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An Intervention to Decrease Intravaginal Practices in HIV-Infected Women in Zambia: A Pilot Study

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Abstract

Intravaginal practices (IVP) are those in which women introduce products inside the vagina for hygienic, health, or sexuality reasons. IVP are associated with bacterial vaginosis (BV) and potentially implicated in HIV transmission. This report presents the results of a pilot study of a behavioral intervention to decrease IVP in HIV-infected women in Zambia. At baseline, all of the enrolled women ($n = 40$) engaged in IVP and rates of BV were high. Women receiving the intervention reported a decrease of the insertion of water and cloths inside the vagina. Communication with sexual partners regarding IVP was higher for women receiving the intervention. Results from this study suggest that a behavioral intervention could decrease IVP in HIV-infected women in Zambia and this may have an impact in decreasing HIV transmission from women to sexual partners and newborns.

Keywords

Africa; bacterial vaginosis; HIV; vaginal practices; women

Vaginal practices are a variety of behavioral techniques that can be used outside or inside the vagina for personal hygiene or as a way to enhance sexual experiences. Studies addressing vaginal practices in sub-Saharan Africa have grouped vaginal practices into six main categories: external washing, external application, anatomical modification, intravaginal cleansing, intravaginal insertion, and oral ingestion (Hilber, Chersich, Van de Wijgert, Ress, & Temmerman, 2007). Intravaginal practices (IVP) include cleansing inside the vagina for the purpose of removing fluids or by introducing liquids or gels (intravaginal cleansing or washing) and the introduction of products for different purposes, regardless of how long they remain inside (intravaginal insertion; Hilber et al., 2007; Hilber, Hull, et al., 2010). In sub-Saharan Africa, women engage in IVP to clean or to facilitate dryness of the vagina and promote “dry sex,” a practice that is believed to increase sexual pleasure for men (Alcaide, Mumbi, Chitalu, & Jones, 2011; Allen et al., 2010; Beksinska, Rees, Kleinschmidt, & McIntyre, 1999; Fonck et al., 2001; Gallo, et al., 2010; Hilber, Francis, et

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al., 2010; Sandala et al., 1995). Women use a variety of products to engage in IVP depending on the purpose; these products include water, soaps, cloths, herbs, traditional medicines, creams, vaginal inserts, and household products (Alcaide et al., 2011; Beksinska et al., 1999; Hilber, Francis, et al., 2010).

The use of IVP is widespread in Africa and strongly influenced by social and cultural beliefs. IVP are introduced to a woman at an early age by an older woman, are female initiated, and are motivated by male preferences. Consequently, strategies to decrease such practices are a challenge (Mwale & Burnard, 1992).

IVP, in particular intravaginal cleansing, increase the risk of bacterial vaginosis (BV), the most common cause of vaginal discharge and malodor in women (Fethers, Fairley, Hocking, Gurrin, & Bradshaw, 2008). Although BV is not considered a sexually transmitted infection (STI), it is known to increase susceptibility and transmission of HIV and STIs to sexual partners and newborns (Farquhar et al., 2010; Fonck et al., 2001; Low et al., 2011). It is believed that IVP could increase HIV transmission by both facilitating BV and by causing irritation and inflammation of the vaginal mucosa (Fonck et al., 2001; Hilber, Francis, et al., 2010; McClelland et al., 2006). Both BV and vaginal inflammation could facilitate genital tract HIV shedding, which can be responsible for HIV transmission.

Zambia is a country severely affected by the HIV epidemic and the prevalence of HIV in women is as high as 20% (Zambia Ministry of Health, 2008). In this country, as in other African countries, IVP is very common and the practice of dry sex has been reported as being close to 50% (Alcaide et al., 2011; Mbikusita-Lewanika & Stephen, 2009). Although studies have not addressed IVP in HIV-infected women, decreasing IVP in this population could have an important effect in decreasing rates of HIV transmission.

In this report, we present the results of a pilot study of HIV-infected women in Zambia with vaginal discharge comparing a behavioral intervention to reduce IVP to the standard of care. We hypothesized that women participating in the behavioral intervention would have lower rates of IVP and BV than those receiving the standard of care.

Methods

Participants were women recruited from a convenience sample at Community Health Centers in urban Lusaka, Zambia. Participants were primarily self-referred, after hearing about the study from enrolled participants. Participants presented documentation of HIV infection at the time of enrollment. Participants were 18 years of age or older, sexually active, infected with HIV, not pregnant, and living in the Lusaka metropolitan area. Participants were screened by study nursing staff for self-reported vaginal discharge using a questionnaire that included questions regarding vaginal symptoms: vaginal discharge, vaginal odor, or vaginal itching. In order to identify high rates of women with BV, only women who reported any vaginal discharge were enrolled into one of two conditions: control ($n = 20$) and intervention ($n = 20$). Sixty women were screened and 40 enrolled; the first 20 participants were allocated to the intervention condition, the following 20 to the control condition, and all were longitudinally followed for a period of 8 weeks. Because this was a pilot study, randomization was not used to allocate participants to control or intervention conditions.

Protection of Human Participants

Institutional Review Board (University of Miami Miller School of Medicine) and Research Ethics Committee (University of Zambia) approvals were obtained prior to recruitment, assessment, and any study related interventions. Participants were provided with information

about the study and assured of confidentiality of information and study records. Voluntarily signed informed consent was obtained from every participant prior to participating in the study.

Study Procedures

Women were enrolled by study nursing staff and administered questionnaires assessing demographic, sexual risk factors, and IVP. The study nurse conducted a vaginal examination and collected vaginal fluid using a cotton-tipped wooden vaginal swab. Material and methods of assessment have previously been described (Alcaide et al., 2011). IVP questionnaires and wet mounts were collected at baseline and at follow-up visits at 8 weeks post intervention. Following assessment, the study coordinator provided either the intervention or control condition. A diagram of study procedures is shown in Figure 1. Both the control and intervention conditions were conducted by study nursing staff.

Control condition—The control condition consisted of a 3- to 5-minute brief message advising women not to engage in IVP. The study coordinator provided this message to the control group (standard of care).

Intervention condition—The behavioral intervention consisted of an individual interactive socio-educational session about IVP. The study coordinator, who was experienced in the administration of risk reduction behavioral interventions, administered the intervention. The pilot intervention utilized the Information Motivation Behavioral Skills (IMB) model, in which the underlying components of IVP (culture, partner preference, hygiene, health and sexuality factors, motivation, and behavioral skills) were addressed to promote vaginal health. The intervention provided information about vaginal fluids, the damaging consequences of IVP (BV and increased risk of transmission of HIV), alternative vaginal hygiene strategies, and treatment for BV. It also enhanced motivation to engage in healthy behaviors related to IVP (good hygiene behaviors, improved attitudes about normal vaginal fluids, and use of correct BV treatment) and skills (increased communication with partners on vaginal health, healthy IVP). The duration of the intervention was 20–30 minutes.

Medical treatment—Women in both conditions were screened for BV. Those who were diagnosed with BV received a prescription for metronidazole 500 mg orally twice a day for 7 days.

Study Measures

Study measures were administered by study nursing staff at baseline and 8 weeks after baseline. Measures included demographics, sexual risk factors, vaginal practices questionnaires, and a biological assessment for BV.

Demographics and sexual risk factors—This questionnaire included general demographic and socioeconomic characteristics and sexual risk factors associated with HIV and STI. It also included questions regarding partner HIV status (Alcaide et al., 2011).

Vaginal practices—This questionnaire assessed the participants' reasons for the use of IVP across three domains: hygiene (to clean, remove odor, decrease discharge and itching, cleansing after menses), health (to avoid pregnancy and to avoid STI and HIV infection), and sexuality (perceived sexual partner preference). The IVP questionnaire was developed from focus group data collected from female community leaders in an urban Community Health Center in Lusaka, Zambia, addressing topics related to intravaginal practices (intravaginal cleansing and intravaginal insertion). Questionnaire items assessed use, reason

for use, products used, subjective symptoms, perceived sexual partner preference for IVP, and perceptions of women regarding IVP. Items were endorsed and scored using a dichotomous scale (*yes* = 1, *no* = 0).

Biological assessments—BV was diagnosed using Amsel criteria. Outcomes were scored and reported using a dichotomous scale (*presence* = 1, *absence* = 0).

Statistical Analysis

Predictive Analytics Software 18 statistics was used for analysis. Comparisons between conditions at baseline and follow-up were conducted using Chi-square analysis. Comparisons within conditions over time were conducted using the McNemar statistic. A *p* value of less than .05 was considered significant.

Results

Twenty women completed baseline assessments in each condition. Four women were lost to follow-up in the control condition and two in the intervention condition. Follow-up assessments were completed with 16 women enrolled in the control condition and 18 women enrolled in the intervention condition.

Demographics and Risk Behavior

Sociodemographic characteristics and risk behaviors at baseline have been previously described (Alcaide et al., 2011). The mean age of the participants was 37 years old. Most women were long-term HIV infected, with very low income, married, and living with a stable partner in a monogamous relationship. The majority had an HIV-infected partner (75%). There were no significant differences in demographic or risk behaviors at baseline between conditions.

Vaginal Practices and Biological Assessments

Baseline—IVP and biological assessments at baseline and follow-up by condition are described in Table 1. At baseline, women who were enrolled in both conditions engaged in IVP, primarily for hygiene, but also for health and sexual preferences. Use of water was prevalent in both conditions (more than 95%). Eighty-five percent of women had BV in both conditions. Women enrolled in the intervention condition had a higher prevalence of the use of herbs and cloths or cotton (Chi-square = 5 and 10.1, respectively).

After intervention—IVP and biological assessments within conditions over time are described in Table 2. Sixteen women in the control condition and 18 women in the intervention condition completed follow-up visits and were included in the analysis. Rates of reported IVP, and use of IVP for hygiene reasons, decreased over time in both conditions; statistical probability calculation for some variables was precluded as rates at baseline or follow-up were 100%. Rates of BV decreased over time in both conditions. Among women in the intervention condition, there was a decrease in the use of water and cloths post intervention; use of soap and herbs also decreased but no statistical probabilities could be calculated. IVP due to partner sexual preference exhibited a decreasing nonsignificant trend approaching significance in the intervention condition.

Women's reports of subjective vaginal symptoms did not differ at follow-up between the two groups (see Table 3). More women in the intervention condition reported discussing IVP with their sexual partners post intervention.

Discussion

This pilot study assessed IVP, and developed, pilot tested, and evaluated a behavioral intervention to decrease intravaginal practices in HIV-infected women in Lusaka, Zambia. Among women reporting vaginal symptoms, IVP and BV were common. On follow-up, women in both conditions had decreased IVP and rates of BV. Women participating in the intervention decreased the intravaginal use of water and cloths/cotton and increased communications with sexual partners regarding IVP.

Although IVP is a common practice in Zambia and in sub-Saharan Africa, and potentially implicated in STI and HIV transmission, interventions to decrease IVP in this region have received little attention. This study evaluated such an intervention among HIV-infected women in Zambia. Previous studies, such as one by Turner and colleagues (2010) in Zimbabwe, evaluated IVP in HIV-uninfected women over 3 months following a brief counseling session and found no change in women's IVP behaviors. Similarly, Van der Straten, Cheng, Chidanyika, Bruyn, and Padian (2010) found no change in the use of IVP in HIV-uninfected women enrolled in a clinical trial of diaphragm use that prohibited IVP while the diaphragm was in place.

Although our study could not assess statistical significance differences between the two groups in terms of prevalence of IVP, results suggested that the intervention was effective in decreasing IVP (6.3% in the control vs. 22.2% in the intervention). Both provision of an education session about IVP and the standard of care, a brief medical message advising discontinuation of IVP, appear to have been effective. However, women provided with an education session made additional important changes, decreasing the use of water and cloths for IVP. This outcome is especially interesting given the higher frequency of the use of water related to IVP; as such, it may represent an exceptionally difficult-to-change and well-established behavior. The cessation of insertion of herbs and the decreased use of cloths/cotton observed is especially important due to potential damage to the vaginal mucosa and possible association with STI and HIV transmission (Farquhar et al., 2010; McClelland et al., 2006). Studies addressing the mucosal damage due to IVP are needed to further evaluate the biological impact of IVP interventions.

Our study identified high rates of BV, likely due to enrolling women with vaginal discharge. Rates of BV decreased for women in both conditions. This outcome is likely explained by the provision of medical treatment to all participants diagnosed with BV, and the relatively short-term follow-up. It is possible that the effect of the behavioral intervention in decreasing BV could outlast the effect of the medical treatment alone. Further studies should address implementation of an intervention with a longer duration of follow-up to more accurately assess the long-term effect of the intervention.

Preliminary data from the same community found that IVP for hygiene using water was the most widespread practice and was associated with vaginal discharge (Alcaide et al., 2011). Our study illustrated that women receiving the intervention decreased the use of water. Although water has been considered a less damaging product when applied inside the vagina, a previous study demonstrated otherwise (Alcaide et al., 2011). Importantly, Fonck and colleagues (2001) also found an association between HIV and douching with water alone among female sex workers in Nairobi, Kenya.

The use of IVP for perceived male preference by women in the intervention condition had a decreasing trend. While not significant, women in the experimental condition were also more likely to have discussed information about IVP with their sexual partners. This outcome suggests that communication with partners occurred and may have had an effect in decreasing IVP for the use of sexual pleasure. IVP is strongly influenced by cultural and

social beliefs, is female initiated, and driven by perceived male preferences. In addition, information regarding IVP is traditionally transmitted from older women in the community to young women prior to their marriage in women-only gatherings (kitchen parties; Mwale & Burnard, 1992). Thus, the discussion of IVP with male partners is culturally prohibited and IPV is traditionally not reported to male partners; as such, such behaviors are extremely difficult to influence. Surprisingly, results of this pilot study suggest that the modification of this behavior could actually be facilitated by involvement of male partners.

This pilot study has several important limitations primarily derived from the characteristics of the sample. As a pilot study, the sample size was small. It was a convenience sample, nonrandomized, and not clinically blinded. IVP data prior to and following the interventions relied on participant self-report. In order to detect women with BV, only women with vaginal discharge were enrolled, and the relative prevalence of asymptomatic BV may have been under identified. Some characteristics of women differed between conditions, due to the limitations of the sample size; the ceiling and basement effects of some variables precluded statistical testing. Furthermore, as mentioned, the brief duration following intervention prevents an evaluation of the sustained effect of the intervention. Finally, social desirability may have influenced participant reports.

Although this pilot study had important limitations, results provide preliminary evidence for the feasibility of this approach in a larger study. A randomized controlled trial designed to decrease IVP and to assess biological markers — BV, immunological markers of mucosal damage, and HIV genital shedding — could clarify the effect of IVP on the vaginal mucosa and evaluate these markers in relation to the behavioral intervention.

Conclusions

Our results suggest that a behavioral intervention could decrease IVP in HIV-infected women in Zambia. Decreasing IVP may have an important impact in decreasing HIV and STI transmission from women to their sexual partners and newborns. Modifying IVP should be considered a key element as part of multidisciplinary HIV prevention plans.

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References

- Alcaide ML, Mumbi M, Chitalu N, Jones DL. Vaginal cleansing practices in HIV infected women in Zambia. *AIDS & Behavior*. 2011 <http://dx.doi.org/10.1007/s10461-011-0083-z>. [Epub ahead of print].
- Allen CF, Desmond N, Chiduo B, Medard L, Lees SS, Vallely A, Hayes RJ. Intravaginal and menstrual practices among women working in food and recreational facilities in Mwanza, Tanzania: Implications for microbicide trials. *AIDS & Behavior*. 2010; 14(5):1169–1181. <http://dx.doi.org/10.1007/s10461-010-9750-8>. [PubMed: 20665101]
- Beksinska ME, Rees HV, Kleinschmidt I, McIntyre J. The practice and prevalence of dry sex among men and women in South Africa: A risk factor for sexually transmitted infections? *Sexually Transmitted Infections*. 1999; 75(3):178–180. <http://dx.doi.org/10.1136/sti.75.3.178>. [PubMed: 10448396]
- Farquhar C, Mbori-Ngacha D, Overbaugh J, Wamalwa D, Harris J, Bosire R, John-Stewart G. Illness during pregnancy and bacterial vaginosis are associated with in-utero HIV-1 transmission. *AIDS*. 2010; 24(1):153–155. <http://dx.doi.org/10.1097/QAD.0b013e32832326d8>. [PubMed: 19952542]

- Fethers K, Fairley CK, Hocking J, Gurrin LC, Bradshaw C. Sexual risk factors and bacterial vaginosis: A systematic review and meta-analysis. *Clinical Infectious Diseases*. 2008; 47(11):1426–1435. <http://dx.doi.org/10.1086/648092>. [PubMed: 18947329]
- Fonck K, Kaul R, Keli F, Bwayo JJ, Ngugi EN, Moses S, Temmerman M. Sexually transmitted infections and vaginal douching in a population of female sex workers in Nairobi, Kenya. *Sexually Transmitted Infections*. 2001; 77(4):271–275. <http://dx.doi.org/10.1136/sti.77.4.271>. [PubMed: 11463927]
- Gallo M, Sharma A, Bukusi E, Njoroge B, Nguti R, Jamieson DJ, Eschenbach DA. Intravaginal practices among female sex workers in Kibera, Kenya. *Sexually Transmitted Infections*. 2010; 86(4):318–322. <http://dx.doi.org/10.1136/sti.2009.040345>. [PubMed: 20410077]
- Hilber AM, Chersich M, Van de Wijgert J, Ress H, Temmerman M. Vaginal practices, microbicides and HIV: What do we need to know? *Sexually Transmitted Infections*. 2007; 83(7):505–508. <http://dx.doi.org/10.1136/sti.2007.028597>. [PubMed: 18024709]
- Hilber AM, Francis SC, Chersich M, Scott P, Redmond S, Bender N, Low N. Intravaginal practices, vaginal infections and HIV acquisition: Systematic review and meta-analysis. *PLoS One*. 2010; 5(2):e9119. <http://dx.doi.org/10.1371/journal.pone.0009119>. [PubMed: 20161749]
- Hilber AM, Hull TH, Preston-Whyte E, Bagnol B, Smit J, Wacharasin C, Widyantoro N, WHO GSVF Study Group. A cross cultural study of vaginal practices and sexuality: Implications for sexual health. *Social Science & Medicine*. 2010; 70(3):392–400. <http://dx.doi.org/10.1016/j.socscimed.2009.10.023>. [PubMed: 19906477]
- Low N, Chersich M, Schmidlin K, Egger M, Francis S, Van de Wijgert S, Hilber AM. Intravaginal practices, bacterial vaginosis, and HIV infection in women: Individual participant data metaanalysis. *PLoS Medicine*. 2011; 8(2):e1000416. <http://dx.doi.org/10.1371/journal.pmed.1000416>. [PubMed: 21358808]
- Mbikusita-Lewanika M, Stephen H, Thomas J. The prevalence of the use of ‘dry sex’ traditional medicines, among Zambian women, and the profile of the users. *Journal of Psychology, Health & Medicine*. 2009; 14(2):227–238. <http://dx.doi.org/10.1080/13548500802270364>.
- McClelland R, Lavreys L, Hassan W, Mandaliya K, Ndinya-Achola JO, Baeten JM. Vaginal washing and increased risk of HIV acquisition among African women: A 10-year prospective study. *AIDS*. 2006; 20(2):269–273. <http://dx.doi.org/10.1097/01.aids.0000196165.48518.7b>. [PubMed: 16511421]
- Mwale, G.; Burnard, P. *Women and AIDS in rural Africa*. Harare, Zimbabwe: Avebury; 1992.
- Sandala L, Lurie P, Sunkutu MR, Chani EM, Hudes ES, Hearst N. ‘Dry sex’ and HIV infection among women attending a sexually transmitted diseases clinic in Lusaka, Zambia. *AIDS*. 1995; 9(Suppl. 1):S61–S68. [PubMed: 8562002]
- Turner AN, Morrison CS, Munjoma MW, Moyo P, Chipato T, Van de Wijgert JH. Vaginal practices of HIV-negative Zimbabwean women. *Infectious Diseases in Obstetrics & Gynecology*, 2010. 2010:387671. <http://dx.doi.org/10.1155/2010/387671>.
- Van der Straten A, Cheng H, Chidanyika A, Bruyn G, Padian N, MIRATeam. Vaginal practices and associations with barrier methods and gel use among sub-Saharan African women enrolled in an HIV prevention trial. *AIDS & Behavior*. 2010; 14(3):590–599. <http://dx.doi.org/10.1007/s10461-010-9690-3>. [PubMed: 20352318]
- Zambia Ministry of Health. Zambia country report. Jan. 2008 Retrieved from http://data.unaids.org/pub/Report/2008/zambia_2008_country_progress_report_en.pdf

Clinical Considerations

- IVP is common and associated with BV, HIV, and sexually transmitted infections.
- Culturally tailored behavioral interventions could be used to decrease IVP in HIV-infected women in sub-Saharan Africa.
- Clinic nursing staff could play a major role in developing and promoting such interventions in areas with high rates of IVP and HIV.

Figure 1.

Diagram of study procedures. *Four women enrolled in the control condition were lost to follow-up; **two women enrolled in the intervention condition were lost to follow-up. BV = bacterial vaginosis.

Table 1

Characteristics of IVP and Comparisons Between Conditions at Baseline

	Baseline		Chi Square (<i>p</i> value)
	Control (<i>n</i> = 20)	Intervention (<i>n</i> = 20)	
Use of any IVP	20 (100%)	20 (100%)	<i>a</i>
IVP for hygiene	20 (100%)	20 (100%)	<i>a</i>
IVP for health	16 (80%)	12 (60%)	1.9 (.15)
IVP for pleasure	12 (60%)	7 (35%)	2.5 (.10)
Use of water for IVP	20 (100%)	19 (95%)	1.02 (.5)
Use of soap for IVP	4 (20%)	7 (35%)	1.12 (.24)
Use of herbs for IVP	5 (25%)	12 (60%)	5 ^{<i>b</i>}
Use of Cloth/cotton for IVP	1 (5%)	11 (55%)	10.1 ^{<i>b</i>}
BV	17 (85%)	17 (85%)	<i>a</i>

Note: BV = bacterial vaginosis; IVP = intravaginal practices.

^{*a*}No statistics computed because variable is a constant between conditions or time points.

^{*b*}*p* value < .05.

Table 2

Characteristics of IVP by Condition Over Time

	Control (<i>n</i> = 16)			Intervention (<i>n</i> = 18)		
	Baseline	Follow-Up	McNemar (<i>p</i> value)	Baseline	Follow-Up	McNemar (<i>p</i> value)
Use of any IVP	16 (100%)	15 (93.7%)	<i>a</i>	18 (100%)	14 (77.8%)	<i>a</i>
IVP for hygiene	16 (100%)	14 (87.5%)	<i>a</i>	18 (100%)	9 (50%)	<i>a</i>
IVP for health	13 (81%)	13 (81%)	.85 (1)	10 (55.5%)	10 (55.5%)	1.9 (1)
IVP for pleasure	6 (37.5%)	8 (50%)	9.6 (.79)	11 (61.1%)	5 (27.7%)	1.03 (.07)
Use of water	16 (100%)	10 (65.5%)	<i>a</i>	17 (94.4%)	8 (44.4%)	.84 ^e
Use of soap	1 (7.7%) ^b	1 (7.7%) ^b	13.2 (1)	6 (35.3%) ^c	0	<i>a</i>
Use of herbs	4 (25%)	0	<i>a</i>	11 (64.7%) ^c	0	<i>a</i>
Use of cloth/cotton	1 (6.2%)	4 (25%)	.35 (.37)	10 (55.5%)	1 (5.55%)	1.32 ^d
BV	14 (82.3%)	6 (35.3%)	.6 ^d	14 (82.3%) ^c	4 (23.5%) ^c	1.12 ^e

Note: BV = bacterial vaginosis; IVP = intravaginal practices.

^a No statistics computed because variable is a constant between conditions or time points.

^b *n* = 13 (number of participants with a valid assessment).

^c *n* = 17 (number of participants with a valid assessment).

^d *p* value < .05.

^e *p* value < .01.

Table 3**Women's Perceptions About Vaginal Practices at Follow-Up**

	Control (n = 16)	Intervention (n = 18)	Chi Square (p value)
Feels more clean	8 (50%)	9 (50%)	10.1 (.25)
Discharge is improved	1 (6.2%)	5 (27.7%)	
Discharge is increased	0	0	
No changes were noticed	7 (43.7%)	2 (11.1%)	
Partner noticed changes	6 (37.5%)	12 (66.6%)	2.9 (.08)
IVP discussed with partner	5 (31.2%)	12 (66.6%)	4.2 ^a

Note: IVP = intravaginal practices.

^a *p* value < .05.