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VAGINAL DOUCHING AND INTIMATE PARTNER VIOLENCE Is There an Association?

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Objective. **This study tests the hypothesis that vaginal douching among women of reproductive age is associated with exposure to intimate partner violence (IPV).**

Methods. **The data source is a cross-sectional population-based sample of 2,002 women ages 18–45 in the Central Pennsylvania Women's Health Study. The survey included measures of IPV, douching behavior, and relevant sociodemographic and health-related covariates.**

Findings. **Six percent of the sample reported experiencing any type of IPV in the past year, and 23% reported douching in the past year. IPV is significantly associated with douching after controlling for sociodemographic and health-related covariates. This finding holds for women with and without current reproductive capacity.**

Conclusions. **This is the first study to identify an association between vaginal douching and IPV. Because vaginal douching is a risk factor for sexually transmitted infections, bacterial vaginosis, and adverse pregnancy outcomes, the findings could have important implications for prevention. Further research is needed to identify the reasons why women who have been exposed to IPV are more likely to douche.**

The correlates and consequences of vaginal douching have received considerable research attention. Although cause and effect have been debated (Grodstein & Rothman,1994; Rothman, Funch, Alfredson, Brady, & Dreyer, 2003), the weight of the evidence suggests that vaginal douching increases the risk of negative health outcomes (Abma, Chandra, Mosher, Peterson, & Piccinino, 1997; Funkhouser, Pulley, et al., 2002; Grimley, Oh, Desmond, Hook, & Vermund, 2005; Martino & Vermund, 2002). Douching is regarded as a risk factor for sexually transmitted infections (STIs; Annang, Grimley, & Hook, 2006; Foch, McDaniel, & Chacko, 2001; Peters et al., 2000), bacterial vaginosis (Holzman, Leventhal, Qiu, Jones, & Wang, 2001; Schwebke, Desmond, & Oh, 2004), and adverse pregnancy outcomes (Bruce et al., 2002; Fiscella, Franks, Kendrick, Meldrum, & Kieke, 2002), and pelvic inflammatory diseases (Caliskan, Subasi, & Sarisen, 2006; Scholes et al., 1993).

According to the 1995 US National Survey of Family Growth (NSFG), about 27% of women practice vaginal douching (Abma et al., 1997). The 2001–2002 National Health and Nutrition Examination Survey (NHANES) reports the prevalence as 22.4% among women ages 14–49 (Sutton et al., 2006). A number of variables are known to be associated with douching, including being African American, having less education, and engaging in high-risk sexual practices, such as earlier initiation of sexual activity, a higher number of lifetime partners, more frequent sexual activity, and lack of condom use (Oh, Funkhouser, Simpson, Brown, & Merchant, 2003; Oh, Merchant, & Brown, 2002; Simpson, Merchant, Grimley, & Oh, 2004). Studies of women's reasons for douching suggest that they en-

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gage in this practice because of concerns about cleanliness associated with menstruation or sexual intercourse; influence of family, friends, and the media; and for self-treatment of symptoms of infections (Annang et al., 2006; Gazmararian, Bruce, Kendrick, Grace, & Wynn, 2001; Oh et al., 2003). There is evidence that some women believe douching prevents STIs or pregnancy (Gazmararian et al., 2001; Oh et al., 2003).

Moreover, studies have shown that without intervention, women who douche are fairly resistant to change (Gazmararian et al., 2001; Grimley, Annang, Foushee, Bruce, Kendrick, 2006; Ness et al., 2003). At the same time, studies have found that women discouraged from douching by a physician or nurse are more likely to discontinue the practice (Funkhouser, Haynes, Vermund, 2002; Ness et al., 2003), suggesting that education can be an effective tool for risk reduction (Gazmararian et al., 2001; Funkhouser et al., 2002). To date, only 1 theory-based behavioral intervention has been conducted with douching cessation as the primary outcome. Using a randomized controlled trial, Grimley et al. (2005) found nearly a 50% reduction in douching rates among African-American adolescent and young adult women compared with a 21.5% reduction rate in the comparison group at 12-month assessment. However, at baseline assessment 90% of all women reported having no intention to stop douching any time soon.

To our knowledge, no previous studies have investigated whether douching might be associated with more contextual or partner-related variables such as intimate partner violence (IPV), including involuntary sexual relations. The plausibility of the hypothesis that douching practices could be associated with IPV stems from previous research suggesting that male partners influence douching and that women who douche may believe that douching prevents STIs or pregnancy. The male partner's influence on douching has been documented in studies of both women and men (Oh et al., 2002; Simpson et al., 2004). Men might be expected to have more influence over douching practices in relationships characterized by a climate of male dominance and violence against the partner; they might demand douching for cleansing before intercourse, after intercourse for pregnancy prevention, or to remove biological evidence most often sought in specimens from rape victims (Sibille et al., 2002). Women who are victims of IPV, in turn, might douche at their own initiative in an attempt to please the partner or to prevent disease or pregnancy resulting from involuntary sexual encounters. Another possibility is that women exposed to involuntary sexual intercourse might douche to cleanse themselves after the incident. Regardless of the underlying reasons, identifying a link between IPV and douching could have important implications for the prevention of STIs and other adverse reproductive health outcomes, as well as for screening and interventions related to IPV.

This study tests the hypothesis that douching among women of reproductive age is associated with IPV, after controlling for relevant sociodemographic and health-related covariates. We also examine the association between douching and IPV separately for women with and without current reproductive capacity; only women with reproductive capacity would be expected to douche for purposes of pregnancy prevention.

Methods

Data Source

The data source is the Central Pennsylvania Women's Health Study and consists of a random digit-dial telephone survey of 2,002 women ages 18–45 years who reside in a largely rural 28-county region in central Pennsylvania. The major purpose of the survey was to estimate the prevalence of multiple risk factors for adverse pregnancy outcomes in a reproductive-age population using an interview protocol that took an average of 30 minutes to administer. The survey was conducted by the Penn State Survey Research Center from September 2004 to March 2005 and resulted in a response rate of 52% and a cooperation rate of 63%; the final sample is highly representative of the target population with respect to key demographics (age, race/ethnicity, educational level, and poverty status). The sample is 93% white, reflecting the target population. The details of the sampling design, survey implementation, and response rate have been published elsewhere (Weisman et al., 2006). The Institutional Review Board at the Penn State College of Medicine approved the study protocol.

Measures

Douching. The dependent variable, douching, was measured using an item adapted from Cycle 6 of the NSFG (Chandra, Martinez, Mosher, Abma & Jones, 2005) with the following question: "Some women douche after intercourse or at other times, while other women do not. During the past 12 months, how often, if at all, did you douche? Did you never douche, did you douche once a month or less, 2–3 times a month, once a week, or more than once a week?" Responses were as follows: 77% reported never douching, 16% reported douching once a month or less, 4% reported douching 2–3 times a month, 2% reported douching once a week, and 1% reported douching more than once a week. (Fourteen women declined to answer the question.) For analytic purposes, douching is defined as a dichotomous variable with 77% of respondents classified as not douching in the past year and 23% as

any douching in the past year. This prevalence of douching is similar to that found for white women ages 15–44 in the NSFG (Chandra et al., 2005) and somewhat higher than that found for non-Hispanic whites in the NHANES (Sutton et al., 2006).

Intimate partner violence. IPV was measured using an 8-item scale from the 1998 Commonwealth Fund Survey of Women's Health (Collins et al., 1999), based on the work of Straus (1979). The question reads, "Domestic violence affects many women's lives. In the past 12 months, has a spouse, partner, or boyfriend: threatened to hit you or throw something at you? Thrown something at you? Pushed, grabbed, shoved, or slapped you? Kicked, bit, or hit you with a fist or some other object? Beaten you up? Choked you? Forced you to have sex against your will? Threatened you with a knife or gun?" Each item was coded yes or no, and there were no missing data on these items. The most prevalent types of IPV reported were "threatened to hit you or throw something at you" (4%) and "pushed, grabbed, shoved, or slapped you" (4%). The least prevalent type of IPV reported was "threatened you with a knife or gun" (0.3%). Only 20 women (1%) reported being forced to have sex against their will. For analytic purposes, 94% of respondents are classified as not experiencing IPV in the past year, and 6% are classified as experiencing at least 1 type of IPV in the past year.

Covariates. Covariates include sociodemographic and health-related variables known to be associated with douching and/or with IPV. Recent research shows that sociodemographic variables that are fairly consistently associated with IPV include younger age, lower socioeconomic status, and being unmarried (Moracco, Runyan, Bowling, & Earp, 2007; Thompson et al. 2006; Vest, Catlin, Chen, & Brownson, 2002). Accordingly, sociodemographic covariates included in this study are: age (in years), race/ethnicity (coded as white non-Hispanic vs. other), educational level (high school graduate vs. not high school graduate), marital status (married or living with a partner vs. not married or living with a partner), and poverty status (yes/no, based on household income and composition, with poor defined as below the federal poverty level and near poor defined as below 200% of the federal poverty threshold).

Reproductive capacity was defined as a dichotomous variable: Women who had a hysterectomy, tubal ligation, or infertility (33% of the sample) were defined as not having current reproductive capacity and all other women were defined as capable of reproduction. Because the association between IPV and douching may vary by reproductive capacity (e.g., only those women who are capable of becoming pregnant would douche for the purpose of preventing pregnancy), this variable could provide some insight into why women who are victims of IPV douche.

An indicator of gynecologic infections diagnosed in the past 5 years (any vs. none) was constructed based on responses to a set of questions about urinary tract infection, chlamydia, herpes, gonorrhea, syphilis, pelvic inflammatory disease, bacterial vaginosis, vaginal yeast infection, HIV/AIDS, and hepatitis B. Women who engage in risky sexual behavior would be expected to be more likely to have gynecologic infections and possibly to douche. Depressive symptoms, often linked with IPV and possibly negatively impacting women's capacity to protect themselves from STIs or unwanted pregnancy in more effective ways than douching, were measured using a 6-item scale assessing frequency of symptoms in the past week, based on the Center for Epidemiologic Studies Depression Scale (Radloff, 1977); the scale score was dichotomized as high risk versus low risk for depression using a cutpoint of 4 (Sherbourne, Dwight-Johnson, & Klap, 2001).

Analytic Methods

Bivariate relationships were examined using the χ^2 test. Multiple logistic regression analysis was used to model the effects of predictors, including IPV and covariates, on douching (a dichotomous outcome). Listwise deletion was used in the regression models. Regression analyses were conducted on the full sample and on the sample stratified by reproductive capacity to investigate whether IPV is associated with douching similarly for women with and without reproductive capacity. Analyses were conducted using SAS Version 9.1 (SAS Institute Inc., Cary, NC).

Results

Table 1 shows the unadjusted associations between douching in the past year and the predictors. All of the variables except for age, marital status, and gynecologic infections are significantly associated with douching, and most of the significant associations are in the expected directions. An exception is reproductive capacity: Women who do not have current reproductive capacity are more likely to douche than women with current reproductive capacity.

Table 2 shows the results of multiple logistic regression models for the full sample and for the sample stratified by reproductive capacity. In all 3 models, exposure to IPV in the past year is the strongest predictor, increasing the odds of douching in the past year by >2-fold; the adjusted odds ratios for IPV are 2.62 for the full sample, 2.58 for women with reproductive capacity, and 2.34 for women without reproductive capacity. Less education (not being a high school graduate) significantly increases the odds of

Table 1. Unadjusted associations with douching in past year (Central Pennsylvania Women's Health Study, n = 2,002)

	Douched	Did Not Douche	
	% (n)	% (n)	p-Value*
Intimate partner violence, past year			
Yes	11 (52)	4 (68)	
No	88 (401)	96 (1,467)	<.0001
Reproductive capacity			
Pre- or interconceptional	52 (234)	71 (1,095)	
Postconceptional	48 (219)	29 (439)	<.0001
Age (yrs)			
18–34	49 (224)	52 (798)	
35–45	51 (229)	48 (733)	.317
Educational level			
Not high school graduate	14 (62)	6 (90)	
High school graduate or more	86 (391)	94 (1,444)	<.0001
Marital status			
Married/living with partner	76 (342)	78 (1,194)	
Not married/not living with partner	24 (110)	22 (335)	.278
Race/ethnicity			
White non-Hispanic	80 (361)	92 (1,412)	
Other	20 (91)	8 (120)	<.0001
Poverty status			
Poor or near poor	45 (172)	29 (383)	
Not poor	55 (208)	71 (945)	<.0001
Gynecologic infection, past 5 years			
Any infection	41 (186)	62 (587)	
No infection	59 (267)	38 (947)	.284
Depressive symptoms			
Low	71 (322)	81 (1,248)	
High	29 (130)	19 (286)	<.0001

*Based on χ^2 test.

douching in all 3 models. Minority race/ethnicity and poverty or near poverty increase the odds of douching in the full sample and for women with reproductive capacity, and depressive symptoms increase the odds of douching in the full sample and for women without reproductive capacity.

Discussion

The findings of this study show that the practice of vaginal douching is associated with IPV. Women who have been exposed to IPV in the past year are more likely to report that they douched in the past year, and this relationship holds after controlling for relevant sociodemographic and health-related variables. The consistent finding of a relationship between douching and IPV for women with and without reproductive capacity is strong evidence of a cross-sectional association of these 2 important risks to women's health, and also suggests that the relationship between IPV and douching does not reflect the use of douching solely for the purpose of pregnancy prevention. A number of lifestyle variables that have been found in previous research to be associated with either douching or IPV—such as poor nutritional habits, smoking, and alcohol and drug use—were explored, but they did not affect the overall findings with regard to the strong association between IPV and douching in regression analyses (data not shown).

The underlying reasons for the association between IPV and douching cannot be discerned from this study. Among women who are victims of IPV, douching could be influenced by the abusive partner's demands, or could be initiated by the woman for purposes of cleansing or disease prevention. Additional research is required to identify why women who experience IPV douche, and whether douching practices precede or follow the experience of IPV. Because previous research on the reasons women douche has not uncovered IPV as a contributing factor, it is possible that women interviewed about their reasons for douching are reluctant to acknowledge IPV exposure. It is possible that women who are honest about reporting IPV may be more honest in reporting douching. Qualitative research, perhaps beginning with focus groups of women who are participating in IPV prevention programs and therefore have already been identified as IPV victims, would be an appropriate place to begin.

The findings of this study have some implications for prevention of STIs, bacterial vaginosis, and adverse pregnancy outcomes. Although a large body of evidence suggests that douching is a risk factor for these outcomes, clinicians in family planning and STD clinics and in obstetrics practices may not routinely screen women for douching behavior; no current guidelines suggest routine screening for douching. In addition, limited information is available about physicians' practices with regard to screening or counseling related to douching. In a physician survey in 1 county in California, only 15% of physicians who provided any gynecologic or obstetric care asked their patients about douching, and only 12% counseled all women on douching practices; among those counseling patients, 61% advised women not to douche at all (Callahan, Weinberg & Gunn, 2003). It is reasonable to assume that many opportunities are lost in clinical practice for influencing women's douching practices.

This study suggests that douching could be indicative of IPV and that clinicians who screen for douching should follow up with a screen for IPV. Conversely, clinicians who screen for IPV should include educational materials about the health risks of vaginal douching in the follow-up information and referral protocol for women identified as being exposed to IPV. Domestic shelters and IPV services similarly should provide information about the health risks of douching. A fuller understanding of the dynamics underlying douching among IPV victims would pro-

Table 2. Multiple logistic regression modeling the probability of douching in the past year for full sample and for women with and without reproductive capacity (Central Pennsylvania Women's Health Study)

	Full Sample (n = 1,696)	Women With Reproductive Capacity (n = 1,118)	Women Without Reproductive Capacity (n = 578)
Intimate partner violence, past year	2.62 (1.69–4.06*)	2.58 (1.48–4.50*)	2.34 (1.10–4.98*)
Age (yrs)	1.01 (0.99–1.03)	1.03 (1.00–1.05*)	0.97 (0.94–1.01)
Reproductive capacity (vs. none)	0.50 (0.38–0.65*)	—	—
Not high school graduate	2.27 (1.49–3.44*)	2.47 (1.32–4.62*)	2.31 (1.32–4.05*)
Not married or partnered	0.92 (0.68–1.25)	1.06 (0.72–1.58)	0.85 (0.51–1.42)
Not white, non-Hispanic	2.14 (1.51–3.03*)	2.52 (1.60–3.98*)	1.61 (0.93–2.79)
Poor or near poor (vs. not poor)	1.53 (1.18–1.99*)	1.96 (1.38–2.78*)	1.10 (0.73–1.64)
Any gynecologic infection, past 5 years	1.02 (0.79–1.30)	0.93 (0.67–1.30)	1.10 (0.75–1.61)
Depressive symptoms	1.40 (1.05–1.85*)	1.27 (0.85–1.91)	1.52 (1.02–2.28*)
Model χ^2	142.77	72.15	36.19
Degrees of freedom	9	8	8
p-Value	$<.0001$	$<.0001$	$<.0001$

Note. Values presented are adjusted odds ratios (95% confidence interval).
*$p < 0.05$.

vide material for tailored screening and public health messages.

There are several limitations of this study. First, because the study is cross-sectional, we could not observe the timing of douching behavior in relation to the timing of IPV exposure; the data are associational only. Second, the small number of women (n = 20) reporting sexual IPV meant that this variable could not be analyzed separately from other forms of IPV; however, examination of the data did not suggest a trend toward more douching among victims of sexual IPV as compared with other forms of IPV. Third, due to limitations of the dataset, we could not include all potential confounders; some known correlates of douching (such as multiple sexual partners and gynecologic symptoms) or IPV (such as abuse as a child) were not measured in this survey. Fourth, because of the small number of non-whites in the sample, we could not examine the association between douching and IPV separately for racial/ethnic groups. Fifth, we could not address the underlying dynamics of the relationship, including the reasons why women exposed to IPV douche, their beliefs about douching efficacy, or the partner's possible influence on douching behavior. As noted, further formative research is needed to explore the reasons for the observed relationship between douching and IPV with women exposed to IPV.

Despite these limitations, this is the first study to identify an association between vaginal douching and IPV. The findings indicate that a relationship exists in a population-based sample of reproductive-age women and suggest the need for further research on the nature of this relationship.

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