



## A Group Intervention for HIV/STI Risk Reduction among Indian Couples

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ARTICLE INFO	ABSTRACT
<p><b>Article type:</b> <i>Original Article</i></p>	<p><b>Background:</b> HIV in India is transmitted primarily by heterosexual contact. The present study sought to test the feasibility of a group HIV/STI risk reduction intervention among heterosexual couples in India.</p> <p><b>Methods:</b> Focus groups and key informant interviews were used in 2008 to culturally tailor the intervention. Thirty sexually active and HIV/STI negative couples were enrolled and assessed regarding risk behavior and sexual barrier acceptability. Gender-concordant group sessions used cognitive behavioral strategies for HIV/STI prevention.</p> <p><b>Results:</b> At baseline, male condom use was low (36%); no participants reported use of female condoms or vaginal gels. HIV knowledge was low; women had more HIV knowledge and more positive attitudes towards condom use than men. Post-intervention, willingness to use all barrier products (<math>t = 10.0, P &lt; .001</math>) and intentions to avoid risk behavior increased (<math>t = 5.62, P &lt; .001</math>).</p> <p><b>Conclusion:</b> This study illustrates the feasibility of utilizing a group intervention to enhance HIV/STI risk reduction among Indian couples.</p>
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### Introduction

Although the HIV epidemic in India is contained within a relatively small percentage of the population (2.7 million out of 1.1 billion), the potential for explosive growth impels consideration of preventive strategies, particularly among “high risk” Indian men and women. In India, the HIV/AIDS pandemic is threatening to undo the health, economic and social advances made in the past 50 years<sup>1-3</sup>. HIV in India is transmitted

primarily by heterosexual contact; for a woman in India, having sex with their husband is the greatest risk factor for acquiring HIV<sup>4-6</sup>. Reproductive tract infections (RTIs), including sexually transmitted infections (STIs), pose the greatest challenge for developing countries. Community based epidemiological studies in developing countries have also drawn attention to the burden of RTIs that may not be sexually transmitted (e.g.,

bacterial vaginosis, vaginal candidiasis) and their negative impact on women's reproductive health. It is clearly important to prevent, diagnose and treat these infections, which may also facilitate HIV transmission<sup>7</sup>.

High-risk sexual behavior is associated with increased STIs and HIV transmission. Abusive men may be at an increased likelihood of abusive men engaging in extra-marital sex, acquiring STIs and using condoms less often, thereby placing their wives at risk. Reduction of such behavior is an important component of worldwide efforts to combat the spread of HIV<sup>8-11</sup>; the agreement reached at the International Conference on Population and Development (1994) noted that: "Changes in men's and women's knowledge, attitudes and behavior are necessary conditions for achieving the harmonious partnership of men and women<sup>12</sup>." Subsequent reports have also emphasized the importance of developing approaches designed to increase male partner involvement to improve reproductive health<sup>13</sup>.

Public health recommendations in India have called for the urgent development of multidisciplinary behavioral sexual risk reduction interventions<sup>6, 14</sup>. These interventions include risk-reduction strategies and components of sexual health education targeted to both partners<sup>15-16</sup> and have been found to increase sexual barrier use<sup>17</sup>. An important HIV prevention option under development is vaginal microbicides, products which kill or inactivate HIV in the vagina or rectum<sup>18-19</sup>. However, women's perceptions of lack of control or lack of acceptability may limit their attitude towards microbicide use. Microbicide trials have suggested that men may fear a loss of control within the relationship when methods used are under the control of women<sup>20</sup>.

Group gender concordant interventions, in which men and women participate in groups separately, rather than mixed gender groups, have been used in previous studies to provide information on HIV-related topics in a variety of cultural settings (e.g., sexual risk behavior)<sup>21-22</sup>. Gender concordant

groups are more appropriate to the discussion of sensitive topics surrounding HIV risk, such as use of barrier methods and multiple partners, than groups in which partners are present. Additionally, such groups enable female participants to speak freely regarding concerns that could provoke violence in a mixed gender intervention.

This study sought to adapt and test the feasibility of a group genderconcordant intervention designed to increase awareness about prevention of transmission of HIV/STIs and to enhance reproductive health through the use of sexual barrier products (i.e., male and female condoms). The intervention, previously used in the US and Zambia<sup>21</sup>, applied a group, cognitive behavioral risk reduction strategy among couples at high risk of HIV/STIs and was guided by the theories of reasoned action and planned behavior<sup>23</sup>. We hypothesized that the intervention, when culturally adapted to the Indian context, could be used to enhance the acceptability of sexual barrier products, including vaginal gels, as a means to prevent HIV/STIs. Additionally, we hypothesized that the adapted intervention would increase knowledge about HIV and intentions to avoid sexual risk.

## **Methods**

### ***Participants and Procedures***

This study was conducted by the Department of Obstetrics and Gynecology at the Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, India, from February 2008 to January 2009 in collaboration with the University of Miami Miller, School of Medicine. Prior to study onset, approval was obtained from the PGIMER Ethics Committee and the University of Miami Institutional Review Board. All participants provided written informed consent at study entry.

Intervention participants were recruited from the PGIMER STI Clinic of the Department of Dermatology, the Integrated Counseling and Testing Clinic of the Departments of Immunopathology & Gyne-

cology, and the Family Welfare Clinic. To be eligible for the study, couples had to be sexually active, in a relationship with their partner for  $\geq 1$  month, aged 18 -59 years, non-pregnant, negative for HIV/STIs and “at-risk” of HIV/STI infection (i.e., was tested or treated for STIs or HIV in the 3 months prior to study enrollment). Prior to study enrollment, couples were screened individually to verify their status as a couple and were tested for STIs (VDRL, HIV, hepatitis B [serology], Chlamydia and Gonorrhoea [urine polymerase chain reaction]). Female participants had a pelvic examination for cervical dysplasia and vaginal infections (Pap smear and vaginal swabs).

Of the 64 couples approached, 30 fulfilled the inclusion criteria and were enrolled in the study (N = 60 individuals). Reasons for couple ineligibility included: not able to return for follow-up (n=19), husband not willing to participate (n=11), STI positive (n=1), HIV positive (both partners, n=1), and pregnant (n=2). Among the 30 women participants, 15 were positive for bacterial vaginosis and one for candidiasis. These women were treated prior to study initiation. None of the women tested positive for cervical dysplasia on Pap smear.

### ***Development of Interventional Program***

Adaptation of the group gender concordant intervention began with a formative component, i.e., key informant interviews and focus group discussions [the group sexual risk reduction intervention has been described in previous literature]<sup>21</sup>. Ten interviews with key informants, e.g., people involved with community health care, HIV related research or psychosexual health practitioners were held. Interviews were tape-recorded, transcribed, coded using NVIVO software and analyzed for dominant themes. Themes which emerged were safer sex issues, gender role, in-laws, social relationships, religious beliefs and stigma. Two focus group discussions of gender concordant groups were conducted. Focus groups were comprised of women (n=7) and partners (n=7) attending the PGIMER

Family Welfare Clinic. The seven couples were of reproductive age and attending the family welfare clinic for contraception advice. The two gender-concordant focus groups were audio taped, transcribed, coded and analyzed. The dominant themes which emerged from discussions were marriage, the ability to have children, and the ability to sexually satisfy one’s partner. Topics on AIDS related knowledge were also discussed. Questionnaires utilized in the study were chosen based on study outcomes and guided by information obtained during the interviews and discussions.

### ***Intervention Content***

The intervention consisted of 3 weekly intervention sessions of 2 hours per session in gender concordant groups (10 participants per group) led by a gender-concordant counselor and co-facilitator. Sessions included cognitive-behavioral skill training on HIV/STI prevention, reproductive choice, communication, sexual negotiation and education on sexual barrier products. The content of the women’s and men’s interventions included gender-relevant issues (e.g., gender roles, sexual negotiation) and each session included relaxation techniques (deep breathing or meditation). Session information was presented through multiple modalities (e.g., visual, auditory, experiential) with ample opportunities for practice, feedback, and reinforcement (e.g., discussion on methods of reproductive choice, sharing experiences using products with their partners, questions on product use, opportunity to handle and examine products). Participants were introduced to sexual barrier products (male and female condoms) and a locally available vaginal lubricant product (KY Jelly®) as a surrogate to assess the potential acceptability of microbicides. The intervention sessions have been associated with increased sexual barrier use<sup>17</sup> and detailed in previous literature<sup>21</sup>.

### ***Measures***

Demographic data on age, religion, nationality, ethnicity, educational level, em-

ployment status, and residential status were recorded at baseline. Additionally, participants provided a baseline report of sexual barrier products and other methods used to prevent pregnancy.

*Scale for Knowledge and Attitude towards Condoms (SKAC)*

The SKAC<sup>24</sup> is an assessment of knowledge (62 dichotomous items: yes/no) and attitudes (36 Likert-type items, strongly disagree to strongly agree) about condoms that was culturally and linguistically adapted from the Sexual Knowledge and Attitude test for Northern Indian populations. Responses were summed for 2 subscales; higher knowledge subscale scores indicated greater knowledge (maximum score=26) and higher attitude subscale scores indicated a positive attitude (maximum score=180). Test-retest reliability (attitudes=.67; knowledge=.43) and validity (comparison of normal controls and sexually dysfunctional populations) are modest or low.

*AIDS-related knowledge scale (ARK)*

The ARK<sup>25</sup> includes 10 items designed to assess HIV risk and prevention-related knowledge, including items on HIV transmission, condom use, and maternal transmission. Responses included Yes, No, or Don't Know. The scale was scored according to the number of correct responses, with "Don't Know" scored as incorrect (maximum score=10). The scale is internally consistent (alpha =.73).

*HIV-risk avoidance intentions scale*

The risk avoidance intentions scale<sup>25</sup> is an adapted measure consisting of 9 items to measure behavior intentions, and asked participants how likely they would be to engage in actions to reduce HIV-related sexual risk. Participants were instructed to imagine a situation in which they would feel tempted or pressured to engage in unprotected intercourse. Scale items reflect cognitive and behavioral strategies often targeted by HIV prevention interventions. Responses are rated on 6-point scales, 1=Definitely will not

do, 6=Definitely will do. Responses were summed to provide a behavioral intentions score. Scores demonstrated high internal consistency (alpha=.89).

*Risk reduction scale (RRS):*

The RRS<sup>26</sup> is a 6-item assessment of obtaining, carrying, and discussing condoms, discussing HIV testing, refusal to have unprotected sex, and the use of alcohol or drugs during sex. Participants indicated the number of times they engaged in these protective/risk behaviors in the past month.

*Barrier methods questionnaire*

The barrier methods questionnaire was adapted from the University of California at San Francisco Center for AIDS Prevention Studies Barrier Questionnaire and measured the use and acceptability of various sexual barriers (male and female condom, gel). Preferences for sexual barriers were rated on a scale of (4) would be very willing to use to (1) not at all willing to use. Preference items include: preferences for delivery systems (5 items), methods of use and temporal limitations, product characteristics (17 items: e.g., slippery, dry, pleasurable), and contraceptive preferences (5 items).

*Acceptability Questionnaire*

The acceptability questionnaire was designed by U.S researchers from information derived from Miami, Zambia and India focus groups and study participant feedback. Participants were asked to rate the acceptability of specific barriers or compare them with similar barriers, using a 7 point Likert-type scale. The 23 items included preferred sexual barriers and factors contributing to preference.

***Data analyses***

Univariate statistics (e.g., mean, frequency, percentages) are presented for socio-demographic variables. Percentages are presented for types of barrier methods used. Analyses of knowledge and attitudes towards condom use, risk avoidance intentions, and acceptability of sexual barrier products utilized paired t-tests to compare pre- and

post-intervention means. Statistical analyses utilized SPSS version 13.0 with a 2-tailed level of significance of  $P = .05$ .

## Results

### Demographics and Contraceptive Use

The age of the majority of the participants ranged between 29 to 32 years (mean age 30 years). Most of the men (83%) were skilled/semiskilled workers and most women were housewives (73%). Education level in 70% of males and 63% of females was up to 10th class (10 years) or higher. More than half (64%) had a monthly income below 6000INR (< \$120), lived in a joint family home (consisting of couple living with children and parents; 57%), resided in an urban setting, and had two or more children (77%).

At baseline, 11 couples (36.7%) were using male condoms. None of the participants had ever used a female condom or vaginal gel during sexual intercourse. All couples self-identified as using protection against pregnancy (i.e., intra-uterine contraceptive

device, implant, oral pills, condoms, or sterilization). In 18 couples, the woman was responsible for contraception (tubal ligation  $n = 8$ , contraceptive implant  $n = 7$ , oral pills  $n = 2$ , intra-uterine contraceptive device  $n = 1$ ); in 11 couples the man was responsible for condoms and in one couple neither partner claimed responsibility for contraception. Participant retention was 100% over the course of the study, an average of 3 months.

### Knowledge and Attitudes about Male Condoms

Mean score of knowledge about Male condom is presented in Table 1; women were more knowledgeable and had more positive attitudes regarding condom use at baseline. A comparison of pre- and post-intervention scores indicated that knowledge and attitudes regarding condoms improved significantly among both men and women. Additionally, AIDS related knowledge had also improved in both men and women (Table 1).

**Table 1:** Pre- and post-intervention male condom and HIV-related knowledge and attitudes

Variables		Baseline N=30 Mean (SD)	Post-intervention	<i>t</i>	Mean difference (95% CI)
Knowledge about male condom	Men	9.4(3.08)	15.96(1.75)	11.7**	6.5 (5.36, 7.63)
	Women	16.4(5.19)	22.4(2.87)	7.1**	6 (4.25, 7.67)
Attitude toward male condom	Men	111.60 (7.04)	131.0 (5.46)	11.3 **	19.4 (15.90, 22.95)
	Women	128.5 (15.33)	135.1 (8.78)	2.9 *	6.6 (1.92, 11.34)
Knowledge about HIV/AIDS	Men	6.9(2.01)	9.6(0.54)	7.8**	2.8 (2.01, 3.44)
	Women	8.0(3.15)	9.9(0.40)	3.5*	1.9 (0.78, 3.02)

\*: *P*-value: less than 0.01, \*\*: less than 0.001

### HIV Risk Avoidance Intentions and Sexual Risk Reduction Strategies

HIV risk avoidance intentions and use of current sexual risk reduction strategies are presented in Table 2. Women reported greater intentions to avoid HIV risk than men at baseline and post-intervention. Use of three of five of the risk reduction strategies (talking with partner about condoms,

planning ahead of time to use condoms or have safe sex, and talking with partner about getting tested for HIV) had improved post-intervention. At baseline, 70% of men never talked about using condoms; at post-intervention, 100% of men and women reported talking about condom use. Post-intervention, 87% of men and all women reported that they had refused to have sex in the ab-

sence of condoms, and also reported plan-

ning ahead to have safe sex.

**Table 2:** Intervention effect on HIV Risk Avoidance Intentions and Sexual Risk Reduction Strategies

Risk Reduction Strategies		Baseline n(%)	Post-intervention n(%)		
Talked to partner about using condoms	Men	9(30)	30(100)		
	Women	7(23)	30(100)		
Refused sex because of not having condoms	Men	8(27)	26(87)		
	Women	4(13)	30(100)		
Planned to have safe sex by using condoms	Men	2(7)	26(87)		
	Women	6(20)	30(100)		
Talked with partner about getting an HIV test	Men	9(30)	28(93)		
	Women	25(83)	30(100)		
Drank or used drugs less before having sex	Men	2(7)	30(100)		
	Women	2(7)	30(100)		
		<b>Mean (SD)</b>	<b>Mean (SD)</b>	<b>t</b>	<b>MD (95% CI)</b>
HIV Risk Avoidance Intentions	Men	37.23 (11.84)	49.46 (1.47)	5.6**	12.23 (7.78,16.68)
	Women	39.36 (7.82)	46.73 (4.88)	7.0**	7.37 (5.22, 9.50)

\*: P-value: less than 0.01, \*\*: less than 0.001

**Acceptability of Barrier methods' Products**

The acceptability of barrier methods products is presented in Table 3. The frequency of coital acts at baseline ranged from 1-3 times per week, which was maintained across the study period. Post-intervention,

12/30 couples were currently using the female condom and 18/30 couples were currently using male condoms along with vaginal gel. Men and women who were slightly or moderately willing to use male condoms at baseline increased to moderately or very willing to use them at post-intervention.

**Table 3:** Effect of the intervention on acceptability of sexual barrier products

Willingness to use sexual product		Baseline Mean (SD)	Post-intervention Mean (SD)	t	Mean difference (95% CI)
Male condom	Men	2.23(0.67)	3.27(0.69)	5.9 **	1.03 (0.67, 1.39)
	Women	2.43(0.89)	3.23(0.67)	4.7 **	0.80 (0.45, 1.45)
Female condom	Men	1.17(0.53)	2.57(0.72)	9.2 **	1.40(1.09, 1.70)
	Women	2.03(0.49)	2.97(0.76)	5.2 **	0.93(0.56, 1.29)
Vaginal gel	Men	1.03(0.18)	2.37 (0.49)	13.4 **	1.33 (1.12, 1.53)
	Women	1.40 (0.49)	2.40 (0.56)	9.3 **	1.00 (0.78, 1.21)

\*: P-value: less than 0.01, \*\*: less than 0.001

Men who were unwilling to use female condoms at baseline increased to moderately willing to use at post-intervention. For vaginal gels, those who were not at all willing to use them increased being slightly to moderately willing to use them. The majority of women (76.6%) found the vaginal gel easy to use, while 40% reported it to be messy. Two thirds preferred sex to be

dry and thought that their partners also liked sex to be dry. Among men, 26.6% found the use of gel comfortable, 60% preferred sex to be somewhat lubricated and 53.3% thought that their female partner preferred the same. Majority of women (76.6%) and men (53.3%) indicated that use of vaginal gel had no effect on their sexual pleasure.

## Discussion

This study sought to adapt and test the feasibility of implementing a group sexual risk reduction intervention for couples in the Indian context. Results support the use of group sessions in this context to increase awareness regarding safer sexual practices, HIV risk reduction, and the use of sexual barrier products. Both male and female participants reported increased HIV-related knowledge, improved sexual barrier acceptability, and increased safer sexual practices and greater use of strategies to avoid risk following participation in the intervention.

The acceptability of sexual barrier products increased following the intervention. Adopting safer sexual practices is critical to controlling the spread of the virus, and sexual barrier product use is an important component of safe sexual practices<sup>27</sup>. In India, sexual barrier products are offered as contraceptives, and their non-contraceptive benefits like STI prevention are not emphasized, especially in busy government hospitals and family welfare clinics. The rate of contraception use among Indian couples is 46.2%, and from 2001 to 2002, the family welfare programme conducted 4.73 million sterilization operations, provided 6.2 million intra-uterine contraceptive devices (IUCD), provided products to 7.47 million oral pill users, and gave 14.57 million conventional contraceptives (usually male condoms) to its beneficiaries<sup>28</sup>.

In countries with high fertility rates such as India, more effective contraceptive methods, such as the intra-uterine contraceptive device, sterilization, oral pills, and injectable hormonal preparations, are used in preference to condoms, which have a greater likelihood of failure. However, those using more effective methods of contraception, which have no effect or even negative effects on prevention of HIV/STIs, typically do not use sexual barrier methods for STI and HIV prevention. Thus, results support the use of interventions by health care workers to highlight the HIV/STI protection offered by

condom barrier methods to reduce STI and HIV transmission<sup>17</sup> in addition to the use of other contraceptives to prevent pregnancy (“dual methods”).

While male condoms are freely available in India, female condoms are not, mainly because they are more expensive and women need training to be able to use them correctly. Despite this situation being prevalent in India, both male and female condoms were readily accepted by the study participants. Being a “woman controlled” method, the female condom may be especially useful in the Indian society where married women may not be able to enforce condom use with their male sexual partners<sup>29-31</sup>. Female-controlled barrier methods (female condom and vaginal microbicides) may provide women with the opportunity to take an active role in reducing their HIV/STI risk and constitute an essential tool to prevent spread of these infections<sup>32</sup>. Recent advances in the development of vaginal microbicides have important implications for reducing HIV transmission, but their introduction must include attention to product acceptability among both men and women.

Couples reported limited knowledge about the symptoms of STIs and HIV and low usage of condoms as a barrier against STIs and HIV at study entry. Health education strategies delivered in a group counseling format by a health care worker facilitated discussion and increased the level of awareness about reproductive tract infections (RTIs) and STIs among both men and women. Education about RTIs and STIs plus demonstration of condom use on penile and vaginal models was effective in improving condom knowledge and attitudes among Indian women in this pilot study. Similar to previous studies<sup>17, 21-22</sup>, group counseling in gender concordant groups was shown to be beneficial and acceptable as a strategy to increase knowledge about reproductive health and sexual barrier use. Male acceptance of family planning methods has traditionally been low in India, and involving male partners in family planning may improve the reproductive health of sexually active cou-

ples and reduce the transmission of STIs and HIV<sup>33-35</sup>.

Results suggest the need for increased communication within the couple regarding product preference. The disparate findings concerning male and female preferences for dry versus lubricated sex indicate that women believe their partners prefer dry sex whereas the preferences noted by male partners did not support this perception. This finding is consistent with findings from earlier studies in Zambia and the US<sup>21</sup>, namely that women tend to overestimate their partner's preferences for potentially risky sexual behaviors (dry sex), and also tend to express their own preferences in alignment with what they perceive to be their partners preference. Increased sexual communication among couples may reduce the risk of risky sexual practices associated with STIs<sup>35</sup>.

Certain important limitations associated with this study should be noted. Most notably, the small sample size and the lack of a control group limit the generalizability of the results obtained or the potential to attribute study outcomes to the intervention alone. In addition, study participants recruited from the hospital environment may have felt the pressure to provide socially desirable responses, though study participation was not linked with clinic services or clinic employees. Additionally, while this study focused on promoting sexual barriers as a HIV/STI risk reduction strategy, future research in areas of high pregnancy incidence should also promote "dual method" use of more effective contraception in addition to sexual barriers. Finally, the male condom knowledge subscale demonstrated low reliability, and results should be interpreted with caution. Future studies should pursue the refinement of this scale.

## Conclusion

Overall, this pilot study supports the feasibility of the use of an adapted group intervention to improve sexual barrier acceptability among Indian couples. Additionally, results highlight the potential to successfully utilize a group intervention to discuss sensi-

tive issues such as sexual risk behavior among both men and women. Based upon the results of this feasibility study, a larger study may be appropriate to determine whether similar findings can be obtained with a more representative sample, and to determine whether such changes can be maintained long term (e.g., one to two years). Findings from such an investigation would have important implications for health policy and practices relevant to decreasing sexual risk among Indian couples.

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## Competing interests

The authors declare that there is no conflict of interest.

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