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Reducing AIDS Risk Among Men Who Have Sex with Men in Salvador, Brazil

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Even though men who have sex with men (MSM) continue to account for a high proportion of AIDS cases in Brazil, relatively few prevention programs have been designed for them. We developed, implemented, and measured the impact of such a program in Salvador, Bahia, Brazil. This prospective cohort study used pre–post comparison to evaluate the impact of an intervention. We interviewed a cohort of 227 men recruited through snowball sampling before and up to 6 months after participating in brief AIDS prevention interventions. Knowledge and attitudes measures of HIV/AIDS and safer sex practices were raised and reported AIDS sexual risk behaviors declined after the intervention (all p values $<.001$). The proportion of men reporting unprotected anal intercourse in the prior month fell from 19% before the intervention to 1% after it. This study suggests that AIDS prevention activities designed for MSM in similar settings can be feasible and effective. More such prevention programs are urgently needed for MSM in developing countries such as Brazil.

KEY WORDS: AIDS; Brazil; homosexual men; human immunodeficiency virus; Latin America.

INTRODUCTION

By the end of the year 2000, 203,348 AIDS cases had been reported to the Brazilian Ministry of Health (Ministerio da Saude do Brasil, 2000). The profile of AIDS cases in Brazil has shifted from the initial years of the epidemic. There is an increase in AIDS cases in women ("feminization") and children, among heterosexuals ("heterosexualization"), poor people ("pauperization"), and people living in smaller cities, but men who have sex with men (MSM) and injecting drug users continue to account for a high proportion of cases. Although the majority of reported AIDS cases are found in the southeast region, including the large urban centers of São Paulo and Rio de Janeiro, AIDS cases have been reported from every region and state of Brazil. The northeast region has reported 18,161 AIDS cases, while the northeastern state of Bahia has about 13 million inhabitants and has reported 4,583 AIDS cases and 1,680 deaths (Secretaria da Saude do Estado da Bahia, unpublished data). Sexual transmission accounts for 60% of all cases in Bahia. Fifty-six percent of these sexually transmitted AIDS cases (or 35% of all cases in Bahia) are attributed to male homosexual/bisexual contact.

Behavioral studies in urban settings in industrialized nations conducted in 1980s documented that MSM could modify their sexual behaviors, reducing frequency of high-risk sexual behaviors in response to various interventions to prevent HIV infection (Carne *et al*., 1987; Centers for Disease Control [CDC], 1985; Joseph *et al*., 1987; Martin, 1987; Mckusick *et al*., 1985; Schechter *et al*., 1988; Winkelstein *et al*., 1987). However, data from the 1990s show that maintaining safer sex behavior over a long period is very difficult (Adib *et al*., 1991; CDC, 1999; De Wit *et al*., 1993; Ekstrand and Coates, 1990; Ekstrand *et al.*, 1999; Kelly *et al*., 1991; Mckusick *et al*., 1990; Stall *et al*., 1990, 2000; Van de Ven *et al*., 1998). Many studies have identified the determinants of safe and risky sexual behavior among gay men.

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These include demographic, cognitive, and behavioral variables such as age, race, relationship status, alcohol/drug use, social norms, condom acceptability, risk perception, and perceived severity of HIV infection (Hospers and Kok, 1995). Kegeles and Hart (1998) reviewed the approaches that have been used to modify risk-taking sexual behaviors of MSM. Interventions targeting small groups using audiovisual presentations that eroticize safer sex, brief safer sex negotiation skills training, and intensive group counseling have proven effective in modifying risk behavior for a short period of time in developed countries (Choi *et al*., 1996; Imrie and Stephenson, 1996; Kelly *et al*., 1996; Peterson *et al*., 1996). Few studies, however, have examined sexual behavior among MSM in Brazil and none has directly measured the impact on behavior of a prevention program in this country.

Effective AIDS prevention programs must reduce risk behavior, especially among subgroups of the population that are most vulnerable. In Bahia, prevention efforts have been hampered by a lack of research into sexual risk behavior and how it can be changed. In particular, research studies of organized prevention programs aimed at MSM were nonexistent. We therefore launched this study to examine patterns of risk behavior among MSM in Bahia and to measure the feasibility and impact of an organized AIDS prevention program directed toward this population.

METHODS

This study was conducted in three phases: a qualitative study, a pilot study, and the intervention study. The intervention portion of the study used a before–after design to measure changes in knowledge, attitudes, and behavior in a cohort of men after participation in an intervention.

Qualitative Study

In the qualitative study, we conducted and recorded qualitative individual semistructured interviews with a convenience sample of 10 men who have sex with men living in Bahia. They were asked about past and current sexual practices, number of partners, relationships with their partners, feelings about masculinity, homophobia, family loyalty, racism, perceptions of risk for HIV infection, difficulties and barriers concerning the acceptability of adopting safe sex practices, and sources of social support, including relationships to their families and friends. We also asked them about perceptions of current socioeconomic and cultural problems of being gay in Bahia and suggestions for an intervention. We analyzed the narratives of the individuals and used the findings in developing the questionnaire for the quantitative phase of the study and planning appropriate contents of safe-sex workshops.

Pilot Study

In the pilot study, we assessed the feasibility and effectiveness of the proposed recruitment strategy. We pretested the questionnaire to assess the reactions to each question in the instrument and to improve clarity regarding specific language, educational level, and local culture in Bahia. We recruited 20 men who have sex with men for this phase of the study. Each subject was interviewed and asked to identify any questions that had been difficult to understand. The men also chose the name for the study: "Projeto Contato" ("Project Contact").

Intervention Study

Setting

The study was conducted between September 1998 and December 1999 in Salvador, capital of Bahia, a state located in northeast Brazil, one of the poorest regions of the country. Salvador is a coastal city with a population of 2,330,000. It is estimated that 80% of its population is Black or racially mixed. The mean income per person is low. Historically, this city was the major destination during the slave traffic from Africa, and it retains a strong African cultural heritage (music, dance, religion, etc). It is also the second most preferred destination for national and international tourists in Brazil, after Rio de Janeiro, which leads to a high number of bars, restaurants, nightclubs, and bathhouses directed to this transitory population. Many of these places concentrate on the MSM population, working as "meeting points" for this group (Cerqueira and Mott, 2000).

Salvador appears to be sexually liberated, but discrimination and violence against men who have sex with men still exist (Mott, 1986). Although homophobia is present, Salvador is also the home of an active gay and transgender organization (Grupo

Gay da Bahia), which has been engaged in fighting the violence against MSM and lobbying for legislation that promotes equality for MSM. It is also involved in efforts of STD/AIDS prevention among the MSM population.

Salvador is therefore an important place to test the effects of an intervention designed to change behavior among MSM. Its characteristics are in some ways typical of many "second-tier" cities with large MSM populations in the developing world, where very little research has taken place previously (Parker, 1999). Information gathered from this study might therefore be helpful to guide prevention programs both in Salvador and similar places.

Interviews took place wherever the interviewee chose, often in private homes. The intervention occurred at night in the Governmental Counseling and Testing Center, outside of normal operating hours.

Target Population and Recruiting

We enrolled 235 males age 18 years or older who identified themselves as homosexual, gay, or bisexual, living in Salvador, and consenting to be part of the study. Two members of the MSM community were trained to conduct interviews and recruited the subjects into the study through snowball sampling (i.e., subjects were asked to identify and recruit other potential participants). Recruiters identified potential participants through their own social networks, through opinion leaders in the gay community, through visiting bars, beaches, and nightclubs, and through promoting gay parties to which they asked recruited participants to invite their friends. Efforts were made to recruit in a broad variety of settings so as to achieve a diverse and representative sample.

Study Procedures

At an initial meeting with one of the interviewers, potential subjects were told about the objectives and the procedures of the study (study design, procedures to ensure confidentiality, participation in the intervention, and the need for follow-up). After agreement, subjects signed a written consent form. Human subjects procedures were approved by the UCSF IRB as well as a local ethical review board in Bahia. Face-to-face interviews were conducted at all waves of data collection. Participants were specifically encouraged to answer questions according to their own beliefs and as truthfully as possible, rather than giving answers that they thought were "desirable." At each interview, subjects received five free condoms for participation.

Participants were randomly assigned to participate in one of the two types of intervention groups: a safe-sex workshop or a class lecture followed by a group discussion. Due to ethical concerns, all participants were given some form of intervention. The workshops as well as the class lectures were scheduled within 1 month of recruitment. After the initial interview, each participant received a card listing his code number, his group assignment, and the date of his scheduled intervention group. All subjects were asked to return and participate in two other waves of data collection (4 and 7 months after baseline) to assess changes over time.

The study personnel who were responsible for recruitment and interviewing were present at all phases of the study, including each intervention session. They were encouraged to maintain contact with enrolled subjects between waves of data collection so as to ensure maximum retention of the recruited sample. In addition, they received payment each time a subject completed an interview or participated in an intervention.

Safe-Sex Workshop Description

Using the information obtained in the qualitative and pilot phases of the study, we developed a safe-sex workshop, adapted to the local situation in Bahia. Each group included 15–20 subjects who participated in one session lasting 3–4 hours. The facilitator was an anthropologist with extensive experience conducting safer sex workshops in Europe, but no previous involvement with the gay community in Bahia. He was selected in consultation with leaders of the Grupo Gay de Bahia. During the session, the participants were invited to participate in games, role playing, and small group discussions to share previous experiences, feelings, and possibilities, using verbal and nonverbal communication. The facilitator opened a 45-min group discussion on perceptions of current difficulties of being a man who has sex with men in Bahia and the symbolic representations of AIDS in their lives.

After a small break, the facilitator provided basic and current information and clarified misconceptions about AIDS and the spectrum of the disease. The participants had the opportunity to identify and confront their feelings, fears, losses and stereotypes about AIDS and discuss what helped them to realize

that they are at risk. The facilitator led a discussion on sexuality and the identification of other options to obtain pleasure, with emphasis on nongenital practices. The participants discussed what kinds of sexual behaviors were "safe" within different kinds of relationships (i.e., sexual behaviors inside or outside of committed relationships). The facilitator focused the activities on safer sex practices, mechanics of using condoms, special difficulties identified with using condoms, and other psychosocial issues related to safety. In this session they discussed the relevance of knowing their HIV serostatus as a tool in efforts to prevent HIV transmission. This session ended with a discussion of strategies for refusing unsafe sex and negotiation of new sexual patterns. The participants received five free condoms.

Class Lecture Followed by Group Discussion

A male infectious diseases specialist with extensive experience in the care and counseling of AIDS patients provided a class lecture lasting 40 min to groups of approximately 20 individuals. Topics included basic information about AIDS, the spectrum of the disease, HIV transmission (with emphasis on the role of sexual behavior in HIV infection), current trends of the AIDS epidemic in Brazil and in Bahia, and the importance of HIV serological testing as a tool for preventing HIV transmission. He also provided skills training on the proper use of condoms. This was followed by a 20-min group discussion to clarify misconceptions regarding these issues. The characteristics of the lecturer, the content of the class, and the way in which information was presented were all determined based on feedback received in the pilot phase of the study. The participants received five free condoms at the end of the session.

Study Measurements

All subjects completed a standardized, interviewer-administered questionnaire, which included demographic data, sexual identity, sexual practices, number of steady and casual partners, alcohol and drug use in the past month, a brief medical history, knowledge and beliefs about AIDS, and HIV-related attitudes. In all waves of data collection, we asked about sexual behavior in the past month to allow comparison between baseline data and subsequent waves. A total of 25 multipart questions separately assessed anal and oral intercourse with male and female partners as well as vaginal intercourse with female partners. These questions were asked separately for steady and casual partners, with a steady partner defined as someone "with whom you have a sexual relationship and feel committed above anyone else." For each of these behaviors, participants were asked whether they use condoms sometimes, always, or never. Unprotected anal sex was defined as reporting receptive and/or insertive anal sex without always using condoms.

An AIDS knowledge score was created by adding the number of correct answers to a series of 17 true/false questions regarding AIDS transmission and prevention (Cronbach's alpha = .61). Participants were asked at Wave 1 if they had ever received HIV antibody testing and, if so, about their HIV serostatus. If never tested, they were asked about the reasons for never being tested.

We developed four scales to measure attitudes. A five-item scale measured perceived barriers to safer sex (Cronbach's alpha = .42). It included statements such as, "You can't ask a sex partner to use a condom if you're in love with him," to which respondents could agree or disagree. A six-item scale to measure safer sex skills included agreement or disagreement with statements such as, "You find it difficult telling a sex partner not to do something you think is unsafe" (Cronbach's alpha = .36). A five-item scale of perceived social norms favoring safer sex included statements such as, "Most gay men are using condoms these days" (Cronbach's alpha = .35). Finally, a six-item scale to measure enjoyment of safer sex asked respondents how much they enjoyed certain activities, such as insertive anal intercourse with condoms, on a 4-point scale (range 0–3) from "dislike very much" to "enjoy very much" (Cronbach's alpha = .70).

Participation and Follow-Up of Subjects

Of 235 men initially interviewed, 118 were assigned to attend a safe-sex workshop and 117 to a class lecture. Three men assigned to the safe-sex workshop and 4 assigned to the class lecture never attended; these men also did not complete the second and third interviews. In addition, 1 man who attended the safe-sex workshop did not complete the subsequent interviews. To avoid any apparent changes in behavior due to attrition of subjects, only data from the 227 men who completed all phases of the study were included in the analysis.

Data Analysis

Individual participants were followed longitudinally in a confidential manner over 7 months. Each subject was given a secret code number from a master list that linked random numbers to the participants' names. This code was used on all subsequent questionnaires, so that the questionnaire did not contain any direct identifying information. The master list was retained in a locked file cabinet under the responsibility of the principal investigator. All data collected were stored in a data bank using EPI-INFO version 6.04 (Dean *et al*., 1994) and analyzed using STATA version 7.0 (Stata Corporation, 2001). Two persons entered the same data directly from the questionnaire into computer files using standard quality control procedures, including examination for impossible values, to compare and correct errors.

Outcome Variables

Our main outcome variable was sexual behavior, particularly unprotected anal intercourse with any partner and unprotected anal intercourse with a nonmonogamous partner. We examined changes in these behaviors, as well as in AIDS knowledge and attitudes toward safer sex. Changes in the presence or absence of specific reported behaviors were assessed using conditional logistic regression with time (wave) as the predictor variable. (This is a generalization of the McNemar test for more than two data points per individual.) Changes in scales were assessed by repeated-measures ANOVA.

Pre–Post Versus Between-Group Comparison

Originally, this study was intended to compare the impact of two different types of interventions. It turned out, however, that the two groups receiving the different interventions showed no significant differences between each other on any of the demographic variables collected or for any outcome variable at any wave of data collection. In other words, the baseline characteristics of the two groups and the impact of the two types of intervention were essentially identical. Furthermore, there was substantial overlap in the content of the two interventions. We therefore combined both intervention conditions and present results as a pre–post comparison that includes all subjects.

RESULTS

Table I gives the charactristics of subjects who participated in all three waves of data collection. The men ranged in age from 18 to 52 years with a mean of 29 years. Most (58%) were Catholic, 19% were spiritualist, 6% participated in Afro-Brazilian religion, and 15% were atheist or not religious. Eighty-five percent of subjects reported drinking alcoholic beverages, but only 8% admitted drinking daily. Fifty-one percent smoked cigarettes. Only 8 subjects (4%) reported illicit drug use (marijuana 7, cocaine 3, other 1; some subjects reported than one type of drug) and none of them injected drugs or shared needles. Only 2% had a history of blood transfusion and less than 2% had at least one STD or symptoms of urethritis or urogenital disease in the past 6 months.

The participants were asked if they had received HIV testing in the past and about their serostatus. Seventy-three percent ($n = 165$) of the subjects had ever been tested for HIV and 8 (4.8%) of those tested reported being HIV-positive. For those who never had been tested, we asked them about reasons for not having the HIV test. Sixty-nine percent reported "not having gotten around to it" as the main reason, followed by "don't want to do the HIV test" (40%; more than one reason could be given). Other reasons were "the results are too stressful" (11%), "am afraid how the test results would affect my personal life" (10%), "am already doing all that I can to stay healthy" (7%), and "friends think that getting tested doesn't do you much good" (2%).

Table I. Characteristics of Study Participants ($N = 227$)

	Percent of participants
Age (mean 29 years, range 18–52 years)	
18–20	11
21–30	54
31–40	30
>41–52	5
Race	
Black	15
Mulatto	51
White	34
Education (years)	
1–4 years (primary)	1
5–9 years (gymnasium)	14
High school	69
College	16
Income (US dollars/month)	
No income or <80	8
80–160	17
161–400	44
>400	31

AIDS-Related Knowledge and Attitudes Before and After Intervention

Knowledge related to HIV/AIDS was fairly good at baseline, with participants averaging 90% correct answers. Attitudes and perceptions related to safer sex left more room for improvement, with average scores ranging from 63% to 77% of "ideal" in the four scales that we measured. We observed statistically significant improvements in all knowledge and attitude scales at 3- and 6-month follow-ups, as shown in Figure 1.

Mean knowledge scores improved from 15.30 out of 17.0 possible at baseline to 16.22 at 6 months after the intervention ($F_{(2,452)} = 39.56$; $p < .0001$ by repeated-measures ANOVA). Perceived barriers to safer sex decreased from a mean of 1.13 to .22 out of 5.0 possible ($F_{(2,452)} = 49.70$; $p < .0001$). Self-reported safer sex skills increased from 3.77 to 4.38 out of 6.0 possible ($F_{(2,452)} = 41.29$; $p < .0001$). Perceived social norms favoring safer sex increased from 3.55 to 4.25 out of 5.0 possible ($F_{(2,452)} = 47.11$; $p < .0001$), and reported enjoyment of safer sexual activities increased from 11.87 to 13.13 out of 18.0 possible ($F_{(2,448)} = 18.89$; $p < .0001$).

Sexual Identification and Sexual Behavior

The vast majority of subjects (92%) described themselves as homosexual, 8% as bisexual, and only one subject labeled himself as heterosexual. Eighty-nine percent declared that some or most of their friends know that they are homosexual, 68% that most or some of the people at work or school know their sexual orientation, and 58% that most of their family know their sexual orientation. Only 5% (11/227) of the participants reported being involved in any gay organizations, primarily Grupo Gay da Bahia. Only 11% had paid for sex with a man and 3% with a woman, and 8% had received money or drugs for having sex with a man during their lifetime. The proportion reporting sexual activity under the influence of alcohol and/or other drugs, which has been associated with risky sexual behavior in other studies (Leigh and Stall, 1993), was only 10% in our sample.

Twenty-one percent of the men ($n = 48$) reported being in a primary relationship with a male partner at baseline. These relationships ranged from less than 1 month to 12 years, and only 10% of those men lived together with their partner. The mean and median number of male partners last month among

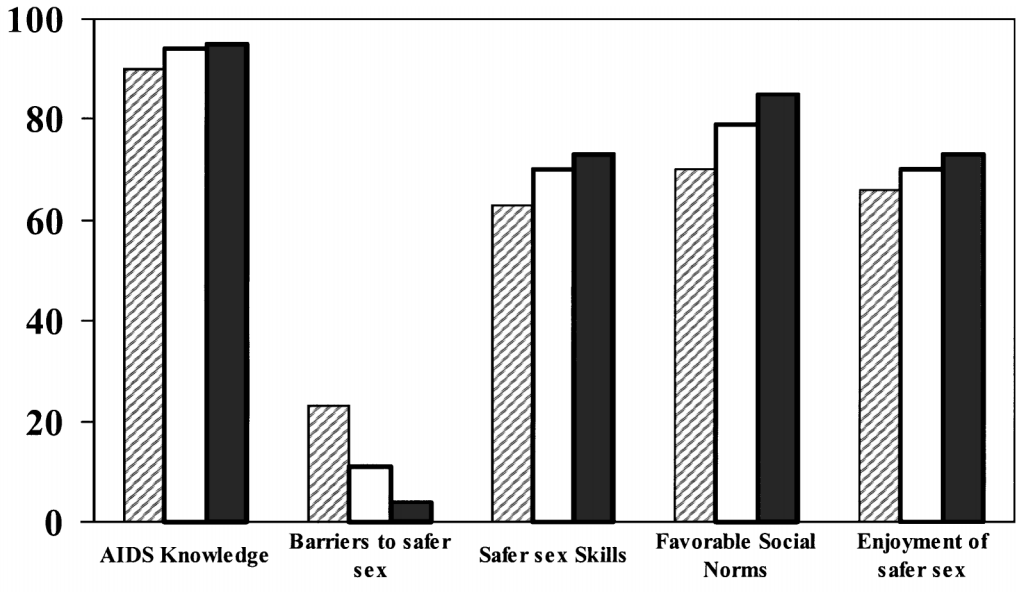

Fig. 1. Knowledge and attitudes before and after intervention. (numbers given as percentage of possible score, $p < .001$, for change in each scale over time).

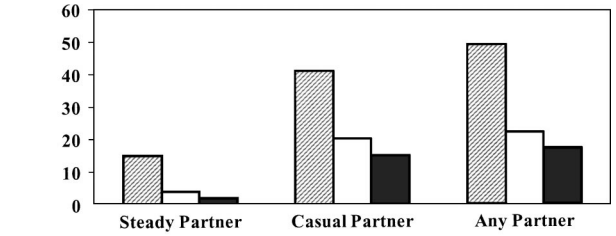

Fig. 2. Anal sex before and after the intervention. (percent of participants reporting this behavior in the prior month, $p < .001$, for change with each category of partner over time).

the entire cohort were 2.9 and 1.0, respectively. Only 8 men (3.5%) reported having vaginal sex in the prior month, 6 with ejaculation and not using a condom, and only 2 reported engaging in anal intercourse with a woman in the past 30 days.

Approximately half of subjects (49%) reported oral sex with men during the prior month at baseline. The same percentage reported anal sex, but only 19% reported unprotected anal sex. As shown in Figures 2 and 3, the subjects reported substantial and statistically significant decreases in sexual risk behavior at 3 and 6-month follow-ups after they had participated in the interventions.

The proportion of men reporting anal intercourse in the past month fell from 49% at baseline to 22% at the first follow-up interview and 17% at the last follow-up interview (likelihood ratio $\chi^2_{(2)} = 96.18$; $p < .0001$ by conditional logistic regression).

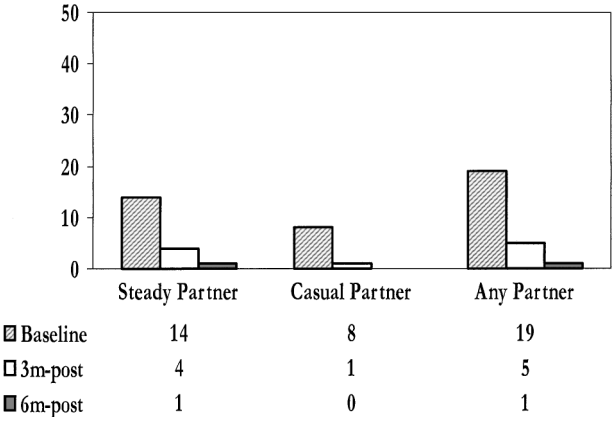

Fig. 3. Unprotected anal sex before and after the intervention. (percent of participants reporting this behavior in the prior month, $p < .001$, for change with each category of partner over time).

Unprotected anal intercourse fell from 19% to 5% and then to 1% ($\chi^2_{(2)} = 52.93$; $p < .0001$). The proportion reporting oral sex with men in the past month fell from 49% to 29% and then to 26% ($\chi^2_{(2)} = 70.80$; $p < .0001$).

DISCUSSION

This study of 227 men who have sex with men in Salvador, Bahia, Brazil, showed a substantial reduction in reported AIDS risk behavior after participating in an AIDS prevention intervention, accompanied by improvements in AIDS knowledge and attitudes regarding safer sex. Gains observed soon after the intervention persisted and even increased at 6-month follow-up.

The first important lesson from this study is that it was possible to enroll men in the project and that a very high proportion (96%) participated in their assigned intervention and completed two follow-up interviews. Even in Brazil, which is generally considered to have one of the strongest AIDS control programs in Latin America, organized prevention activities for MSM have been noticeably lacking. Exceptions have usually been in the largest cities with organized gay communities that have initiated and taken an active part in these efforts. Our experience demonstrates that successful AIDS prevention activities for MSM are also possible in other settings. The fact that this project was conducted with a total budget of US $12,000 (exclusive of investigator time and donated condoms) also demonstrates that such programs are financially feasible.

We found no significant differences in outcome between two different types of intervention. This was largely because both interventions were quite effective, leaving little statistical power to distinguish between them. For these men, most of whom had never participated in organized gay groups or AIDS prevention activities, the exact type of intervention was probably less important that the fact that the intervention occurred at all. The same key messages may have come through: "AIDS is important, you are important, we care, and by changing your behavior you can survive." Whether the inability to detect differences in behavior between the two intervention conditions would persist over longer periods of follow-up cannot be determined by this study.

The findings of this study cannot necessarily be generalized to all MSM in Bahia or to MSM in other settings. Study participants were somewhat

more educated and middle class than most men in Salvador, and those enrolling in the study may have been more ready to change than most MSM. This is suggested by the high levels of knowledge and low levels of risky behavior observed at baseline. For example, 19% of men in this study reported unprotected anal intercourse at baseline, while 30–45% of MSM have reported this behavior in other Brazilian studies (De Souza *et al*., 1999; Kerr-Pontes *et al*., 1999). These percentages are not directly comparable, however, because other studies have asked about behavior in the prior 6–12 months, whereas we asked only about the prior 1 month.

Like most studies measuring the impact of AIDS prevention programs, this study used self-reported behavior as the main outcome. It is possible that some or all of the observed reduction in sexual risk behavior was due to increased underreporting of such behavior after the intervention as compared to before. Participants may have consistently portrayed themselves as safer over time because of a desire to "please" the study team or because they became increasingly familiar with the questionnaire. Such a process, however, could not fully explain the improvements in knowledge and safer sex attitudes that we also observed. Furthermore, other studies of prevention programs that measured HIV seroconversion as an outcome have shown that reductions in reported risk behavior are accompanied by decreased HIV incidence (Bhave *et al*., 1995; Coates *et al.*, 1998).

The method of pre–post comparison used to assess the impact of the interventions has potential limitations. The lack of a control group means that changes observed may have been due to temporal trends unrelated to the study intervention. We consider this unlikely due to the magnitude of the changes observed and the fact that there were no other major AIDS prevention activities for MSM in Salvador at the time of this study. Another concern is whether the substantial decrease reported in all penetrative sexual behaviors is sustainable in the long run. In this regard, it would be useful to know to what extent this represented substitution of safer nonpenetrative sexual practices, such as mutual masturbation, as opposed to an overall decrease in sexual activity of any type. Unfortunately, our questionnaire did not assess this.

Our method of employing members of the gay community as recruiter/interviewers and encouraging them to maintain contact with participants between waves of the study had advantages and disadvantages. This undoubtedly contributed to our ability to access this population and the exceptionally high rate of follow-up achieved, thereby reducing bias due to attrition. On the other hand, this may have caused an increased social desirability bias in participants' responses, even though they were repeatedly instructed to answer all questions truthfully. Furthermore, continuing interaction with study personnel, including the gay parties organized as part of the snowball recruiting process, may have been in itself an important cointervention. Other potential limitations of this study include the low Cronbach's alphas of some of the measurement scales and the fact that data for two different (though similar) interventions were combined in the analysis.

Whatever the limitations of this study, it should provide encouragement about the feasibility and effectiveness of prevention activities for MSM in Brazil and similar settings. This simple and inexpensive intervention appears to have helped many men reduce their risk for HIV/AIDS. Similar efforts should be part of all AIDS prevention programs in the developing world in settings where men who have sex with men continue to account for a substantial proportion of HIV infections.

This study demonstrates that it was possible to reach a large number of MSM in Salvador with an AIDS prevention intervention. The program was low in cost, and men reported substantial reduction in AIDS risk behavior after participating. Future research should address longer term maintenance of safer behavior and validation of self-reported behavior with biological markers. It is also important to replicate and extend these findings to other cities and other segments of the population of men who have sex with men in Brazil and elsewhere.

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