HIV status. You will then be asked to complete a questionnaire on a computer. You can do the questionnaire even if you've never used a computer before. The initial interview will take about 2 hours.

You will be asked to come back to the SHARE Project approximately a week after the initial interview to attend a series of group sessions. You will be placed into one of two groups by a process called randomization. Randomization is like the flip of a coin. There are no special reasons why you would be in either group. You will either be placed in a group that will talk about HIV, sexual relationships, and social support. **OR** a group that will talk about HIV medication habits, health care, and nutrition.

You will be asked to attend 4 group sessions that meet over a two-week period, with other HIV positive women. The group sessions are 120-minutes long and are led by two facilitators.

You will be asked to come back to the SHARE Project office two more times over the next four months to complete a questionnaire on the computer. Each questionnaire will take about an hour to complete. The questionnaires will ask you questions about your attitudes, health, relationships, substance use, medications for treating HIV, and sexual behaviors. Your name will not be put on these questionnaires, instead you will be given a secret code number and only that code will be on your questionnaires.

Risks and inconveniences

There is no risk of physical harm from this study. You will be asked personal questions about your health status, personal life, sexual behaviors and habits about taking your medications. Some of the questions may make you uncomfortable or cause you to become upset. You do not have to answer any question that you do not want to and you can stop participating at any time. If you become distressed, we will have someone for you to talk with. By coming to the SHARE Project office it is possible that others may find out that you are living with HIV. Having to come to the SHARE Project office to complete the questionnaires and group sessions may be inconvenient and may require you to get transportation and other forms of assistance to participate. The total time to complete the study will be approximately 12-13 hours over the next four months.

Benefits

This study may help us understand the health behaviors of women living with HIV/AIDS. The information you provide could help in the development of other ways to treat women with HIV/AIDS. It is possible that you could learn new methods to improve your health and health behaviors, however you understand that this is not guaranteed.

Economic Considerations

For your time commitment to the project, you will be compensated each time you complete a study activity. You will receive:

Initial Intake Interview and Office Assessment
Group Education Sessions
Second Office Assessment
Third Office Assessment

Confidentiality

We will do everything we can to keep others from learning about your participation in the research.

You should understand that the investigator is not prevented from taking steps, including reporting to authorities, to prevent serious harm to yourself or others. You should know there are limits to the confidentiality that we can promise you.

In the group, we cannot guarantee confidentiality. Any group participants however, will be asked not to repeat anything they might hear during a group session.

If you tell that you have a plan to engage in high-risk behavior with a named person who does not know your HIV status, we may be legally required to protect that person.

Also, if you tell that you plan to hurt yourself or others, we may take action to protect you or other people.

All the information you provide during the computer questionnaires will be identified only by a secret code that will be created and your name will not be put on any of this

information. The list linking your secret code to any of your information will be kept separate. The list will be destroyed within 6 months of completion of the study.

Your name will not appear in any publication or be given to anyone without your written consent.

Some of the group sessions you attend may be audio taped for quality assurance and research purposes. These tapes will remain confidential and only the researchers and their staff will listen to them. The tapes may be transcribed without names included and the tapes will be destroyed within 6-months of completion of the study. When tapes are transcribed, no names will appear in the transcriptions.

You should know that the Universities of South Carolina/Connecticut Institutional Review Board (IRB) and the Office of Research Compliance may inspect study records as part of its auditing program, however these reviews will only focus on the researchers and not on your responses or involvement. The IRB is a group of people that looks at research studies to protect the rights and welfare of research participants.

Voluntary Participation

You do not have to be in this study if you do not want to. If you agree to be in the study, but later change your mind, you may drop out at any time without any penalty.

Questions

Take as long as you like before you make a decision. We will be happy to answer any question you have about this study. If you have further questions about this project or you have a research-related problem, you may contact. If you have any questions concerning your rights as a research subject, you may contact the University of South Carolina Institutional Review Board (IRB) at

I have read this form and decided that _____ will
(Name of Participant)
participate in the project described above. Its general purposes, the particulars of involvement and possible hazards and inconveniences have been explained to my satisfaction. My signature also indicates that I have received a copy of this consent form.

Participant Name (printed)

Date of Birth

Signature of Participant

Today's Date

Signature of Person Obtaining Consent

Today's Date