Substance use, sexual risk, and violence: HIV prevention intervention with sex workers in Pretoria.

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Substance Use, Sexual Risk, and Violence: HIV Prevention Intervention with Sex Workers in Pretoria

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This paper describes an HIV prevention intervention designed in the US that was adapted and implemented in South Africa. Using an experimental design, 93 women who reported recent substance use and sex trading were randomly assigned to a modified Standard HIV intervention or to a Woman-Focused HIV prevention intervention. Eighty women completed the one-month follow-up interview. Participants reported high rates of sexual risk and violence at baseline. At follow-up, findings showed decreases in the proportion of women reporting unprotected sex and the daily use of alcohol and cocaine. Daily alcohol and cocaine use decreased more for women receiving the Woman-Focused intervention. Although violence continued to be a problem, at follow-up Woman-Focused participants reported being victimized less often than women receiving the Standard intervention. This study demonstrates the feasibility of implementing cross-cultural behavioral HIV prevention interventions, and supports the need for future studies of women's contextual issues and the effectiveness of targeted interventions.

KEY WORDS: HIV prevention; sexual health risks; substance use; behavioral interventions ; South Africa.

INTRODUCTION

There are an estimated 4 to 5 million HIV-infected people in South Africa, which is believed to be the highest prevalence of human immunodeficiency virus (HIV) and the acquired immune deficiency syndrome (AIDS) in the world (Dorrington *et al.*, 2001; UNAIDS, 2002; UNAIDS/WHO, 2002). AIDS is also one of the leading causes of death in South Africa (Statistics South Africa, 2002), with the highest AIDS-related mortality rates occurring among Black South African women aged 15 to 39 (UNAIDS/WHO, 2002; Statistics South Africa, 2002). Indeed, research indicates that young Black women of childbearing age are particularly vulnerable to HIV infection (Dorrington *et al.*, 2001; UNAIDS, 2002; UNAIDS/WHO, 2002; HSRC, 2002; Abt Associates, 2000). According to these studies, a disproportionate number of women aged 15 to 49 are infected with HIV; HIV prevalence among young women aged 15 to 24 is more than twice that of men in the same age group; and HIV prevalence peaks at younger ages and higher levels among women compared with men (Dorrington *et al.*, 2001; HSRC, 2002).

Many young South African women who turn to sex work (i.e., trading sex for food, money and/or shelter) come from disadvantaged backgrounds, are poorly educated, and lack the skills necessary for formal or informal legal employment (Campbell, 2000; Leggett, 2001; Campbell and Mzaidume, 2001; Wojcicki, 2002). Sex workers in South Africa face not only high risks for HIV, but also for sexually

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transmitted infections (STIs) and sex-related violence. The challenges confronting these women include high-risk sexual behaviors (e.g., unprotected sex, incorrect or repeated use of condoms); increasing substance abuse; cultural norms and practices that perpetuate violence toward women; and a high prevalence of untreated STIs, which render women more susceptible to HIV (Campbell and Mzaidume, 2001; Jewkes *et al.*, 2003; Karim *et al.*, 1995).

Few studies have examined the effectiveness of behavioral interventions for HIV prevention in South Africa; even fewer interventions address high-risk sexual behaviors, substance use, imbalance of power for women in sexual relationships, exposure to violence, and access to treatment (Jewkes *et al.*, 2003; Karim *et al.*, 1995; Franzen, 1998). To this end, a supplemental study funded by the National Institute on Drug Abuse (NIDA) was initiated in Pretoria, South Africa in 2001 to pilot test whether an HIV prevention intervention designed for use with African-American women who abuse crack cocaine in the United States (Wechsberg *et al.*, 2004) could be adapted for use with Black South African sex workers who use cocaine and are at high risk for HIV and STIs. The study also aimed to conduct a small-randomized trial of the adapted Woman-Focused intervention and a US standard intervention to reduce substance use and HIV risk behaviors. Pretoria was selected because it is in Gauteng, one of the provinces in which the level of hard substance use (e.g., cocaine and heroin) is particularly high (Parry *et al.*, 2002).

This paper describes how the women's intervention was adapted and implemented; presents the findings of the pilot study; and outlines the implications for designing and implementing brief, theoretically based HIV prevention interventions in South Africa. The intervention was based on principles of social cognitive theory (Bandura, 1986; i.e., it seeks to enhance skills and increase self-efficacy), gender theory (Wingood and DiClemente, 2000; i.e., focuses on stressors women face, sexual assertiveness, and power imbalances in relationships), and empowerment, (Wechsberg, 1998 i.e., focuses on feelings of powerlessness and economic dependence on male partners).

METHODS

The current study pilot tested an adapted HIV prevention intervention for women in south Africa. Preparatory work for the Pretoria Women's CoOp Project began in July 2000 by establishing alliances and collaborations with government officials, health professionals, and researchers in universities and research institutes. In addition, in-depth interviews and focus groups were conducted with service providers, researchers, and female sex workers who were active substance abusers. These activities were conducted to better understand risk behaviors and determine innovative ways to address these behaviors within a South African woman's life context. A community advisory board (CAB) was also established and comprised of a cross-section of professionals from non-governmental organizations (NGOs), nonprofessionals, service providers, and researchers.

Adapting the Intervention and Procedures

Focus groups informed the adaptation of the original intervention developed for inner-city African-American women crack users to the Black South African female sex workers' context. A consistent theme that emerged from the focus groups was the use of drugs prior to sex work to lower inhibitions and give the women courage to approach clients. Unless they were too intoxicated, the women used protection with clients; however, they were less likely to use protection with boyfriends, some of whom insisted on having "dry" vaginal sex with the women. Dry sex refers to a preference for a dry, tight vagina during sexual intercourse, which increases the likelihood of bleeding and subsequent vulnerability for HIV infection. Women also had to contend with frequent violent behavior from both boyfriends and clients.

The adaptation process also involved revising and pretesting the questionnaire, modifying and pretesting the intervention, developing outreach strategies, and setting up field operations. CAB members helped revise the questionnaire and offered feedback to the research team. Items from the original US study that demonstrated reliability and relevance to the target population were selected (Wechsberg *et al.*, 2003). A field manual was developed to address daily operations, including participant referrals to available resources. Full-time field staff who speak Afrikaans, English, Zulu, and Sesotho were trained to conduct outreach, collect urine samples and test for substance use, conduct baseline and follow-up interviews, and deliver the two-session intervention.

Field Operations and Community Outreach Strategies

A targeted sampling plan was used to balance recruitment communities, and field staff worked in teams with local outreach workers to recruit study participants. A number of barriers to conducting outreach, recruiting, and re-contacting substance-abusing sex workers were revealed during the study, including police presence, gatekeepers at the daily hotels (e.g., security guards and madams), and general mistrust. However, being visible at key locations, keeping scheduled appointments, and returning to each community regularly helped build credibility and trust among participants. Consequently, despite these barriers, outreach strategies were successful and a high follow-up rate (86%) was achieved.

Data Collection and Assessment

This study focused on women who conducted sex work in daily-rate hotels, apartments, and informal settlements; however, women who were homeless and working the city streets of Pretoria were also recruited. Eligibility criteria included self-identifying as a Black South African woman, aged 18 years or older, either having a positive urine test for cocaine or self-reporting weekly cocaine use during the past 90 days, engaging in active sex work in the past 90 days, having multiple sex partners, and providing informed consent. For eligible participants, staff made appointments and arranged transportation to and from the field site. At the field office, informed consent was obtained for study participation and separate consents were obtained for service referrals after the intervention. Intake data collection began with a locator form to enable outreach staff to contact participants for subsequent assessments. Field staff then conducted urine testing for substance use and administered a modified version of the US risk behavior assessment instruments (Wechsberg *et al.*, 2003) to evaluate substance abuse, sexual risk behavior, and experiences of violence and victimization. After completing the intake assessment, participants were randomly assigned to one of two interventions, a Standard intervention or a Woman-Focused intervention. A follow-up questionnaire was administered approximately one month later.

Standard Intervention

The Standard intervention was an adapted version of the revised NIDA Standard Intervention (Wechsberg *et al.*, 1998). Minor modifications for South Africa were primarily language-based, such as substance use terminology obtained from the focus groups (e.g., marijuana is called "dagga" and cocaine or crack is called "rock"). The intervention consisted of two private one-hour educational and skills building sessions held within two weeks. During both sessions, the interventionist used cue cards to provide information on HIV; drug and sexual risks; risk-reduction methods including proper use of male and female condoms; how to talk with a partner about safer sex practices; the HIV antibody test; and steps that participants should take to prevent the spread of HIV. The interventionist also demonstrated and rehearsed proper condom use, and gave each participant a risk-reduction and toiletry kit as well as information on referral resources.

Woman-Focused Intervention

The Woman-Focused intervention presented the same information as the Standard intervention but in addition, it addressed HIV/AIDS issues facing women in South Africa as identified in the focus groups and CAB meetings. It included a more personalized assessment of each woman's drug and sexual risks that informed specific goals to help each woman negotiate risk-reduction by communicating the importance of condom use with sex partners. The women also learned violence prevention strategies such as staying sober to assess the situation, communication techniques in difficult situations, and ways to exit a volatile situation if need be. Women were also shown how to actively seek community resources.

The Woman-Focused intervention was culturally specific, addressing male dominance and attitudes towards women, multiple partners and beliefs and values about sex, and safer sex practices particularly with boyfriends. HIV education was tailored to increase factual knowledge and dispel myths about HIV and AIDS and sexual practices that emerged from focus groups (e.g., that two male condoms are not better than one; sex with a virgin does not eliminate HIV infection). The Woman-Focused intervention placed particular emphasis on contextual (e.g.,

sex-related violence, substance use, and cultural barriers to increased condom use) and lifestyle (e.g., multiple sex partners) issues that are relevant to sex work, including the development of personal concrete plans that support goals of reducing risks and developing more independence.

This intervention consisted of two private one-on-one sessions held within two weeks, each lasting a little longer than an hour. Similar to the Standard intervention, the interventionist demonstrated and rehearsed proper male and female condom use, but also role-played and rehearsed verbal assertiveness with each participant. The Woman-Focused participants also received a risk-reduction and toiletry kit as well as referrals to resources.

Data Analysis

Descriptive statistics were compiled on participants' demographic characteristics, sexual behavior, substance use, and experiences of violence. Bivariate analyses were conducted to compare pre and post intervention effects within each group (i.e., the Woman-Focused group and the Standard group). Specifically, statistical significance of changes in dichotomous variables (e.g., condom use, and alcohol and crack cocaine use) were assessed using the McNemar test, and changes in continuous variables (e.g., number of STI symptoms) were assessed with paired t-tests. Logistic regression analysis controlling for baseline was used to examine intervention group effects on daily alcohol and cocaine use outcomes.

Results

Characteristics of Women Participants

Ninety-three women were enrolled in the pilot study. The average age of the participants was 24 years. Seventy-three percent of the women were single. Most (75%) had completed secondary education. Nearly all (96%) reported that sex work was their main source of income; however, 93% reported that they were looking for legal employment. Many participants reported that they were financially supporting children, parents, and extended family members. A large proportion of the women (77%) reported having been arrested at least once. In addition, approximately 67% of the women reported having at least one current STI symptom.

Sexual Behavior

At baseline, participants reported a mean age of first paid sex of 16 years. Nearly one-third (29%) reported that they did not consent to their first sexual encounter and 78% reported that birth control was not used at the first encounter. At baseline, most of the women (98%) reported that they had ever used a male condom. However, 42% reported that they experienced a condom breaking in the past week. In contrast, 83% reported that they had never used a female condom and none had ever used any other type of barrier, such as the oral or dental dam. At baseline, 59% of the participants did not use a condom with their boyfriend during the last sexual encounter, 41% never used a condom with a boyfriend, and 41% reported that their boyfriend had other sexual partners. Eleven percent of the women reported that they had paying clients who resisted using condoms and 14% had clients who offered more money not to use condoms. Almost half of the women (47%) reported that on at least one occasion they had been too high on drugs to negotiate condom use with paying clients.

Substance Use

Baseline data indicate that dagga (cannabis/marijuana) was the first substance ever used by 34% of the participants, 26% reported alcohol, 14% reported crack cocaine, and 8% reported Thai White (which we assume to be a heroin-type drug). Fifty-one percent and 22% of the participants, respectively, reported alcohol and cocaine use by age 17. Seventy-two percent reported daily cocaine use and 18% reported daily alcohol use during the previous 30 days; 16% and 24% reported using cocaine and alcohol, respectively, at least twice a week during the same period. Although 77% of the sample considered their current substance use a problem, only 26% knew about substance abuse treatment and only 7% had ever been in treatment.

Physical and Sexual Abuse

The baseline interview revealed that 32% of the participants had been physically abused and 55% had

Table I. Condom Use Reported at Baseline and at 1-Month Follow-Up

Characteristic	Baseline (N=93)	1-Mo Follow-Up (N=80)
Male condoms always used with boyfriends in last month, %		
Woman-Focused	23	33
Standard	36	36
Male condoms always used with clients in last month, %		
Woman-Focused	94	97
Standard	92	82
Male condom used with boyfriend during last sexual encounter, %		
Woman-Focused *	28	55
Standard	44	48
Any female condom use with boyfriends in the last month, %		
Woman-Focused **	3	48
Standard	20	40
Any female condom use with clients in the last month, %		
Woman-Focused **	12	68
Standard **	13	61
Alcohol and/or drugs used during sex work in the last week, %		
Woman-Focused	65	54
Standard	58	53

*$p<0.05$, **$p<0.01$.

been sexually abused before age 17. The type of physical abuse experienced by the women in the past year included being beaten by a boyfriend (61%) or client (44%), being cut by a client (19%), and being robbed and/or not being paid as agreed by a client (39%). In total, 27% of the women reported being raped by a client, 19% reported being raped by a boyfriend, and 15% reported being gang raped.

Intervention Effects at One-Month Follow-Up

Sexual Risk

Table I presents sexual risk behavior by group at baseline and one-month follow-up. Overall, the proportion of women who reported having any unprotected sex with paying clients or with boyfriends decreased from baseline to follow-up, with greater reductions in the Woman-Focused group. Most women reported always using condoms with clients at baseline (94% in the Woman-Focused group and 92% in the Standard group) and at one-month follow-up (97% and 82%, respectively). The proportion of women who reported always using male condoms in the past month with their boyfriends remained stable at 36% in the Standard group and increased from 23% to 33% for the Woman-Focused group. While the proportion of women who reported having used a male condom with a boyfriend during their last sexual encounter increased substantially (from 28% to 55%) in the Woman-Focused group, only a marginal change (from 44% to 48%) was observed in the Standard group. Further, the Woman-Focused group showed a large increase from 3% to 48% in any female condom use with boyfriends, while the Standard group showed a smaller increase from 20% to 40%. There were similar increases for both intervention groups in the use of female condoms with clients, from 13% to 61% in the Standard group and from 12% to 68% in the Woman-Focused group. Additionally, the Woman-Focused group showed a decrease from 65% to 54% in the proportion of participants who reported using substances during sex work compared with a smaller decrease from 58% to 53% in the Standard group. Finally, participants in the Woman-Focused group reported fewer STI symptoms at follow-up than women in the Standard group (mean 0.64 vs. 1.07; Effect Size [d] = −0.43), suggesting that the referral services were successful.

Substance Use

Overall, a decrease was observed in the daily use of alcohol and cocaine from baseline to follow-up. A reduction from 15% to 5% was observed in the proportion of women reporting daily alcohol use in the Woman-Focused group compared with the smaller decrease of 18% to 10% in the Standard group (see Table II). Both intervention groups showed similar reductions in the proportion of women reporting daily cocaine use: 64% to 33% for the Woman-Focused group and 75% to 40% for the Standard group.

Table II. Substance Use Reported at Baseline and at 1-Month Follow-Up

Characteristic	Baseline	1-Mo Follow-Up
Daily alcohol use, %		
Woman-Focused	15	5
Standard	18	10
Daily cocaine use, %		
Woman-Focused **	64	33
Standard**	75	40

*$p<0.05$, **$p<0.01$.

In a logistic regression model that adjusted for baseline alcohol use, Woman-Focused group participants were less than half as likely as women in the Standard group to report daily alcohol use at follow-up (OR = 0.46; 95% CI = 0.07, 2.90). In a similar model that adjusted for daily cocaine use at baseline, Woman-Focused group participants were slightly less likely to report daily cocaine use at follow-up than women in the Standard group (OR = 0.86; 95% CI = 0.31, 2.43).

Violence

Violence continued to be a serious problem at one-month follow-up, with 22% of the women reporting being beaten by a boyfriend, 32% reporting being beaten by a client, and 19% reporting being robbed during the previous month (see Fig. 1). Additionally, 14% of the women reported being raped by a client, 5% reported being raped by a boyfriend, and 4% reported being gang raped. Although violence continued to be a problem, Woman-Focused group participants reported being victimized less often than women in the Standard group (mean 4.5 vs. 6.3; $d=-0.28$) at follow-up.

DISCUSSION

Given that this was a pilot study, findings should be interpreted cautiously. Although some of the observed differences between the intervention groups were not statistically significant due to the small sample size, all of the outcomes showed trends in the desired direction. The Woman-Focused intervention was particularly effective in increasing the use of male condoms with boyfriends and both groups increased their use of the female condom, suggesting important outcomes for women with respect to having a little more control over sexual risk. The Woman-Focused intervention effects were less encouraging with respect to the women's experiences of violence perpetrated by clients and their regular partners. As most often victims of sex-related violence, women typically have less personal and direct control in changing contexts of violence than male perpetrators. This finding suggests the need for greater involvement of partners and clients in HIV risk-reduction interventions among female sex workers.

Even though behavior changes were only assessed at one month, this work has important implications. The findings demonstrate that outreach to active substance abusers in South Africa is possible, and that brief interventions can promote HIV and substance use risk reduction. The successes, however, are tempered by the ongoing violence women face (Jewkes *et al.*, 2003) and by the scarce opportunities

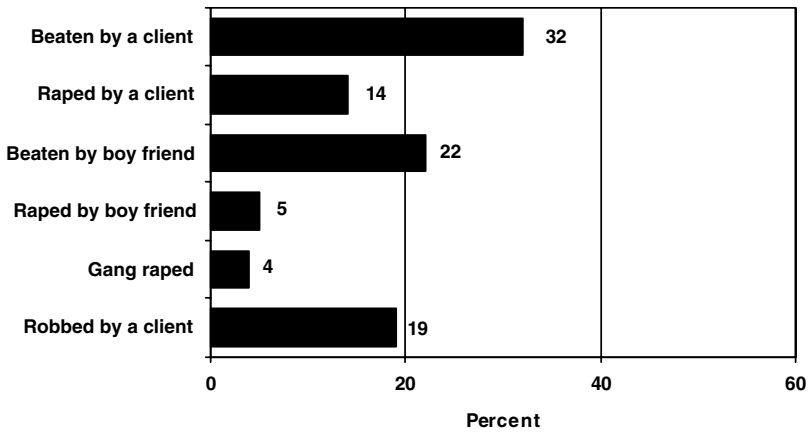

Fig. 1 Violence in the Past Month Reported at 1-Month Follow-Up.

for legal employment for unskilled and low-skilled women.

Despite cautious interpretations, this study confirms the high levels of health risk behavior among sex workers in Pretoria (Leggett, 2001). Furthermore, it demonstrates the feasibility of adapting research procedures and behavioral interventions developed in the US for use in South Africa. The pilot study outcomes suggest that brief interventions can and should be adapted but not without the involvement of the target population and community advisory members. In summary, this pilot presents important changes in substance use and condom use after one month that suggest reduced HIV risk. However, a larger study with extended follow-up is in order.

Harm reduction that focuses on reducing the adverse consequences of substance abuse is a first defense for individuals who are at daily risk for HIV infection. However, for greater benefits to be realized, interventions are also needed to bring about long-term reductions in substance-using behaviors. Further, given the serious unemployment crisis in the country, many South African women with low educational levels and limited training and skills have few or no options other than sex work to support their families. Alternative income-earning opportunities for such women urgently need to be created to reduce the high number of women putting themselves at risk for substance abuse, violence, and HIV/AIDS. Additional research is necessary to evaluate the long-term effectiveness of harm-reduction approaches examined in this study, especially women-centered approaches, and to develop strategies for implementing such approaches more widely.

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