PREDICTORS OF VAGINAL DOUCHING BEHAVIOR AND SEXUAL RISK TAKING AMONG A POPULATION OF WOMEN IN THE SOUTH: THE INFLUENCE OF SEXUAL CONCURRENCY AND PARTNER INCARCERATION

by

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A DISSERTATION

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PREDICTORS OF VAGINAL DOUCHING BEHAVIOR AND SEXUAL RISK TAKING AMONG A POPULATION OF WOMEN IN THE SOUTH: THE INFLUENCE OF SEXUAL CONCURRENCY AND PARTNER INCARCERATION

KERI J. GRIFFIN

HEALTH EDUCATION AND HEALTH PROMOTION

ABSTRACT

In the United States, adolescent women between the ages of 14 and 19 are estimated to bear the largest burden of sexually transmitted infections. Left untreated, these infections have the potential to result in several adverse reproductive health outcomes. Sexually risky behaviors, including early sexual initiation, sexual partner concurrency, and the use of vaginal douche products increase the risk for the contraction of sexually transmitted infections. Further, having a sexual relationship with a male partner who is known to have other partners or a history of contact with the justice system might put a woman at additional risk.

Utilizing a subset of data from a larger study related to the use of vaginal douche products, the purpose of the present study is three fold: (a) to assess the predictors of the use of douche products among a convenience sample of adolescent and young adult women; (b) to assess the prevalence and predictors of engaging in sexual partner concurrency; and (c) to assess the likelihood of ever having a sexually transmitted infection with regard to main sex partner history of contact with the justice system.

Among the sample, 46% of participants were regular users of vaginal douche products. The largest predictor of use was the use of other feminine hygiene products (OR = 38.48, p<0.000), followed by the recommendation from a person of influence that
she should use douche products (OR =8.06, p<0.000). Thirty-six percent of the population was engaging in sexual partner concurrency, the largest predictor of which was the perception that the main male sex partner was also sexually concurrent (OR=4.43, p<0.000). Having a main partner with a history of justice system contact was associated with a history of sexually transmitted infection. Women in the sample whose partners had justice system contact were more likely to be engaging in sexual concurrency (OR=3.01, p<0.000), and to ever have had a sexually transmitted infection than women whose partners did not have justice system contact (OR=2.33, p<0.008).

Ultimately the women who are a part of this sample are not impacted by each of these risk factors in isolation. It becomes increasingly important to change the social norms with regard to the acceptability of behaviors which put this population at increased risk for adverse reproductive health outcomes.

Key words: vaginal douche, sexual concurrency, incarceration, adolescent sexual risk
DEDICATION

I would like to dedicate this dissertation to my grandmother, Dorothy Wallace, my parents, Carl and Yvonne Griffin, and my not-so-little baby brother, Carl II. I love you with all my heart. Thank you for your prayers and encouragement! Thank you for being constant and unwavering sources of support, knowledge, and reassurance. Thank you for teaching me how to love unconditionally. Thank you for being constant examples of what it means to be family.
ACKNOWLEDGEMENTS

Most humbly I must first acknowledge the hand of God which I have no doubt guided me through this process. Though I am still not certain the plans He has for my life, I am certain that wherever He leads me, His grace will keep me. “I can do all things through Christ who strengthens me.” Philippians 4:13

I would like to extend a special word of thanks to my committee members, and especially Dr. Susan Davies, who not only served as my committee chair, but who took on the task of becoming my advisor when I needed mentorship. Thank you so much for assisting me in attaining my goals. To Drs. John Bolland and Tina Simpson, thank you for your contributions of knowledge and time. I appreciate all you have done to make my educational experience well-rounded. To Drs. Cathy Simpson, Retta Evans, and Diane Grimley thank you so much for your thoughtful reflections and willingness to share the lessons of experience. I appreciate your comments and contributions. I would also like to extend a few words of appreciation to the National Institutes of Health’s National Institute of Child Health and Human Development for funding for this dissertation research.

To my friends, colleagues, and loved ones, thank you for your laughter. “At the height of laughter, the universe is flung into a kaleidoscope of new possibilities” –Jean Houston
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<th>Definition</th>
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<tr>
<td>AAW</td>
<td>African American women</td>
</tr>
<tr>
<td>ACASI</td>
<td>Audio, Computer-Assisted Self-Interview</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<tr>
<td>NSFG</td>
<td>National Survey of Family Growth</td>
</tr>
<tr>
<td>SES</td>
<td>Socioeconomic Status</td>
</tr>
<tr>
<td>STI</td>
<td>Sexually transmitted infection</td>
</tr>
<tr>
<td>YRBSS</td>
<td>Youth Risk Behavioral Surveillance System</td>
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INTRODUCTION

Objective

The objective of the current examination is to identify correlations and predictors between various sexual risk behaviors and the impacts they have on women’s reproductive and sexual health. The current study sample includes a group of adolescent and young adult women, between the ages of 14 and 25, who are primarily of low socioeconomic status, and who reside in the southeastern United States. The use of vaginal douche products, exhibiting sexually risky behavior, and having a partner who exhibits sexually risky behavior are all factors which have the propensity to predispose this group of women to a number of adverse reproductive health outcomes.

Vaginal Douche Products

Vaginal douche products have typically been associated with cleaning behaviors, and most commonly with irrigating the vaginal canal after the conclusion of the menses (Grimley et al., 2006). Use of the products varies by race, and geographic location, as well as by socioeconomic status (SES). Women residing in the southeastern region of the United States are most likely to use douche products, as are African American women (AAW) (Cottrell, 2010; Funkhouser, Hayes, & Vermund, 2002; Grimley et al. 2006; Vermund et al. 2001; Zhang, Thomas & Leybovich, 1997).

Though usage after menses is the most common, Ness and colleagues have identified other reasons why women might engage in this behavior. The reasons include
general hygiene, to be clean before and after sex, to rid themselves of an odor, or because they believe it is normal behavior (Ness, et al., 2003).

Despite the perception that these women have that the activity is a part of cleaning behavior, a plethora of evidence exists demonstrating the associations between use of douche products and several adverse reproductive health outcomes. Beyond these associations, there is additional evidence to suggest that women who use douche products might also engage in riskier sexual behavior than women who do not (Oh, Funkhouser, Simpson, Brown, & Merchant, 2003).

**Sexually Risky Behavior**

Adolescent and young adult women bear the largest burden of diagnosed sexually transmitted infections (STIs) (Forhan et al., 2009). Engagement in risky sexual behaviors such as having multiple partners, early sexual initiation, and lack of condom usage are known to contribute to the outcome of STIs among this group (Kaestle, et al., 2005; Kahn, et al. 2002). Further, sexual partner concurrency among adolescents and young adults is a major public health concern (Lenoir et al., 2006). The mixing of sexual partners with different risk characteristics increases the opportunity for the amplified spread of STIs (Aral, Adimora, & Fenton, 2008; Ford et al., 2002), even among women who themselves might be at lower risk (Aral et al., 2008; Doherty, Schoenbach, & Adimora, 2009; Pouget, Kershaw, Niccolai, Ickovics, & Blankenship, 2010; Staras, et al., 2009). Partner characteristics such as having a history of justice system contact puts women at further risk.
Incarceration and Health Risk

Incarceration has long been identified as a health risk (Rich, Wakeman, & Dickman, 2011). Evidence further exists that incarcerated individuals are at increased risk for sexually transmitted infections (Hammett, 2009; Mertz, 2002; Barry, 2007). Many studies have been conducted describing the incarceration rates in African American communities, as well as the rates of infection with sexually transmitted diseases among this population. Since data indicate that HIV transmission is augmented in the presence of other STIs (Fleming & Wasserheit, 1999; Wasserheit, 1992), communities with both high rates of incarceration and sexually transmitted infections might also be at increased risk for the spread of HIV. When formerly incarcerated individuals return to their communities, they interact with a lower risk population (Aral et al., 2008).

Individuals who are exposed to these risk factors in their communities are in turn at increased risk for adverse reproductive health outcomes. By understanding the predictors of many of these outcomes among this population, researchers might be able to better focus their efforts toward prevention.
PREDICTORS OF REGULAR VAGINAL DOUCHE USE AMONG A HIGH-RISK POPULATION OF WOMEN IN THE SOUTHEAST

KERI J. GRIFFIN, TINA SIMPSON, JOHN BOLLAND, CATHY SIMPSON, RETTA EVANS, DIANE GRIMLEY, SUSAN DAVIES

Submitted in preparation for *Journal of Pediatric and Adolescent Gynecology*
Format adapted for dissertation
Introduction

The use of vaginal douche products has been associated with numerous health risks, including sexually transmitted infections (Tsai, Shepherd, & Vermund, 2009), pelvic inflammatory disease (Aral & Wasserheit, 1998; Ness et al., 2001; Wølner-Hanssen et al., 1990; Zhang, Thomas, & Leybovich, 1997), ectopic pregnancy (Kendrick, Atrash, Strauss, Gargiullo, & Ahn, 1997; Zhang et al., 1997), preterm birth (Bruce, Fiscella, & Kendrick, 2000; Fiscella, Franks, Kendrick, Meldrum, & Kieke, 2002; Misra & Trabert, 2007), low birthweight (Fiscella, Franks, Kendrick, & Bruce, 1998), bacterial vaginosis (Cottrell, 2006; Holzman et al., 2001; Trabert & Misra, 2007), and intimate partner violence (Weisman et al., 2007). Increasingly, data are also demonstrating a link between the use of vaginal douche products and cervical cancer (Aral & Wasserheit, 1998; Gardner et al., 1991; Sun et al., 2005; Zhang et al., 1997).

Beyond the associations between douching and adverse reproductive health outcomes (Martino & Vermund, 2002), there is additional evidence to suggest that women who use douche products might also engage in riskier sexual behavior than women who do not. Oh and colleagues (Oh, Funkhouser, Simpson, Brown, & Merchant, 2003) demonstrated that among a sample of adolescents and young adult females, those who began douching earlier also had earlier coital debut and believed that douching could cure infections such as sexually transmitted diseases. Grimley, et al. (Grimley, Oh, Desmond, Hook, & Vermund, 2005) indicated that early coital debut, increased number of sexual partners, reduced condom use, and a history of STIs were associated with the use of vaginal douche products.
Despite the numerous risks associated with the use of vaginal hygiene products and the paucity of data supporting their use, the most recent National Survey of Family Growth (NSFG) reported in 2002 that over 32% of women between the ages of 15 and 44 regularly use these products (Mark et al., 2010). This is a reduction from the 1998 findings from the NSFG, wherein 37% of women in the same age groups used the products (Zhang et al., 1997). However, African American women (AAW) are still more likely than both Caucasian and Hispanic women to douche (Cottrell, 2010; Grimley, Annang, Foushee, Bruce, & Kendrick, 2006). In a national study, Grimley and colleagues (Grimley et al., 2006) indicated that nearly one-quarter of US AAW between the ages of 18 and 24 regularly engaged in douching behavior. Among a population of university women in the southeastern United States, the population of AAW who used douche products was estimated to be as high as 48% (Cottrell & Close, 2008).

Though much research has been done identifying both the risks and the increased prevalence of douche use among women of lower socioeconomic status (SES) (Vermund et al., 2001; Zhang et al., 1997), and those residing in the southeastern United States (Funkhouser, Hayes, & Vermund, 2002; Grimley et al., 2006), few studies have demonstrated the specific predictors of douche use among this population of women at high risk for the behavior. Therefore the purpose of the current analysis is to quantify the prevalence of use and to examine the predictors of the use of vaginal douche products among a population of low SES women residing in the South.
Materials and Methods

Study Population and Enrollment

The participants included in this analysis consisted of N=257 women between the ages of 14 and 25 who were recruited from an adolescent clinic and the family planning and sexually transmitted disease clinics of an urban health department in the southeastern United States. Potential study participants were eligible for participation if they met the following inclusion criteria: were between the ages of 14 and 25, spoke English, were not currently pregnant, had douched at least once per month for the last three months, or had never douched, and were willing to provide consent (or parental consent and ascent if under age 19). Individuals with HIV or immune system compromising infections were excluded from study participation.

Between November 2009 and April 2011, female research assistants (of approximately the same age as the mean population) approached and screened over 1,300 potentially eligible participants. Those who met the inclusion criteria and agreed to be in the study were enrolled. The study’s protocol was approved by Institutional Review Boards of both the University of Alabama at Birmingham and the Jefferson County Department of Health.

Study procedures

Study participants were assessed regarding their sexual risk behaviors, some of those practiced by both their main and non-main sexual partners, and their history of the use of vaginal douche products. Audio computer assisted self-interview (ACASI) methods were utilized to assess the questions, which included sensitive information so as
to reduce any potential social desirability bias. After the behavioral assessment, participants were tested for current infections of chlamydia, gonorrhea, trichomoniasis and bacterial vaginosis, which comprised the biological assessment. Female research assistants guided the participants through the assessment and the testing so as to eliminate as much discomfort as possible. Participants who were found positive for infection were effectively treated and all participants were provided an incentive for participation.

Behavioral Assessment

An internet-based ACASI program was utilized to reduce potential social desirability bias associated with asking questions of a sensitive nature. The platform allows researchers to write their desired questions, and provide voice recordings that read the questions as they are presented on the computer screen. The system allows participants to simply ‘point and click’ their desired response after listening or reading along with the question, and follows the appropriate skip patterns established by specific answers to specific questions. Focus group testing of the system was conducted prior to beginning the main study to ensure acceptability, ease of use, and comfort with the system. Feedback was incorporated into the final version of the behavioral assessment. All questions were recorded by female research assistants, using non-judgmental language and tone.

Demographic variables included age (collected as a continuous variable), self-identified race, and personal and maternal levels of educational attainment categorized into less than high school, high school diploma or GED, some college, or completion of trade school, college, or an advanced degree. Questions asking about the receipt of free
or reduced cost meals, Medicaid or government-funded housing, welfare, the government-funded food program for women, infants, and children (WIC), and food stamps were designed to measure socioeconomic status (SES). This variable was dichotomized as low SES or not low SES. Responding affirmative to receipt of any of these services was operationalized as having low SES.

Sexual risk variables included age of vaginal sexual initiation which was collected as a continuous variable (from less than 12 years old to 20 years or older), number of sexual partners in the previous three months (continuous from 0 to 10 or more), use of birth control methods (Depro-Provera, intrauterine device, the patch, the pill, condoms, rhythm, or withdrawal), and sexual partner gender, which was assessed by the participant indicating whether her sex partners had been male, female, or both. The use of feminine hygiene products was also assessed by asking the participants if they used vaginal washes, sprays, wipes powders, and creams or gels. To avoid multicollinearity issues, these products were grouped into a category of “any other feminine cleaning product”. This variable was dichotomized as “Any feminine product” or “No feminine product”. An affirmative response to use of any of these feminine products was operationalized as “any” use.

Additionally, participants were asked to respond how frequently they used alcohol or drugs before sex (every time, most of the time, sometimes, hardly ever, or never), whether they had a previous diagnosis of a STI, or other adverse reproductive health outcome, including pelvic inflammatory disease and cervical cancer. Lastly, participants were asked about their number of previous pregnancies, how frequently they used condoms, and whether they were engaged in sexual concurrency (dichotomous as
‘yes’ or ‘no’). The participants were considered to be engaged in sexual concurrency if they admitted to having sex with another partner since first having sex with the current main partner.

Partner risk variables included previous contact with the justice system, which consisted of asking the participant whether her main partner had ever been on probation, or in juvenile detention, jail, or prison. The variable of “any justice system contact,” a dichotomous variable, was created to represent an affirmative answer to any of the justice system questions. Participants were also asked about the frequency with which her main partner used drugs or alcohol before sex, the participant’s perception of whether her main and/or non-main sexual partners’ had other concurrent sexual partners and if the participant’s main partner had been diagnosed with a previous STI.

Psychosocial variables included asking the participant about her feelings of depression. The variable was assessed using a depression scale with items indicating how frequently she was depressed, how often she had crying spells, and how often she felt lonely, fearful, or sad. The scale had a Chronbach’s alpha score of 0.817, indicating a high degree of reliability. In addition, participants were asked whether they were currently trying to get pregnant (dichotomous as ‘yes’ or ‘no’), whether they had a history of sexual or physical abuse (dichotomous as ‘yes’ or ‘no’), and the types of media that made them think they needed to use vaginal douche products (music, television or radio, magazines or newspapers, or the internet). Lastly, participants were asked which persons of influence to whom they would listen regarding the use of douche products. Persons of influence fell into several categories, namely male and female relatives or significant others, male and female friends, and male and female associates. To avoid
multicollinearity issues, these people were grouped into a category of “person of influence”. These data were all collected via self-report.

Biological Assessments

Consistent with the literature, study participants were assessed for Neisseria gonorrhoeae, Chlamydia trachomatis, Trichomonas vaginalis, and bacterial vaginosis. Participants were assessed for chlamydia and gonorrhea using the Aptima Combo 2 Assay (Gen-Probe), for trichomonas utilizing the InPouch TV test, and bacterial vaginosis using the Nugent criteria for determination (Nugent, Krohn, & Hillier, 1991).

Data Analysis

Data analysis included both bivariate and multivariate logistic regression analyzing the association between the independent variables and the dependent variable, which was the ‘ever’ use of vaginal douche products. The level of statistical significance of (p<0.05) was utilized as the standard level of significance. Data analysis was conducted utilizing SPSS version 19 (SPSS Inc., Chicago, Illinois), and odds ratios, 95% confidence intervals and p values appear in the results section below.

Results

Participant characteristics appear in Table 1 (below). Participants in the study were between the ages of 14 and 25 (mean 21.15, SD 2.579). Eighty-seven percent of the participants self-identified as black or African American, nearly 10 percent as Caucasian, and just over three percent self-identified as Asian, Hispanic, or other. These categories were combined to reflect the “Other” category.
Nearly one quarter of the participants had less than a high school education, and one quarter had completed high school or received a graduate equivalency degree. Just over 40% had undertaken some college courses, and 10% had completed trade school, college, or graduate-level education. Age was statistically significantly correlated with education in bivariate analysis (p < 0.000).

Seventy percent of the sample was classified as having low socioeconomic status (SES). Over half of the sample had vaginally initiated sexual intercourse by the time she reached the age of 15, and nearly eight percent of the sample was actively trying to get pregnant.

Just under half of the sample regularly used douche products (46.3%). AAW were more likely (49.1%) than Caucasian (28%) or Other women (25%) to regularly engage in the behavior. The main reason indicated by AAW and Other women for using douche products was to clean following the menstrual period (64.2% for AAW and 100% for Other women). The next common reason indicated was the thought that it would make them feel fresh and clean (15.6% for AAW). Caucasian women were equally as likely to indicate that they douched because they thought douching would make them smell better (33.3%), as they were to douche to feel fresh and clean (33.3%). Participants were not able to indicate multiple reasons for conducting the behavior. Nearly half of the sample (44.6%) indicated their mothers as the person they would be most likely to listen to if someone told them to douche.
**Table 1 Participant Characteristics**

<table>
<thead>
<tr>
<th>Category</th>
<th>Non-Hispanic White</th>
<th>Non-Hispanic Black</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race or ethnicity (N=257)</strong></td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Number (%)</td>
</tr>
<tr>
<td>White</td>
<td>25 (9.7)</td>
<td>224 (87.2)</td>
<td>8 (3.1)</td>
<td>257 (100)</td>
</tr>
<tr>
<td>Black</td>
<td>224 (87.2)</td>
<td>1 (0.4)</td>
<td>1 (0.4)</td>
<td>225 (87.5)</td>
</tr>
<tr>
<td>Other</td>
<td>8 (3.1)</td>
<td>8 (3.1)</td>
<td>8 (3.1)</td>
<td>24 (9.3)</td>
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<tr>
<td><strong>Age, in years</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>14-19</td>
<td>4 (16)</td>
<td>59 (26.3)</td>
<td>2 (25)</td>
<td>65 (25.3)</td>
</tr>
<tr>
<td>20-21</td>
<td>11 (44)</td>
<td>60 (26.8)</td>
<td>4 (50)</td>
<td>75 (29.2)</td>
</tr>
<tr>
<td>22-25</td>
<td>10 (40)</td>
<td>105 (46.9)</td>
<td>2 (25)</td>
<td>117 (45.5)</td>
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<tr>
<td><strong>Education</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Less than high school</td>
<td>3 (12.5)</td>
<td>55 (24.6)</td>
<td>0 (0)</td>
<td>58 (22.7)</td>
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<td>High school or GED</td>
<td>0 (0)</td>
<td>60 (26.8)</td>
<td>3 (37.5)</td>
<td>63 (24.6)</td>
</tr>
<tr>
<td>Some College</td>
<td>17 (70.8)</td>
<td>88 (39.3)</td>
<td>4 (50)</td>
<td>109 (42.6)</td>
</tr>
<tr>
<td>Trade school, college degree or higher</td>
<td>4 (16.7)</td>
<td>21 (9.4)</td>
<td>1 (12.5)</td>
<td>26 (10.2)</td>
</tr>
<tr>
<td><strong>Low SES</strong></td>
<td>5 (20)</td>
<td>171 (76.3)</td>
<td>6 (75)</td>
<td>182 (70.8)</td>
</tr>
<tr>
<td><strong>Age of vaginal sexual initiation, in years</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 or younger</td>
<td>11 (45.8)</td>
<td>115 (53.5)</td>
<td>4 (50)</td>
<td>130 (52.6)</td>
</tr>
<tr>
<td>16-17</td>
<td>9 (37.5)</td>
<td>74 (34.4)</td>
<td>2 (25)</td>
<td>85 (34.4)</td>
</tr>
<tr>
<td>18 or older</td>
<td>4 (16.7)</td>
<td>26 (12.1)</td>
<td>2 (25)</td>
<td>32 (13.0)</td>
</tr>
<tr>
<td><strong>Regularly use vaginal douche products</strong></td>
<td>7 (28)</td>
<td>110 (49.1)</td>
<td>2 (25)</td>
<td>119 (46.3)</td>
</tr>
<tr>
<td><strong>Main reason for starting to douche</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To clean following menstrual period</td>
<td>1 (16.7)</td>
<td>70 (64.2)</td>
<td>2 (100)</td>
<td>73 (62.4)</td>
</tr>
<tr>
<td>Thought it would make me feel fresh/clean</td>
<td>2 (33.3)</td>
<td>17 (15.6)</td>
<td>0 (0)</td>
<td>19 (16.2)</td>
</tr>
<tr>
<td>Thought I would smell better</td>
<td>2 (33.3)</td>
<td>6 (5.5)</td>
<td>0 (0)</td>
<td>8 (6.8)</td>
</tr>
<tr>
<td>I started having sex</td>
<td>0 (0)</td>
<td>6 (5.5)</td>
<td>0 (0)</td>
<td>6 (5.1)</td>
</tr>
<tr>
<td>I was curious</td>
<td>0 (0)</td>
<td>3 (2.8)</td>
<td>0 (0)</td>
<td>3 (2.6)</td>
</tr>
<tr>
<td>I think it is normal</td>
<td>0 (0)</td>
<td>3 (2.8)</td>
<td>0 (0)</td>
<td>3 (2.6)</td>
</tr>
<tr>
<td>I was told I should</td>
<td>0 (0)</td>
<td>2 (1.8)</td>
<td>0 (0)</td>
<td>2 (1.7)</td>
</tr>
<tr>
<td>I knew someone who douches</td>
<td>1 (16.7)</td>
<td>1 (0.9)</td>
<td>0 (0)</td>
<td>2 (1.7)</td>
</tr>
<tr>
<td>I had discharge, itch, or burning sensation</td>
<td>0 (0)</td>
<td>1 (0.9)</td>
<td>0 (0)</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Currently trying to get pregnant</td>
<td>0 (0)</td>
<td>19 (8.5)</td>
<td>1 (12.5)</td>
<td>20 (7.8)</td>
</tr>
</tbody>
</table>
Bivariate analysis revealed statistical associations between the use of vaginal douche products and several variables that were included in the analysis.

Significant participant characteristic associations included: age (p<0.000), the use of various feminine hygiene products (p<0.000), use of antibiotics in the last two weeks (p<0.011), and ever having bacterial vaginosis (p<0.002).

Sexual risk variables that were statistically significantly correlated with douche use included: engaging in sexual partner concurrency (p<0.010), number of vaginal (p<0.001), oral (p<0.010), or anal (p<0.009) sex partners in the last three months, trying to get pregnant (p<0.008), history of ever being diagnosed with any STI (p<0.000), ever being diagnosed with gonorrhea (p<0.002), ever being diagnosed with trichomoniasis (p<0.000), and having been diagnosed with trichomoniasis in the last three months (p<0.025). Ever engaging in anal sex (p<0.001), ever receiving (p<0.035) or giving oral sex (p<0.001), consuming alcohol before sex (p<0.003), history of pregnancy (p<0.000), and diagnosis of cervical cancer (p<0.034), or pelvic inflammatory disease (p<0.007) were also associated in bivariate analysis. None of the in-clinic tests for current infections of chlamydia, gonorrhea, or trichomoniasis were statistically significant.

Psychosocial variables that were significantly correlated in bivariate analysis included mother’s level of education (p<0.022), feelings of depression (p<0.047) a person of importance promoting douche use (p<0.000), having ever experienced physical abuse (p<0.001), number of previous pregnancies (p<0.000), history of ectopic pregnancy (p>0.004), and being influenced by music (p<0.007), television or radio (p<0.000), or the newspaper (p<0.025) to use douche products.
Partner sexual risk factors that were bivariately associated with the current regular use of douche products included partner gender (p<0.002), having a main partner who used drugs (p<0.003) or alcohol (p<0.003) before sex, and having a main sex partner who had ever been on probation (p<0.001), in jail (p<0.000), or in prison (p<0.019), or who had any justice system contact (p<0.000). Having a main sex partner who had been in juvenile detention was not significantly correlated. Additionally, douche product use was associated with the belief that the main sex partner was engaging in sexual concurrency (p<0.032). Non-main partners of the women in the sample tended to be older than main partners. There was no significant association between douche product use and main partner age, but product usage was bivariately associated with non-main partner age (p<0.006).

The results from adjusted analysis using logistic regression to predict the likelihood of the use of vaginal douche products appear in table 2, below.

<table>
<thead>
<tr>
<th>Predictors</th>
<th>OR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of other feminine products</td>
<td>38.48 (14.38-102.96)</td>
<td>0.000</td>
</tr>
<tr>
<td>Person of influence said to douche</td>
<td>8.06 (3.61-17.97)</td>
<td>0.000</td>
</tr>
<tr>
<td>Main partner justice system contact</td>
<td>6.77 (2.82-16.22)</td>
<td>0.000</td>
</tr>
<tr>
<td>Age 22-25</td>
<td>3.85 (1.11-10.30)</td>
<td>0.007</td>
</tr>
</tbody>
</table>

In adjusted analysis, the largest predictor was the use of other feminine products including vaginal washes, sprays, wipes, powders, and creams. Women who used these products were over 38 times more likely to have ever drenched.

Women between the ages of 22 and 25 were almost four times as likely to douche as women between the ages of 14 and 19. Having a main male sexual partner who had contact with the justice system was also associated with the use of vaginal douche.
products. Women whose main partner had been in juvenile detention, on probation, in jail, or in prison were nearly seven times as likely to douche as women whose main partners had not experienced any contact with the justice system.

When a person of influence said to use vaginal douche products, the women in the sample were over eight times as likely to use them. The associations with sexually transmitted infections lost significance in the adjusted model.

Discussion

Several social correlates were identified which contributed to an increased likelihood of a participant using vaginal douche products. While many studies over the last 20 years, including those recently published (DiClemente, 2012), have reported on these correlates with regard to douching, an area of research that yet remains appropriate for future study is the relationship between douching and cervical cancer. Future research more conclusively characterizing the relationship has the potential for important public health significance, and could assist clinicians in providing better, more targeted care to their patients.

In the present study, use of other types of feminine hygiene and cleaning products was the largest predictor of the use of vaginal douche products among women in the present study. Consistent with the literature, Grimley, (Grimley et al., 2006), Mark, (Mark et al., 2010), Ness, (Ness et al., 2003), and Short, Black, and Flynn, (Short, Black, & Flynn, 2010), have all shown that the use of a vaginal douche product to clean after menses was one of the most significant motivating factors to douche. Women in the present study might also be using these other vaginal cleaning products for the same
reasons. Counseling on the proper way to clean the vaginal area as well as education on
the additional risks of douche use could be beneficial to this population.

Additionally, and similar to other published literature (Arbour, Corwin, &
Salsberry, 2009; Diclemente et al., 2012; Mark et al., 2010; Oh et al., 2003; Oh,
Merchant, & Brown, 2002), age was also found to be a predictor of the use of vaginal
douche products. Women at younger ages tended not to use the products, and some
indicated during the screening process that they had not even heard of the concept.
Perhaps this is suggestive of a move in the right direction and positive steps toward broad
cessation of the practice, even among traditionally higher risk groups of women.
According to previous studies, the majority of women who douched reported douching
only once a month after their period ended (Grimley et al., 2006; Mark et al., 2010; Ness
et al., 2003; Short et al., 2010). Several of the younger women screened at the county
health department during the present examination reported the use of depot
medroxyprogesterone acetate injections (Depo-Provera), as their primary method of birth
control. Use of this method, which is administered by a provider as an intramuscular
injection every 90 days, is known to reduce the frequency of menstruation (Hicks &
Rome, 2010). In the absence of menses, many young women have foregone the use of
vaginal douche products.

Having a main sex partner with a history of justice system contact was also
predictive of the use of douche products. Contact with the justice system has been shown
detrimental to health (Rich, Wakeman, & Dickman, 2011). It is well documented that
incarcerated individuals are at increased risk of sexually transmitted infections (STIs)
(Barry et al., 2007; Hammett, 2009; Mertz, Voigt, Hutchins, Levine, & Group, 2002).
The literature also suggest that women have used douche products in the belief that such use will cure STIs (Oh et al., 2003). Additional education is necessary about accessing competent medical care in the case of suspicion of a sexually transmitted infection.

Study participants indicated that they would trust a person of influence if he or she suggested that she should use douche products. Depending on the nature of her sexual relationship, a woman might feel pressure to conform to the desires of her sexual partner, especially if she is depending on him for needs such as food, clothing, or shelter. However, in this population, of the 119 women who were current regular douche users, only 15 of them indicated that their boyfriend or husband said they needed to douche. Nearly half of the sample indicated that they would most likely listen to their mother than anyone else if they suggested the use of douche products, while only 30% were most likely to listen to a doctor or nurse. This is suggestive of the need for increased education of both women in the age group of the current study, and also those who are held in high regard. Changes in the social norms regarding appropriate vaginal cleaning behaviors are needed to ensure women are receiving correct information about how to appropriately care for their bodies.

Although the literature consistently demonstrate associations between race and ethnicity, those characteristics fell out of significance in the adjusted model, most likely because of the homogeneity of the sample, and the recruitment from a high-risk pool like the health department. It is likely that if the population would have been more general, these associations would have maintained significance.
Douching and Cervical Cancer

In bivariate analysis, neither mother’s education, race, nor SES, were associated with the likelihood that a participant ever used vaginal douche products. However, bivariate analysis did demonstrate a significant effect of cervical cancer (p<0.034) among this population. Though this relationship was initially significant, due to the small number of those indicating a positive cervical cancer test result and the relatively young age of the population, this relationship fell from significance in adjusted analysis. Even though this relationship did not maintain significance, the fact that the relationship was significant in bivariate analysis among such a young cohort indicates that further study with older women, for a longer length of time, is warranted.

The present study is not unlike the analysis conducted by DiClemente and colleagues (DiClemente et al., 2012) which found that douche use was associated with higher age, lower levels of SES, and having older sex partners. However the present study also assesses the potential association between the use of douche products and the outcome of cervical cancer among this high risk population. While the correlates of douching have been well examined with different populations of women in various regions of the country, further studies among an older population of women are needed to strengthen the accepted association between douching and cervical cancer.

Challenges and Limitations

Several limitations were noted with regard to the current study. First, the topic of vaginal douche use is not easily studied. The behavior is not frequently discussed, and the literature which exist on the topic are mixed. Most researchers agree about the
negative health outcomes associated with the use of vaginal douche products. However, some dissenting views have been reported and at least a few examples exist of the benefits of douche use under specific conditions. Monif reported that the use of vaginal douche products has never been proven as a causal factor of infections (Monif, 1999). He argues that several initial studies, including those discussed in the meta analysis by Zhang and colleagues, that appeared to show an association between douching and adverse reproductive health outcomes were taken from the same small population of women. Monif postulates that these women were perhaps douching because they thought it would help rid them of an infection they had previously acquired. Drago and colleagues (Drago et al., 2007) determined that the use of vaginal douche preparations containing lactobacillus acidophilus were effective in the treatment of bacterial vaginosis among a population of women who presented with abnormal vaginal flora. In this sample of women use of the specific douche preparation assisted in returning the vaginal pH back to normal levels. Suwannaruk (Suwannarurk et al., 2010) has described the use of vaginal douching as a potential means for women to self-collect samples for the detection of human papillomavirus. Women in the study were asked to use a vaginal douche mechanism to inject saline into their vaginas and to collect the liquid as it exited. Though some utility was described, the self collection of liquid after the douche process did not contain enough biological material to demonstrate effective levels of sensitivity to replace the pelvic exam, which is the current standard of care for collection of cervical cells.
Due to the lack of a conclusive association between douche products and especially the outcome of cervical cancer, larger longitudinal studies with an older population of women are needed to fully clarify the relationship.

A second limitation to this study was the use of the current survey instrument. There were no questions designed to assess the total number of lifetime sexual partners. This information would have proven beneficial when attempting to compare the current sample with a larger population of American women. Also, the researchers were forced to rely on self-reported behaviors and activities of the participants. Relying on a participant to remember not only that she was infected with a STI, but also relying on her to remember the specific infection is inherently problematic. A record search of health department medical records would have more accurately depicted the sexual history of the participants.

While the assessment inquired about the habits of both main and non-main partners, it is entirely possible that the participants simply were not aware of the behaviors of their partners, or under or overestimated such behaviors. Due to the lack of stability in some of these adolescent and young adult relationships, many of the girls might simply not know their partners well enough to accurately assess their risk behaviors. Though we were not able to assess the actual risks of the partners, some estimation of their activity with regard to concurrency was demonstrated in bivariate analysis to correlate with the concurrency behaviors of the participants. Additional research is needed in this area to determine the true associations and risk factors surrounding dual sexually concurrent partnerships among this population.
Use of a homogenous sample resulted in the loss of statistical significance for the variable of race, which as discussed above is a risk factor associated with the practice of douche use. The clinic population from which participants for this study were recruited tends to be lower socioeconomic, primarily African American, and uninsured. Caution should therefore be exercised regarding the generalizability of these data to other populations. Lastly, the use of a longitudinal study design, rather than cross-sectional measurements would yield richer data, particularly with regard to the development of longer-term adverse health outcomes such as cervical cancer. Following these women for a period of time and monitoring their vaginal douche use habits, sexual risk behaviors, and health outcomes would provide a more rounded view of the population at risk.

Given these data, health care providers, and other influential individuals should continue spreading the message that the use of vaginal douche products is completely unnecessary and potentially quite harmful. The changing age of the users of douche products is a positive indication that progress is being made, even among those who are at high risk for practicing the behavior. Additional research is needed to explore the impact of main sex partner influence on the outcome of douche use among this population of women.
References


EXAMINING THE PREDICTORS OF SEXUAL PARTNER CONCURRENCY AMONG WOMEN SEEKING CARE AT A HEALTH DEPARTMENT IN THE SOUTHEAST

KERI J. GRIFFIN, TINA SIMPSON, JOHN BOLLAND, CATHY SIMPSON, RETTA EVANS, DIANE GRIMLEY, SUSAN DAVIES

Submitted in preparation for Sexually Transmitted Infections
Format adapted for dissertation
Introduction

Adolescent and young adult women bear the largest burden of diagnosed sexually transmitted infections. Forhan and colleagues (Forhan et al., 2009) estimate the disease burden among US adolescent women aged 14-19 to be as high as 25%. Among African American women of the same age, they estimate the burden may be closer to 50%. These infections carry consequences including loss of fertility (Weinstock, Berman, & Cates, 2004), adverse reproductive health outcomes including preterm birth (Sutton et al., 2007), ectopic pregnancy (Hoover, Tao, & Kent, 2010), pelvic inflammatory disease (Centers for Disease Control and Prevention [CDC], 2009), and mortality. Among adolescents, early sexual initiation, gap length, and sexual partner concurrency are known to contribute to the contraction of these infections (Kraut-Becher & Aral, 2003; Manhart, Aral, Holmes, & Foxman, 2002; Rosenberg, Gurvey, Adler, Dunlop, & Ellen, 1999).

Sexual Partner Concurrency

Prevalence of sexual partner concurrency was estimated among a national sample of women to be just over 8% (Adimora, Schoenbach, Taylor, Khan, & Schwartz, 2011). However, among adolescents, the practice is even more of a major public health concern. The practice of having multiple, concurrent sex partners among adolescent populations is estimated to be as high as 60% in some populations (Lenoir, Adler, Borzekowski, Tschann, & Ellen, 2006). The mixing of sexual partners with different risk characteristics increases the opportunity for the amplified spread of sexually transmitted infections (STIs) (Ford, Woosung, & Lepkowski, 2002). Further, sexual partners of individuals engaged in concurrent sexual partnerships might not be aware of (or, choose not to think about) whether their partners are engaging in sex with other individuals and,
therefore, might not take the necessary precautions to protect their reproductive health. Lenoir (2006) conducted a study designed to determine whether there was agreement between an individual’s sexual concurrency status and their perception of their partner’s concurrency status. The results indicated that many participants believed they were part of a mutually monogamous sexual relationship, when in fact their partners were engaging in sexual concurrency. The largest discrepancy was among women who did not believe their partners were engaging in concurrency. Of this group of females, 40% of their sexual partners reported that they were not sexually monogamous (Lenoir et al., 2006). Such sexual relationships expose partners to risks that they possibly never considered. Other dynamics, such as gender and power inequality within the context of a sexual relationship also contribute to increased sexual risk (Vance, Ross, Long, & Griffin, 2008). Wu and colleagues determined that a population of urban minority women who had experienced violence from their primary partners were at increased risk for HIV (Wu, El-Bassel, Witte, Gilbert, & Chang, 2003).

Since sexually transmitted infections can only be contracted from an infected partner, previous studies have examined the risk of individual partner characteristics including age discordance (Begley, Crosby, DiClemente, Wingood, & Rose, 2003; Seth, Raiford, Robinson, Wingood, & Diclemente, 2010), partner concurrency (Adimora et al., 2002; Kraut-Becher & Aral, 2003; Seth et al., 2010), alcohol intoxication during intercourse (Crosby et al., 2008), intravenous drug use (Seth et al., 2010), and history of incarceration (Barry et al., 2007; Irene A. Doherty, Minnis, Auerswald, Adimora, & Padian, 2007).
Though several studies have focused on similar populations of women with regard to their patterns of sexually transmitted infections, few have focused on their risky behaviors, those of their partners, and the perception of their partners’ concurrency status. Therefore, the purpose of the present study is to determine the characteristics that contribute to the behavior of sexual partner concurrency and the perceptions of partners’ concurrency status, both of which contribute to increased risk for the acquiring of sexually transmitted infections among this population.

Materials and Methods

Participants

From November 2009 to February 2011, 303 participants were recruited and enrolled in the study. Participants were recruited from Family Planning and Sexually Transmitted Disease clinics of the Jefferson County Departments of Health and from an adolescent clinic in the city of Birmingham, Alabama. All study participants self-identified as female, between the ages of 14 and 25, were not currently pregnant or under the auspices of the justice system, had no serious immune compromising medical conditions, spoke English, and had sexually initiated. Once participants met eligibility criteria, informed consent (and assent in the case of those under the age of majority) was obtained and the participants were enrolled in the study.

Data Collection

Data collection consisted of both behavioral and biological assessments. The behavioral assessments were collected utilizing an internet-based audio-computer assisted
self-interview format. Study participants were placed in a private room, away from other participants and research staff and allowed to answer the assessment questions by entering their responses directly into an encrypted laptop computer by simply using a mouse to ‘point and click’. For each question and response, the participants had the option of reading the questions themselves or listening to the questions being read to them in the voice of one of the female research assistants, who were of approximately the same age as the participants. Automatic randomization of the study participants was completed via the use of the computer program, which utilized skip patterns designed to present only relevant questions to the participant based on her previous responses.

Demographic variables included age, which was collected as a continuous variable, race, which the participants were able to self-identify, and personal and maternal levels of educational attainment, which was categorized into less than high school, high school diploma or GED, some college, or completion of trade school or college, or an advanced degree. Questions asking about the receipt of free or reduced cost meals, Medicaid or government-funded housing, welfare, WIC (the government funded food program for women, infants, and children), and food stamps were designed to measure socioeconomic status (SES). This variable was dichotomized as low SES or not low SES. Responding affirmative to receipt of any of these services was operationalized as having low SES.

Sexual risk variables included age of age of vaginal sexual initiation, which was collected as a continuous variable (from less than 12 years old to 20 years or older), number of sexual partners in the previous three months (continuous from 0 to 10 or more), use of birth control methods (Depro-Provera, intrauterine device, the patch, the pill,
condoms, rhythm, or withdrawal), and feminine hygiene products (vaginal washes, sprays, wipes powders, and creams or gels), and sexual partner gender, which was assessed by the participant indicating whether her sex partners had been male, female, or both. Additionally, participants were asked to respond how frequently they used alcohol or drugs before sex (every time, most of the time, sometimes, hardly ever, or never), whether they had a previous diagnosis of a STI, or other adverse reproductive health outcome, including pelvic inflammatory disease and cervical cancer (dichotomous as ‘yes’ or ‘no’). Lastly, participants were asked about their number of previous pregnancies (continuous from 0 to more than 5), frequency of condom use (of the last five times she had sex, how many times did she use a condom, continuous 1-5), and whether they were engaged in sexual concurrency. The participant was considered to be engaged in sexual concurrency if she admitted to having sex with another partner since she first had sex with her current main partner.

Partner risk variables included previous contact with the justice system, which consisted of asking the participant whether her main partner had ever been on probation, or in juvenile detention, jail, or prison. The variable of “any justice system contact” was created to represent an affirmative answer to any of the justice system questions. Participants were also asked about the frequency with which her main partner used drugs or alcohol before sex (every time, most of the time, sometimes, hardly ever, or never), the participant’s perception of whether her main and/or non-main sexual partners’ had other concurrent sexual partners and if the participant’s main partner had been diagnosed with a previous STI. All of these variables were collected via self-report.
Psychosocial variables included asking the participant about her feelings of depression. The variable was assessed using a depression scale with items indicating how frequently she was depressed, how often she had crying spells, and how often she felt lonely, fearful, or sad. The scale had a Chronbach’s alpha score of 0.817, indicating a high degree of reliability. In addition, participants were asked whether they were currently trying to get pregnant, whether they had a history of sexual or physical abuse, and the types of media that made them think they needed to use vaginal douche products (music, television or radio, magazines or newspapers, or the internet). Lastly, participants were asked which persons of influence to whom they would listen regarding the use of douche products (mother, grandmother, sister, boyfriend, girlfriends, male friends, doctor, teacher, father, or brother).

The biological assessment variables consisted of tests for Neisseria gonorrhoeae, Chlamydia trachomatis, Trichomonas vaginalis, and bacterial vaginosis. Participants were assessed for chlamydia and gonorrhea using the Aptima Combo 2 Assay (Gen-Probe), for trichomonas utilizing the InPouch TV test, and bacterial vaginosis using the Nugent criteria for determination (Nugent et al., 1991).

The biological specimens were self-collected by the participant by the insertion of vaginal swabs. This method of specimen collection has shown high acceptability in other groups of young women (Holland-Hall, Wiesenfeld, & Murray, 2002). Female research assistants instructed the participants how to properly collect the specimens and the swabs were delivered to the laboratory for analysis.
Data Analysis

The association between sexually concurrent behavior and demographic, individual sexual, and partner risk, and psychosocial variables was analyzed using bivariate and multivariate logistic regression. The level of statistical significance was set at (p<0.05) for bivariate analysis. Those variables meeting this threshold of significance were entered into multivariate logistic regression. The data from these adjusted models are presented in the form of odds ratios with corresponding confidence intervals and p values. Data analysis was conducted utilizing SPSS version 19 (SPSS Inc., Chicago, Illinois).

Study methodology was approved by the Institutional Review Boards at the University of Alabama at Birmingham, Jefferson County Department of Health, and Children’s Hospital of Alabama. Participants were provided an incentive for completing the assessment. Demographic characteristics of the study sample appear in table 1.
Results

<table>
<thead>
<tr>
<th>Table 1- Participant Characteristics</th>
<th>Non-Hispanic White Number (%)</th>
<th>Non-Hispanic Black Number (%)</th>
<th>Other Number (%)</th>
<th>Total Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, in years (mean 21.15 SD 2.7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14-19</td>
<td>4 (14.8)</td>
<td>66 (24.8)</td>
<td>2 (20)</td>
<td>72 (23.8)</td>
</tr>
<tr>
<td>20-21</td>
<td>11 (40.7)</td>
<td>71 (26.7)</td>
<td>4 (40)</td>
<td>86 (28.4)</td>
</tr>
<tr>
<td>22-23</td>
<td>7 (25.9)</td>
<td>70 (26.3)</td>
<td>2 (20)</td>
<td>79 (26.1)</td>
</tr>
<tr>
<td>24-25</td>
<td>5 (18.5)</td>
<td>59 (22.2)</td>
<td>2 (20)</td>
<td>66 (21.8)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>4 (15.4)</td>
<td>62 (23.3)</td>
<td>1 (10)</td>
<td>67 (22.2)</td>
</tr>
<tr>
<td>High school or GED</td>
<td>0 (0)</td>
<td>68 (25.6)</td>
<td>3 (30)</td>
<td>71 (23.5)</td>
</tr>
<tr>
<td>Some college</td>
<td>18 (69.2)</td>
<td>110 (41.4)</td>
<td>4 (40)</td>
<td>132 (43.7)</td>
</tr>
<tr>
<td>Trade school, college degree, or higher</td>
<td>4 (15.4)</td>
<td>26 (9.8)</td>
<td>2 (20)</td>
<td>32 (10.6)</td>
</tr>
<tr>
<td>Low Socioeconomic status</td>
<td>6 (22)</td>
<td>201 (75.6)</td>
<td>7 (70)</td>
<td>214 (70.6)</td>
</tr>
<tr>
<td>Age of vaginal initiation, in years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 or younger</td>
<td>13 (48.1)</td>
<td>135 (50.8)</td>
<td>5 (50)</td>
<td>153 (50.5)</td>
</tr>
<tr>
<td>16-17</td>
<td>9 (33.3)</td>
<td>92 (34.6)</td>
<td>2 (20)</td>
<td>103 (34.0)</td>
</tr>
<tr>
<td>18 or older</td>
<td>5 (18.5)</td>
<td>39 (14.7)</td>
<td>3 (30)</td>
<td>47 (15.5)</td>
</tr>
<tr>
<td>Currently trying to get pregnant</td>
<td>1 (3.7)</td>
<td>23 (8.7)</td>
<td>1 (10)</td>
<td>25 (8.3)</td>
</tr>
<tr>
<td>Ever used vaginal douche products</td>
<td>9 (33.3)</td>
<td>150 (56.8)</td>
<td>4 (40)</td>
<td>163 (54.2)</td>
</tr>
<tr>
<td>Main reason for starting to douche</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To clean following menstrual period</td>
<td>2 (25)</td>
<td>92 (62.2)</td>
<td>3 (75)</td>
<td>97 (60.6)</td>
</tr>
<tr>
<td>Thought it would make me feel fresh/clean</td>
<td>2 (25)</td>
<td>21 (14.2)</td>
<td>0 (0)</td>
<td>23 (14.4)</td>
</tr>
<tr>
<td>Thought I would smell better</td>
<td>2 (25)</td>
<td>7 (4.7)</td>
<td>0 (0)</td>
<td>9 (5.6)</td>
</tr>
<tr>
<td>I was curious</td>
<td>1 (12.5)</td>
<td>7 (4.7)</td>
<td>0 (0)</td>
<td>8 (5.0)</td>
</tr>
<tr>
<td>I had a discharge, itch, or burning sensation</td>
<td>0 (0)</td>
<td>6 (4.1)</td>
<td>1 (25)</td>
<td>7 (4.4)</td>
</tr>
<tr>
<td>Engaging in sexual concurrency</td>
<td>3 (11.1)</td>
<td>101 (38.0)</td>
<td>5 (50)</td>
<td>109 (36.0)</td>
</tr>
<tr>
<td>Believe main partner is engaging in concurrency</td>
<td>4 (14.8)</td>
<td>91 (34.2)</td>
<td>3 (30.0)</td>
<td>98 (32.3)</td>
</tr>
</tbody>
</table>
Eighty-eight percent of the current study population self-identified as black or African American, 8.9% as Caucasian, and 3.3% as other. The mean age of the population was 21.26 (SD 2.56). Twenty-two percent of the population had a less than high school education, 23% had completed high school or obtained a GED, 44% had completed some college and 10.6% had education beyond college. Over 70% of the population was classified as low SES. Age of sexual initiation was similar among both African American and Caucasian participants. Half of both groups had sexually initiated by the age of 15.

Just over half of the participants had ever engaged in the practice of vaginal douching. In agreement with other studies, the main reason identified for beginning the practice was to clean after the conclusion of the menstrual period. The second most common reason participants listed for beginning the behavior was the thought that it would make her feel “fresh and clean”.

Thirty-six percent of participants indicated they were currently engaged in sexually concurrent behavior. Among those acknowledging a main sexual partner, 32% percent either knew or suspected their main partner had other concurrent sex partners.

In bivariate analysis, race (p<0.005), feelings of depression (p<0.017), trying to get pregnant (p<0.031), age at first vaginal sex (p<0.036), ever having anal (p<0.000) or oral sex (p<0.014), consuming alcohol before sex (p<0.016), and being diagnosed with an STI (p<0.005) were all associated with sexually concurrent behavior. Being influenced by television or radio to douche (p<0.008), ever being positive for gonorrhea (p<0.000), and number or oral sex partners in the last three months (p<0.000) were also associated. Additionally, several partner factors were also bivariately associated with the
outcome of concurrent behavior including sexual partner gender (p<0.014), main partner having a history of probation (p<0.000), jail (p<0.000), or prison (p<0.001), or main partner using drugs before sexual intercourse (p<0.032).

In adjusted analysis via multiple logistic regression, shown in table 2, below, participants’ perception of their main partner also engaging in sexually concurrent behavior was the strongest predictor of sexual partner concurrency. Participants who believed their partners were having sex with another person were 4.43 times as likely to be engaged in concurrent behavior. Participants engaged in concurrency were also likely to have had two or more oral sex partners in the last three months, to have ever engaged in anal sex, to have ever been diagnosed with gonorrhea, and to have been influenced to use douche products by advertisements on television or the radio. Lastly, concurrent participants were over three times more likely to have had a main sex partner who had had contact with the justice system than those participants whose main partners did not have a history of contact with the justice system.

Race, age, education, feelings of depression, the use of feminine hygiene products, number of pregnancies, type of sex, alcohol used before sex, and partners’ use of drugs before sex all fell from significance in the adjusted model.
Table 2. Multivariate Predictors of Sexual Partner Concurrency

<table>
<thead>
<tr>
<th>Predictor</th>
<th>OR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Think main partner is engaging in sexually concurrent behavior</td>
<td>4.43 (2.43-8.09)</td>
<td>0.000</td>
</tr>
<tr>
<td>Two or more oral sex partners in the past 3 months</td>
<td>4.09 (2.18-7.69)</td>
<td>0.000</td>
</tr>
<tr>
<td>Main sex partner has history of justice system contact</td>
<td>3.17 (1.75-5.69)</td>
<td>0.000</td>
</tr>
<tr>
<td>TV/radio influenced the desire to use vaginal douche products</td>
<td>2.13 (1.11-4.09)</td>
<td>0.022</td>
</tr>
<tr>
<td>Have ever engaged in anal sex</td>
<td>2.10 (1.14-3.88)</td>
<td>0.017</td>
</tr>
<tr>
<td>Have ever been diagnosed with gonorrhea</td>
<td>2.09 (1.09-3.98)</td>
<td>0.026</td>
</tr>
</tbody>
</table>

Discussion

Over half of the current sample of adolescents and young adults in this study had sexually initiated by the age of 15. Though the relationship between age of vaginal initiation and sexual concurrency was significant in bivariate analysis, it lost significance in adjusted analysis. However, other studies have demonstrated statistical significance between early initiation and other negative health outcomes (Adimora et al., 2011; Greenberg, Magder, & Aral, 1992; Kaestle, Halpern, Miller, & Ford, 2005; J. A. Kahn, Rosenthal, Succop, Ho, & Burk, 2002).

The United States Centers for Disease Control and Prevention’s (CDC) Youth Risk Behavioral Surveillance System (YRBSS) is a survey administered biennially to students in grades nine through twelve designed to assess youth risk behavior. The survey examines several risky behaviors including tobacco, alcohol, and drug use, as well as sexual activity and other behaviors related to nutrition, violence, physical activity,
obesity, and asthma. The 2007 national survey was administered to over 14,000 adolescents. Additional data were collected from students in 39 states and 22 major metropolitan school districts around the United States.

Data from the YRBS indicate that initiation, or first sexual debut is occurring at continually younger ages (CDC, 2008). The previous iteration of the publication, dated 2006 for data collected in 2005, indicates that just under half of all adolescents (46.8%) have been sexually active during high school. By the time students had reached their twelfth grade year, over 63% had been sexually active. Further, over one third of these adolescents indicated a failure to use condoms during their last sexual encounter (37.2%). The current version of the YRBS (dated 2008 for data collected in 2007) indicates that the percentage of adolescents who have been sexually active during high school has risen to 47.8%. By the time they have reached twelfth grade, 64.6% of them have sexually initiated. Additionally, 2008 data indicate that 38.5% indicated failure to use a condom during their last sexual encounter. All three of these numbers indicate a dangerous trend—risky sexual behavior among this population is increasing.

Initiation at earlier ages puts adolescents at further increased risk of not only largely unintended pregnancy, but also for the contraction of sexually transmitted infections. The younger adolescents continue to initiate, the chances increase for them to have greater numbers of partners throughout their lifetimes. According to the YRBS, in 2005, adolescents reporting sexual initiation before the age of 13 years was 3.7% among females, 8.8% among males and 6.2% overall. These percentages have now risen to 4%, 10.1%, and 7.1%, respectively according to data from the current YRBS (CDC, 2006; 2008).
Kaestle and colleagues, utilizing data from the National Longitudinal Study of Adolescent Health, have determined that earlier sexual initiation is associated with higher odds of contracting a sexually transmitted infection than those with later sexual initiation (Kaestle et al., 2005; J. A. Kahn et al., 2002). The longer initiation or sexual debut can be delayed, the better opportunity to avert not only unintended pregnancy, but also the potential for increased exposure to sexually transmitted infections.

Evidence also exists to support the claim that young adult women who experience early coital debut are more likely to engage in the use of vaginal douche products (Oh et al., 2003). The practice of vaginal douching involves the insertion of a device to manually deliver various solutions inside the vaginal canal. Women practice this behavior for several reasons including the belief that it provides a cleaning function after the menstrual cycle, or after sexual intercourse, that using the products makes the women feel ‘clean and fresh’, to reduce vaginal odor, and to rid the body of infection (Grimley et al., 2006; Ness et al., 2003; Oh et al., 2003). However the opposite might actually be true as several studies have demonstrated an association between the use of vaginal douche preparations and increased susceptibility to sexually transmitted infections (Allsworth, Hladky, Hotchkiss, McNicholas, & Rohn, 2009; Sun et al., 2005; Tsai et al., 2009).

Recent data from Mark, et al., however, suggests that younger women are engaging in the practice at continually lower rates than previously determined (Mark et al., 2010). Early sexual debut has been associated with a number of other risky health behaviors among the adolescent population including smoking (Zabin, 1984), use of alcohol or other illicit drugs (Stanton, Li, Cottrell, & Kaljee, 2001), increased numbers of sexual partners
(Greenberg et al., 1992), and participation in other risky sexual behavior situations (Kahn, et al., 2002).

Main partner’s previous contact with the justice system, defined as a participant believing her partner had ever been in juvenile detention, on probation, in jail or in prison, remained a significant predictor of concurrency after adjusted analysis. To avoid multicollinearity issues, a variable of ‘any justice system contact’ was created, which was coded as a dichotomous variable when an affirmative answer was given to any of the four conditions of contact with the justice system. Though the concurrent behavior might have occurred while the main partner was away from the participant during the justice system contact, this was not assessed. It is widely accepted that incarcerated individuals are at high risk for the contraction of sexually transmitted infections (Barry et al., 2007; Hammett, 2009; Mertz et al., 2002; Rogers et al., 2012) Participating in sexual relationships with individuals who have had previous justice system contact might place these women at increased risk for the contraction of STIs as well.

The finding that the largest predictor of sexually concurrent behavior is the belief that a participant’s main partner is also engaged in concurrency suggests a troubling issue related to the social norms of the participants in the current study. Drumright and colleagues, among a population of young adults in California determined that only 26% of their study population was aware that their partners were indeed engaging in concurrency (Drumright, Gorbach, & Holmes, 2004). This compares to the 34% in this study who were sexually concurrent and 42% percent who either knew or suspected their partner had other partners. The knowledge that a sexual partner has other partners could be interpreted as a warning sign for the increased potential for the contraction of sexually
transmitted infections. In this population, however, the participants instead use the perceived knowledge to presumably justify engaging in their own sexually concurrent relationships. An analogous observation was also described among a population of women at high-risk for HIV in the northeast United States. After adjusting for other characteristics, only drug use and perceived partner concurrency were predictive of a participant engaging in sexually concurrent behavior (Grieb, Davey-Rothwell, & Latkin, 2012). Adimora and colleagues determined that African American race, age, age at first intercourse, use of alcohol or drugs before sex, and marital status, in addition to having a non-monogamous partner, were all associated with concurrency (Adimora et al., 2011). Aral and Leichliter have stated that this so called ‘mutual non-monogamy’ is the most efficient method to spread sexually transmitted infections throughout sexual networks (Aral & Leichliter, 2010). To combat this finding, Grieb and colleagues determined that one of the strongest protective factors against sexual partner concurrency was the strength and size of a woman’s non-sexual social network. They determined that especially among African Americans, women who had other sources of support such as family networks were more likely to look to these individuals for emotional and physical support and definitions of social norms regarding sexual relationships (Grieb, Davey-Rothwell, & Latkin, 2011).

Study limitations

Participants were asked about both their main and their last non-main partner. However, it is entirely possible that some participants might not consider any of their partners to be a main partner and might simply have a sexual arrangement that fails to
meet their definition of ‘main partner’. The question designed to assess concurrent partnerships asked whether the participant had any kind of sex with another person since she first had sex with her current main partner. Those participants who declined having a main sex partner (n=85) may have been involved in concurrent sexual relationships but they were excluded from the analysis because they failed to meet the definition of main versus non-main partner. In a similar concurrency study with an older population, Paik discusses sexual relationships between respondents that were described as “non-romantic”. Among this group, those who classified their sex partners as “casual” or as a “friend” had an increased likelihood of engaging in concurrency (Paik, 2010) Utilizing more inclusive definitions of sexual partner could help to more accurately describe the prevalence of the behavior.

An additional limitation of the present study is the lack of information from the male half of the sexual dyad. Though the participants responded with their perceptions of their “main” and “non-main” partners’ risk behaviors, it is not known exactly how accurate these perceptions actually are. The participants’ perceptions may in fact be a gross underestimation of the actual risk.

Though this study provided useful information on the predictors of sexually concurrent behavior, the cross-sectional design prohibits the ability to determine the long-term adverse reproductive health events potentially suffered as a result of engaging in the behavior. Following these women over a period of time would provide a more informed view of these long-term risks.

The nature of the self-reported mechanism of data collection involves inherent limitations of recall and social desirability biases. Though the use of ACASI assists with
the collection and assessment of sensitive data, not having to rely on this method would be superior.

Lastly, the women in the present study were recruited from a convenience sample from a potentially high-risk group of individuals seeking care at a county health department in the southeast United States. Caution should be exercised when generalizing these data to the general population.

Conclusion

Monogamy within sexual relationships is a protective factor against the contraction of sexually transmitted infections. Even if adolescents do initiate early, sexual partners who remain mutually monogamous significantly reduce their risk for infection. Monogamy, though, is a multifaceted concept. Norris and Ford (Norris & Ford, 1999) discuss three types of monogamy including what is typically thought of as a traditionally mutually monogamous relationship, which they call relative monogamy; a type of monogamy defined by several short and close relationships which they call serial monogamy; and nonmonogamy which they characterize as an individual having more than one sexual relationship at the same time.

Individuals who consider themselves monogamous and wait until the end of one sexual relationship to begin another with a new partner may do so, in part, to prevent the contraction and spread of infection. However, Norris and Ford (1999), and others (Kraut-Becher & Aral, 2002; Chen, Ghani, & Edmunds, 2008) indicate that participants in serially monogamous relationships may actually be contributing significantly to the spread of sexually transmitted infections because of the lack of time between sexual
relationships. The term “gap length” is defined as the length of time between the end of one sexual relationship and the beginning of the next (Kraut-Becher & Aral, 2002). Gap lengths can be positive—when there is a positive length of time between the end of one relationship and the beginning of the next, negative—when there is a negative length of time, meaning the sexual relationships overlapped in time, or they can also be a net of zero, wherein the next sexual relationship began in the same month as the last, but did not overlap.

Kraut-Becher and Aral (Kraut-Becher & Aral, 2003) examined data from the National Survey of Family Growth and determined not only that gap lengths in sexual relationships could potentially contribute to the contraction of infection, but also that female adolescents were more likely than older women to have both negative gap lengths and serially monogamous sexual relationships. Further, the gap between many of these serially monogamous relationships was shorter than the average length of infectivity for many of the most common sexually transmitted infections, including chlamydia, gonorrhea, and syphilis. In effect, these data translate into the direct ability for serially monogamous sexual partners to transmit and receive infections from one another, and increases the opportunity for further spread to the next sexual partner. In the aforementioned study, adolescents aged 15-19 had the shortest gap lengths than any other group, as well as the largest percentage of such gaps that would effectively allow for transmission of sexually transmitted infections. The authors continue that such effects remained significant “even in the presence of STD prevention and treatment programs”.

Future research should focus on the definitions of main versus non-main partner and should reword the question to ask more directly “Are you currently having sex with
more than one person?” The follow up questions should also more directly ask “With how many people are you currently having sex?” The use of focus groups or other methods of qualitative data collection might be useful in determining the appropriate terminology to use with specific populations. Further, recruiting either matched pairs of sexual partners or clusters of sexual networks could yield beneficial information with regard to a more accurate estimation of the risk associated with a particular demographic.

Television and radio media were shown to be influential among this group of adolescent and young adult women. The use of media should be considered in future campaigns to reduce concurrency in this population. Sznitman and colleagues were able to demonstrate the effectiveness of the use of multimedia and community-based counseling campaigns to reduce the number of sexual partners among a group of African American adolescents previously testing positive for STIs (Sznitman et al., 2011). However, the effect was transient in that six months post intervention the adolescents again began to adopt their previous behaviors and the protective effects were erased. Investigators should consider the use of boosters or ‘cues to action’ to reinforce previously learned lessons and remind participants about the negative health outcomes association with risky sexual behavior.

Among adolescents, the perceptions of their parents and peers serve a large role in the commencement of sexual activity, and increased communication with parents has been shown to delay sexual initiation (Akers et al., 2011; DiIorio, Kelley, & Hockenberry-Eaton, 1999; McNeely et al., 2002). Further research should not only assess the strength of family support, as has been demonstrated elsewhere (Grieb et al., 2011), but also should involve parents and other influential individuals. Ultimately,
conversations with parents and other influential individuals regarding the structure of the social norms surrounding standards of sexual behavior might prove protective against concurrency among this and similar populations.
References


American High-risk Women with Main Sex Partners. AIDS and Behavior [Epub ahead of print].


CORRELATES OF MAIN SEX PARTNER JUSTICE SYSTEM CONTACT AND FEMALE PARTNER SEXUALLY TRANSMITTED INFECTION EXPERIENCE

KERI J. GRIFFIN, TINA SIMPSON, JOHN BOLLAND, CATHY SIMPSON, RETTA EVANS, DIANE GRIMLEY, SUSAN DAVIES

Submitted in preparation for *Journal of Urban Health*
Format adapted for dissertation
Introduction

Rates of incarceration for the State of Alabama vary greatly when stratified by racial and ethnic characteristics (State of Alabama, 2010). According to the Fiscal Year 2010 Annual Report from the Alabama Department of Corrections, 59% of the incarcerated population is comprised of African Americans, compared to 41% for Caucasians. The overall rate of incarceration for Caucasians in the state is 3.99 compared to a rate of 15.06 for African Americans (United States Census Bureau, 2010).

Contact with the justice system is detrimental to the individual’s health, as well as that of his or her family (Geller, Garfinkel, & Western, 2011; Kinner, Alati, Najman, & Williams, 2007; Kjellstrand & Eddy, 2011). When incarceration rates are exceedingly high among specific populations, they also contribute to more systemic issues, especially those related to health risk (Rich, 2011). It is widely accepted that incarcerated individuals are at high risk for contracting sexually transmitted infections (STIs) (Hammett, 2009; Mertz, 2002; Barry, 2007).

In a study describing the rates of sexually transmitted infections among incarcerated populations from various states, Mertz and colleagues determined that among adolescent girls, the rate of infection with chlamydia was as high as 19.5% and as high as 8.9% among their male counterparts. The rate of infectivity with gonorrhea was as high as 10% among adolescent girls and as high as 2.6% for adolescent boys. Among the adult population, reactive syphilis tests were as high as 23.8% for women and as high as 7.8% for men (Mertz et al., 2002). Further data from the Centers for Disease Control and Prevention’s Jail STD Prevalence Group elucidated that not only was the prevalence
of the most common sexually transmitted infections extremely high among incarcerated individuals, but also that many county and state health departments, under whose care much of the incarcerated fell, lacked the resources to effectively screen and treat infected individuals in their care (Kahn et al., 2005; Mertz et al., 2002). This could potentially result in high risk populations of individuals being released back into their communities with the capacity to spread the infections to others.

Many studies have been conducted describing the incarceration rates in African American communities, as well as the rates of infection with sexually transmitted diseases among this population. Since data indicate that HIV transmission is augmented in the presence of other STIs (Fleming & Wasserheit, 1999; Wasserheit, 1992), communities with both high rates of incarceration and sexually transmitted infections may too be at increased risk for the spread of HIV. When formerly incarcerated individuals return to their communities, they interact with a lower risk population (Aral, Adimora, & Fenton, 2008). However, few studies have described this risk from the perspective of adolescent and young adult low SES women, and the impact that interacting with these high risk, formerly incarcerated individuals may pose. Therefore the aim of this study is to determine the impact of having a main male sex partner with a history of justice system contact on the female partner’s history of STIs.

Methods

Women between the ages of 14 and 25 were assessed as to their perception of their main male sex partner’s previous contact with the justice system. The family planning and sexually transmitted disease clinics of an urban health department in the
southeast United States served as the primary recruitment sites. Patients who presented for services at either one of these clinics were asked about participating in the study. Those who expressed interest were screened for eligibility. Exclusion criteria included current pregnancy, current justice system detention, positive HIV status, and discontinued use of vaginal douche products. This study was part of a larger study focused on the use of vaginal douche products. For the purposes of the parent study, women either had to be current users of douche products or never have used such products.

Once consent (or consent and ascent for those under the age of 18) was obtained, participants were asked to complete the first part of the study, which consisted of a behavioral assessment. An internet-based audio computer-assisted self-interview method served as the primary method of administering the behavioral assessment so as to reduce potential social desirability bias associated with the assessment of sensitive information. The method has been utilized with success among similarly aged adolescents responding to questions about risk behavior (Pealer, Weiler, Pigg, Miller, & Dorman, 2001; Turner et al., 1998). A female researcher’s voice corresponded to the images and questions on the computer screen, which allowed the participant to either read along or just listen to the assessment questions and answers as they were presented. Participants were able to ‘point and click’ to select their responses, and the computer system utilized their response data to follow appropriate skip patterns and present them with the next appropriate question. Once the participants completed the behavioral component, they were shown by female research assistants how to complete the biological assessment.
The biological assessment consisted of tests for chlamydia, gonorrhea, trichomoniasis and bacterial vaginosis. Female research assistants instructed the participants on the method of self-collecting vaginal specimens with the use of specially designed vaginal swabs. Use of the swabs for the self-collection of biological material has been previously demonstrated with a high degree of acceptability among a similarly aged population (Holland-Hall et al., 2002). The participants were assessed for chlamydia and gonorrhea using the Aptima Combo 2 Assay (Gen-Probe), for trichomonas utilizing the InPouch TV test, and bacterial vaginosis using the Nugent criteria for determination (Nugent et al., 1991).

The main variable of interest was whether the participants’ main sexual partners had experienced contact with the justice system. This variable was assessed by asking the participants to respond whether their main partner had ever been in juvenile detention, on probation, or had spent time in jail or prison. A category of “Any Contact” was created to represent an affirmative answer to any of the justice system questions. Bivariate analysis was conducted to determine the level of correlation between the responses to the justice system variable and other factors experienced by women whose partners had such an contact with the justice system. The level of statistical significance was established as p<0.05.

The variables which were assessed fell into four broad categories: demographic variables, psychosocial variables, sexual risk variables, and biological variables. Demographic variables included age, which was collected as a continuous variable, race, which the participants were able to self-identify, personal and maternal levels of educational attainment, which was categorized into less than high school, high school
diploma or GED, some college, or completion of trade school or college, or an advanced degree. Questions asking about the receipt of free or reduced cost meals, Medicaid or government-funded housing, welfare, WIC (the government funded food program for women, infants, and children), and food stamps were designed to measure socioeconomic status (SES). This variable was dichotomized as low SES or not low SES. An affirmative response to receipt of any of these services was operationalized as having low SES.

Psychosocial variables included asking the participant about her feelings of depression. The variable was assessed using a depression scale with items indicating how frequently she was depressed, how often she had crying spells, and how often she felt lonely, fearful, or sad. The scale had a Chronbach’s alpha score of 0.817, indicating a high degree of reliability. In addition, participants were asked whether they were currently trying to get pregnant (“yes” or “no”), whether they had a history of sexual (“Have you ever been forced to have vaginal, anal and/or oral sex with someone when you really didn’t want to?”) or physical abuse (“Have any of your boyfriends or partners over hit, slapped, or physically hurt you on purpose?”) (“yes” or “no”), and the types of media that made them think they needed to use vaginal douche products (music, television or radio, magazines or newspapers, or the internet). Lastly, participants were asked which persons of influence to whom they would listen regarding the use of douche products (mother, grandmother, sister, boyfriend, girlfriends, male friends, doctor, teacher, father, or brother).

Sexual risk variables included age of vaginal sexual initiation, which was collected as a continuous variable (from less than 12 years old to 20 years or older),
number of sexual partners in the previous three months (continuous from 0 to 10 or more), use of birth control methods (Depro-Provera, intrauterine device, the patch, the pill, condoms, rhythm, or withdrawal), and feminine hygiene products (vaginal washes, sprays, wipes powders, and creams or gels), sexual partner gender (male, female, or both), the frequency of use of alcohol or drugs before sex (every time, most of the time, sometimes, hardly ever, or never), whether they had a previous diagnosis of STI, or other adverse reproductive health outcome, including pelvic inflammatory disease and cervical cancer (dichotomous as ‘yes’ or ‘no’), previous pregnancies (continuous from 0 to more than 5), frequency of condom use (of the last five times, how many times did she use a condom, continuous 1-5), and assessment of sexual concurrency. Sexual concurrency was defined as having had sex with another person since the participant first had sex with her current main sex partner. The biological variables consisted of tests for Neisseria gonorrhoeae, Chlamydia trachomatis, Trichomonas vaginalis, and bacterial vaginosis.

Variables that were statistically significant in bivariate analysis were further analyzed for significance using multiple logistic regression techniques. The statistical package SPSS version 19 (SPSS Inc., Chicago, Illinois) was used for all analysis.

Approval for the study was obtained from the institutional review boards of both the University of Alabama at Birmingham and the Jefferson County Department of Health. All participants were compensated for their time.

Results

Participants (N = 303) were aged from 14-25, with a mean of 21.26 (SD 2.56). Eighty-eight percent of the sample self identified as African American, 8.9% as
Caucasian, and 3.3% self-identified as other. Twenty-two percent had less than a high school education, 23% had obtained a high school diploma or equivalency certificate, 44% indicated they had completed some college, and 10.6% had completed trade school, college, or had obtained higher levels of education. Seventy percent of the sample was classified as having low socioeconomic status (defined as either receiving free or reduced cost school meals, food stamps, WIC, welfare, Medicaid, or living in Section Eight housing). All participants had sexually initiated. Over half had sexually initiated by the age of 15, and approximately 87% had initiated by the age of 17. Just over 8% indicated that they were currently trying to get pregnant, and 36% met criteria for sexual concurrency.

Just over 15% of the sample tested positive during the study for chlamydia, 2% for gonorrhea, and 9% for trichomoniasis. Eight percent of the population met the clinical definition of bacterial vaginosis. Nearly 70% of the sample reported having tested positive for a sexually transmitted infection in the past, and over 20% indicated they had done so within the previous three month time period. Nearly 40% of the total population acknowledged having a main sex partner who had had any contact with the justice system. This was true for 18.5% of the Caucasian participants, for 41% of the African American participants, and for 50% of the participants who were in the race category of “Other”. This “Other” racial category included participants who primarily identified as Asian, Hispanic, or of mixed race/ethnicity. Participant Characteristics are presented in Table 1 (below).
Table 1- Participant Characteristics

<table>
<thead>
<tr>
<th>Age, in years (mean 21.15 SD 2.7)</th>
<th>Non-Hispanic White Number (%)</th>
<th>Non-Hispanic Black Number (%)</th>
<th>Other Number (%)</th>
<th>Total Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-17</td>
<td>0 (0)</td>
<td>25 (9.4)</td>
<td>0 (0)</td>
<td>25 (8.3)</td>
</tr>
<tr>
<td>18-21</td>
<td>15 (55.6)</td>
<td>112 (42.1)</td>
<td>6 (60)</td>
<td>133 (43.9)</td>
</tr>
<tr>
<td>22-25</td>
<td>12 (44.4)</td>
<td>129 (47.5)</td>
<td>4 (40)</td>
<td>147 (47.9)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>4 (15.4)</td>
<td>62 (23.3)</td>
<td>1 (10)</td>
<td>67 (22.2)</td>
</tr>
<tr>
<td>High school or GED</td>
<td>0 (0)</td>
<td>68 (25.6)</td>
<td>3 (30)</td>
<td>71 (23.5)</td>
</tr>
<tr>
<td>Some college</td>
<td>18 (69.2)</td>
<td>110 (41.4)</td>
<td>4 (40)</td>
<td>132 (43.7)</td>
</tr>
<tr>
<td>Trade school, college degree, or higher</td>
<td>4 (15.4)</td>
<td>26 (9.8)</td>
<td>2 (20)</td>
<td>32 (10.6)</td>
</tr>
<tr>
<td>Low socioeconomic status</td>
<td>6 (22)</td>
<td>201 (75.6)</td>
<td>7 (70)</td>
<td>214 (70.6)</td>
</tr>
<tr>
<td>Age of vaginal initiation, in years</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 or younger</td>
<td>13 (48.1)</td>
<td>135 (50.8)</td>
<td>5 (50)</td>
<td>153 (50.5)</td>
</tr>
<tr>
<td>16-17</td>
<td>9 (33.3)</td>
<td>92 (34.6)</td>
<td>2 (20)</td>
<td>103 (34.0)</td>
</tr>
<tr>
<td>18 or older</td>
<td>5 (18.5)</td>
<td>39 (14.7)</td>
<td>3 (30)</td>
<td>47 (15.5)</td>
</tr>
<tr>
<td>Currently trying to get pregnant</td>
<td>1 (3.7)</td>
<td>23 (8.7)</td>
<td>1 (10)</td>
<td>25 (8.3)</td>
</tr>
<tr>
<td>Ever used vaginal douche products</td>
<td>9 (33.3)</td>
<td>150 (56.8)</td>
<td>4 (40)</td>
<td>163 (54.2)</td>
</tr>
<tr>
<td>Main reason for starting to douche</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To clean following menstrual period</td>
<td>2 (25)</td>
<td>92 (62.2)</td>
<td>3 (75)</td>
<td>97 (60.6)</td>
</tr>
<tr>
<td>Thought it would make me feel fresh/clean</td>
<td>2 (25)</td>
<td>21 (14.2)</td>
<td>0 (0)</td>
<td>23 (14.4)</td>
</tr>
<tr>
<td>Thought I would smell better</td>
<td>2 (25)</td>
<td>7 (4.7)</td>
<td>0 (0)</td>
<td>9 (5.6)</td>
</tr>
<tr>
<td>I was curious</td>
<td>1 (12.5)</td>
<td>7 (4.7)</td>
<td>0 (0)</td>
<td>8 (5.0)</td>
</tr>
<tr>
<td>I had a discharge, itch, or burning sensation</td>
<td>0 (0)</td>
<td>6 (4.1)</td>
<td>1 (25)</td>
<td>7 (4.4)</td>
</tr>
<tr>
<td>Engaging in sexually concurrent behavior</td>
<td>3 (11.1)</td>
<td>101 (38.0)</td>
<td>5 (50)</td>
<td>109 (36.0)</td>
</tr>
<tr>
<td>Have main partner with any justice contact</td>
<td>5 (18.5)</td>
<td>110 (41.4)</td>
<td>5 (50)</td>
<td>120 (39.6)</td>
</tr>
</tbody>
</table>
In bivariate analysis, a participant’s history of ever having a sexually transmitted infection (p<0.000), as well as the current test for trichomoniasis (p<0.001) were statistically associated with having a main sex partner with any justice system contact. Current positive test for chlamydia approached significance (p<0.059). There were also significant contacts between main partner justice system experience and currently trying to get pregnant (p<0.000), admitting to sexual concurrency (p<0.000), and the belief that her main partner is also engaging in sexually concurrent behavior (p<0.000).

In unadjusted analysis, there was also an association between a participant’s main partner having any justice system contact and their last non-main partner having contacts with either probation (p<0.029), or jail (0.021), but not with juvenile detention or prison. Bivariate associations with partner contact with the justice system are presented in table 2 (below).
<table>
<thead>
<tr>
<th>Table 2. Bivariate Correlations (p-value)</th>
<th>Main Partner history of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Juvenile Detention</td>
</tr>
<tr>
<td>History of STI (ever)</td>
<td>0.392</td>
</tr>
<tr>
<td>STI in last 3 months</td>
<td>0.254</td>
</tr>
<tr>
<td>Currently trying to get pregnant</td>
<td>0.435</td>
</tr>
<tr>
<td>Sexually concurrent</td>
<td>0.154</td>
</tr>
<tr>
<td>Think main sex partner is sexually concurrent</td>
<td>0.052</td>
</tr>
<tr>
<td>Ever used vaginal douche</td>
<td>0.094</td>
</tr>
<tr>
<td>Current positive chlamydia</td>
<td>0.151</td>
</tr>
<tr>
<td>Current positive gonorrhea</td>
<td>0.381</td>
</tr>
<tr>
<td>Current positive trichomoniasis</td>
<td>0.000*</td>
</tr>
<tr>
<td>Current positive bacterial vaginosis</td>
<td>0.431</td>
</tr>
<tr>
<td>Main partner Hx of JD</td>
<td>********</td>
</tr>
<tr>
<td>Main partner hx of probation</td>
<td>0.000*</td>
</tr>
<tr>
<td>Main partner hx of jail</td>
<td>0.000*</td>
</tr>
<tr>
<td>Main partner hx of prison</td>
<td>0.001*</td>
</tr>
<tr>
<td>Non-main partner Hx of JD</td>
<td>0.418</td>
</tr>
<tr>
<td>Non-main partner hx of probation</td>
<td>0.058</td>
</tr>
<tr>
<td>Non-main partner hx of jail</td>
<td>0.049*</td>
</tr>
<tr>
<td>Non-main partner hx of prison</td>
<td>0.628</td>
</tr>
<tr>
<td>Ever sexually abused</td>
<td>0.000*</td>
</tr>
<tr>
<td>Ever physically abused</td>
<td>0.154</td>
</tr>
</tbody>
</table>
In adjusted analysis, the largest predictor of main partner justice system contact was pregnancy intention. Participants whose main sex partners had a history of justice system contact were over four times (CI 1.41-12.46) as likely to be trying to get pregnant than women whose partners lacked any contact with the justice system. Women whose main sex partner had any contact with the justice system were also 2.3 times (CI 1.25-4.35) more likely to have ever been diagnosed with an STI, over three times (CI 1.70-5.33) more likely to admit engaging in sexually concurrent behavior, and two times as likely (CI 1.18-3.78) to think their partners also have other partners. Women whose partners had justice system contact were also twice as likely (CI 1.17-3.61) to have used vaginal douche products, and 2.65 times as likely to be positive for chlamydia when they were tested as a part of this study (CI 1.24-5.65).

History of positive STI in the last three months, the current testing positive for trichomoniasis, gonorrhea, bacterial vaginosis and non-main partner justice system contact were statistically significant with main partner having any justice system contact in bivariate analysis. However, these variables fell out of significance in the adjusted model. Adjusted analyses appear in Table 3 (below).

| Table 3. Multivariate Predictors of Partner with Any Justice System Contact |
|-----------------------------|-----------------|------------------|
| Predictor                   | OR (95% CI)     | p-value          |
| Currently trying to get pregnant | 4.18 (1.41-12.46) | 0.010            |
| Engaging in sexual concurrent behavior | 3.01 (1.70-5.33)  | 0.000            |
| Current positivity for Chlamydial infection | 2.65 (1.24-5.65)  | 0.012            |
| Ever been diagnosed with an STI | 2.33 (1.25-4.35)  | 0.008            |
| Think main partner is engaging in sexually concurrent behavior | 2.12 (1.18-3.78)  | 0.011            |
| Used vaginal douche products | 2.05 (1.17-3.61)  | 0.012            |
Discussion

Among the current study sample, the largest predictor of main partner justice system contact was pregnancy intention. The second strongest predictor was sexually concurrent behavior. Using a sample of over 500 African American adolescents from low SES neighborhoods in Birmingham, Alabama, Davies and colleagues determined that participants who desired pregnancy were twice as likely to have engaged in sexual intercourse with a casual partner during the previous sixth month period (Davies et al., 2004). These data agree with Davies’ findings, and others that indicate that pregnancy is often intended, among similar groups of adolescents (Davies et al., 1994; Stevens-Simon, Kelly, Singer, & Cox, 1996; Zabin, Astone, & Emerson, 1993).

Study findings further demonstrate a statistically significant association between a woman’s main sex partner’s delinquency history and her history of positivity for sexually transmitted infections (Table 3). These findings support and reinforce evidence on the increased propensity for the transmission of sexually transmitted infections among incarcerated individuals (Barry et al., 2007; Hammett, 2009; Mertz et al., 2002), and the impact that male partners’ risky behaviors have on their female partners (Aral et al., 2008; Staras, Cook, & Clark, 2009).

Aral, Adimora, and Fenton discuss the level of risk incurred by African American women because of the riskiness of their sexual partners. The researchers indicate, based on data from the National Survey of Family Growth, that African American women typically have the highest rates of sexually transmitted infection, but lower numbers of total sex partners than Caucasian women. According to Aral, this is indicative of an
unequal level of risk in the population, and that the high prevalence of STIs among African American women is not solely because of their own behaviors, but rather due in large part to the riskiness of their partners (Aral et al., 2008).

Our analysis also reveals a significant association between main partner history of justice system contact and both the participant admitting to concurrency and the belief that her partner is also engaged in concurrency. Sexual partner concurrency among adolescents and young adults is a major public health concern. The practice of having multiple, concurrent sex partners among adolescents and young adults is estimated to be as high as 60% in some populations (Lenoir et al., 2006). The mixing of sexual partners with different risk characteristics increases the opportunity for the amplified spread of STIs (Aral et al., 2008; Ford et al., 2002), even among women who themselves may be at lower risk (Aral et al., 2008; Doherty, Schoenbach, & Adimora, 2009; Pouget, Kershaw, Niccolai, Ickovics, & Blankenship, 2010; Staras, et al., 2009). Further, sexual partners of individuals engaged in concurrent sexual partnerships may not be aware of (or, choose not to think about) whether their partners are engaging in sex with other individuals and, therefore, might not take the necessary precautions to protect their reproductive health. For instance, Lenoir (Lenoir et al., 2006) conducted a study designed to determine whether there was agreement between an individual’s sexual concurrency status and their perception of their partner’s concurrency status. The results indicated that many participants believed they were part of a mutually monogamous sexual relationship, when in fact their partners were engaging in sexual concurrency. The largest discrepancy was among women who did not believe their partners were engaging in concurrency. Of this
group of females, 40% of their sexual partners reported that they were not sexually monogamous (Lenoir et al., 2006).

In general, even if adolescents and young adults are not involved in sexually concurrent relationships, they are still more likely to engage in multiple short, sequential relationships that still put them at increased risk. Kraut-Becher (Kraut-Becher & Aral, 2003) examined data from the National Survey of Family Growth and determined that female adolescents were more likely than older women to engage in serially monogamous sexual relationships. The gap between many of these serially monogamous relationships was shorter than the average length of infectivity for many of the most common sexually transmitted infections, including chlamydia, gonorrhea, and syphilis. In effect, these data translate into the direct ability for serially monogamous sexual partners to transmit and receive infections from one another, and increases the opportunity for further spread to the next sexual partner. In the aforementioned study, adolescents aged 15-19 had the shortest gap lengths between relationships than any other group, as well as the largest percentage of such gaps that would effectively allow for transmission of sexually transmitted infections. The authors continue that such effects remained significant “even in the presence of STD prevention and treatment programs”.

**Sex Ratio Imbalances**

A contributing factor to the amount of sexual concurrency in these communities is the imbalance in the sex ratio between male and female community members. Rates of male incarceration, premature male mortality, and poverty among African American communities creates an imbalance that results in fewer available suitable male mates for
their female counterparts (Adimora, Schoenbach, & Floris-Moore, 2009; Adimora et al., 2001; Aral et al., 2008; Borrell, Dallo, & Nguyen, 2010; Cooper et al., 2001; Doherty et al., 2009; Geronimus, Bound, Waidmann, Hillemeier, & Burns, 1996; Thomas, 2006). The result is a reduction in the bargaining power of women in African American communities.

A great deal of literature has been devoted to the study of the decreased sexual negotiating power of women in international venues. However, due to the sex ratio differences in many African American communities, women here too have decreased negotiating power. Pouget and colleagues (Pouget et al., 2010) postulate that the Theory of Gender and Power is applicable to this population, given that women’s ability to negotiate within sexual relationships is decreased because of a much reduced quantity of suitable male partners.

Reducing the Risk

In order to reduce the risks associated with the transmission of infection among this group, their participation in research must be solicited. Incarcerated males must be a part of the plan to create programs that address the increased rates of infection. Numerous strategies have been suggested and evaluated to assist with the issue, but few have taken place in this area of the country. Historically, it has been difficult to recruit minority males to participate in research studies. The geographic location of Birmingham, in such close proximity to Tuskegee, Alabama, where horrific abuses of great magnitude took place (Shavers, Lynch, & Burmeister, 2000, 2002) no doubt contributes to the resistance of men in this community to participate in research.
In other areas of the country, interventions have been designed to effectively reduce risk associated with incarcerated males. In the REAL MEN study, Freudenberg and colleagues (Freudenberg et al., 2010) demonstrated the effectiveness of an intervention among incarcerated males to decrease risk in the domains of substance abuse, sexual risk behavior, criminal justice, and to increase “engagement in constructive activities.” Their intervention compared two study arms incorporating either a training session that started before the men were released and continued three weeks post-release, or participation in one session before release. The most effective results reducing sexual risk were observed among men who chose to take advantage of services that were offered in a community-based setting, post-release, regardless of their randomization into either of the study arms.

In the PALMS study, (Preventing AIDS through Live Movement and Sound) researchers used three theatrical performances based on the health belief model (Rosenstock, Strecher, & Becker, 1988) and the social cognitive theory (Bandura, 1986) to provide health education related to HIV risk reduction to incarcerated adolescents and young adults. The use of role-playing, skits, and condom demonstration led to an increase in HIV knowledge and increased report of condom use at last sex with non-main partner at six-month follow up.

Barbarin (Barbarin, 2010) suggests that the problem should be tackled from several different angles, including specific changes that need to take place at the family, school, and community levels in order to change the “school-to-prison pipeline”.

Methodologies that aim to change the sexual risk behavior associated with low-SES African American males have been shown more effective when they incorporate the
concept of family protection. Henny and colleagues (Henny et al., 2012) conducted a meta analysis of the literature including studies that were aimed at risk reduction of STIs among heterosexual African American men. They determined that the studies which were most efficacious were those that included referrals to other medical services, male facilitators, and that framed HIV reduction behavior in the light of protecting loved ones. Interventions targeted toward men with incarceration histories were also effective.

Future studies among this group of individuals should consider the type of justice system contact and whether such contact required the individual to be confined away from their main partner for any significant period of time. Justice system contact that restricts the activities or confines the location of an individual might interrupt the primary relationship and contribute to sexually concurrent behavior.

Study Challenges and Limitations

With the exception of the in-clinic chlamydia, gonorrhea, trichomoniasis and bacterial vaginosis testing, the data collected as a part of this study are self-reported. Data collected via this method are known to have an inherent social desirability bias, especially when the topic is related to sensitive issues such as sexual behavior. Use of the audio computer assisted self-interview technique is designed to reduce bias and has been shown to increase response rates of questions inquiring of sensitive information among similarly aged groups (Pealer et al., 2001; Turner et al., 1998).

Though the researchers characterized participants’ sexual partners’ behavior, it is not known how accurate these characterizations are, especially in light of the inherent qualities associated with the sexual networks of adolescents and young adults. These
networks have been shown to be shorter and lacking in depth as compared to
relationships among older adults. Repeated concurrent or serially monogamous
relationships may reduce the degree to which partners communicate, especially about
sensitive issues such as sexually transmitted infections and disease risk. While having a
certain perception of their partners’ experiences is helpful for evaluation, not knowing
their partner’s actual behavior is inherently risky. Further research is necessary to
determine the partners’ actual contact with the justice system. Research involving not
only adolescents, but also their main and non-main sexual partners would shed light on
the actual risk involved.

Lastly, the cross-sectional nature of this study precluded the researchers
from studying the long-term impacts of these women and their partners. While data are
available to describe the risks at a single point in time, very few studies have been
conducted among this population of women in the Birmingham, Alabama area over time.
Longitudinal examinations of this group of women would inform researchers on the types
of interventions that are likely to be effective among this population.

Interventions that both reduce the disparities associated with incarceration and
reduce the incidence of sexually transmitted infections in these populations are necessary.
More research is needed in particular to revamp programs and policies surrounding the
prosecution of drug offences which result in higher rates of incarceration for African
Americans than their Caucasian counterparts charged with similar offences (Iguchi, Bell,
Ramchand, & Fain, 2005).

Simultaneous prevention interventions at the family, school, and community
levels are imperative as reinforcement for the change of social norms or expectations for
the adolescents and young adults in the population. Integration of principles related to community based participatory research could be helpful in matching the perceived needs of the community with what researchers and policy makers identify as needs. Further research into increasing educational and training opportunities, as well as job growth is necessary, as these have been shown to decrease incarceration rates and have been identified as personal barriers among similar communities (Adimora et al., 2001).
References


SUMMARY CONCLUSION

Among a convenience sample of adolescent and young adult women of low SES, it was determined that vaginal douche product use might be decreasing, that knowledge of partner concurrency might not be protective against sexual risk, and that partner justice system contact might be predictive of a woman’s risk for sexually transmitted infections. Though the data were drawn from a high risk sample of women recruited primarily from urban health departments in the southeastern United States, there are implications for future study that could greatly benefit a larger population.

Ultimately women who are a part of this sample are not impacted by each of these risk factors in isolation. It becomes increasingly important to change the social norms with regard to the acceptability of douching, sexual concurrency, and incarceration. It is likely that each of these risk outcomes is underpinned by issues closely related to SES and environment. Quite similar to Bandura’s Social Cognitive Theory (1986), these women are impacted by both their behavior and their environment. Bolland and colleagues have determined that among inner city neighborhoods with high rates of poverty that a sense of hopelessness exists, which contributes to engagement in risk behavior among adolescents. This risk behavior manifests itself in several domains, including that of sexual risk. Though the present study did not address hopelessness, the samples are similar in that they are both primarily African American, located in the southeastern United States, and are overwhelmingly of low socioeconomic status. Future
studies should incorporate the concept of hopelessness to determine if such a factor could be related to the sexual riskiness of the current population.

**Strengths**

One of the major strengths of this study was the use of mixed methodology regarding data collection. The collection of both behavioral and biological measures allowed the research team to assess the types of behavior that correlate with the biological outcomes which were observed. Additionally, independently assessing participants’ current sexually transmitted infection status allowed the research team to remove the burden of recall and social desirability biases with regard to the current infection status.

Further, though many studies have examined the increased rates of incarceration among this group, a second strength of this study is that it examines the impacts of this contact on the reproductive health history of female sex partners. Further research is needed to reduce the rates of incarceration among this population.

**Limitations**

As with studies of this nature, much of the information relies on the method of self-report. Self reported data are widely known to have biases associated with social desirability. However, because the assessment was given by use of an audio computer-assisted self interview mechanism, some of the bias was likely reduced. However, recall bias is still likely to affect the quality of the sample.
Secondly, since the population was drawn from public health departments in the southeast United States, it is likely that the data are not entirely generalizable to the population at large. These women could potentially be more at-risk than the general population because they likely lack the ability to seek medical care at other facilities. Simultaneously, they could also be less-risky than other populations because they were actively seeking medical care, albeit from a government health facility. The very act of accessing care might make them less risky than others who fail to seek care at all.

Third, study participants provided information about their main and non-main sexual partners. Although participants’ observations of their partner’s risk behaviors can be a useful tool in the determination of personal risk, study participants cannot be absolutely certain of the actual behaviors of their partners. It is well documented that adolescents and young adults more frequently engage in serial monogamy than other aged groups (Norris & Ford, 1999). Participation in these short relationships may limit the ability a participant has to really learn about the sexual risk behaviors of her partner. Ideally, utilizing matched pairs of sexual partners would garner greater information about partner risk. This method would also be useful in assessing how much agreement exists with regard to the sexual behavior within the relationships.

Lastly, the use of a cross-sectional study design inherently limits the strength of the current study. Collecting longitudinal data would allow investigators to more thoroughly understand the patterns of behavior among this high risk group of women, and how their behavior impacts their long term reproductive health.
Implications

Several implications are derived from the current study. First, future research is needed to more accurately collect information regarding sexual concurrency in the absence of sexual partners who lack the threshold of ‘main’. Though individuals may be engaging in sexual behavior with several other people, use of the word ‘main’ limits the collection of data for persons who do not define any single partner as a main partner. Secondly, given that this study demonstrated increased partner concurrency with the suspicion of having a main partner who also engages in sexually concurrent behavior, health care providers should continue the advice of condom use to their patients, even within the context of a ‘main’ sexual relationship. Lastly, in health department environments, where effective use of scarce funds is critical to the reduction of sexually transmitted infections among a population, this study suggests that an effective method of risk reduction might be the testing and treatment of incarcerated individuals before they are released back into their communities.


APPENDIX A

Project pHree Survey Instrument

2009

Today we will ask you some questions that deal with women’s sexual health. Some questions ask about what you know and others ask what you think about things.

Some of the questions may ask about things that are very personal to you or things you may not have done. Please honestly answer as many questions as you can. All of your answers will be kept private and your name will not be connected to them.

You will hear each question and all responses read to you as you follow along in the survey. You may need to scroll down to see all of the possible responses on some questions. If you need to hear something read again, just click on the play button below the text you would like to hear.

To complete the survey, for each question click on the response that you think is true about yourself. Some questions will have more than one part; please choose a response for every part of each question. If you do not feel comfortable answering a question or a part of a question, you can select “refuse.” Click on the button that says “next” at the bottom of the screen when you are ready to go on to the next question.

If you have any questions as you are going through the survey, please ask someone from Project pHree for help.
The next few questions will ask a little bit about you. Some will also ask about your family. For each question, pick the answer that fits you best. When you are done, click on “next” to go to the next section.

DEMOGRAPHICS

1. How old are you?
   14 □ 14
   15 □ 15
   16 □ 16
   17 □ 17
   18 □ 18
   19 □ 19
   20 □ 20
   21 □ 21
   22 □ 22
   23 □ 23
   24 □ 24
   25 □ 25
   26 □ 26
   77 □ Refuse

2. What is your race?
   1 □ American Indian or Alaska Native
   2 □ Asian
   3 □ Black or African American
   4 □ Native Hawaiian or other Pacific Islander
   5 □ White
   6 □ Hispanic or Latina
   7 □ Other
   77 □ Refuse

3. What was the highest grade of school your MOTHER completed?
   1 □ Less than 8th grade
   2 □ 8th grade
   3 □ 9th grade
   4 □ 10th grade
   5 □ 11th grade
   6 □ 12th grade/GED
   7 □ Some college
   8 □ College
   9 □ Trade or career school (i.e. beauty school, massage therapy school, etc.)
   10 □ Graduate school
   88 □ DK/NS
   77 □ Refuse
4. What is the highest grade of school **YOU** have completed?
   1 □ Less than 8th grade
   2 □ 8th grade
   3 □ 9th grade
   4 □ 10th grade
   5 □ 11th grade
   6 □ 12th grade/GED
   7 □ Some college
   8 □ College
   9 □ Trade or career school (i.e. beauty school, massage therapy school, etc.)
   10 □ Graduate school
   88 □ DK/NS
   77 □ refuse

5. Do you currently receive free or reduced school meals?
   1 □ Yes
   0 □ No
   99 □ I am not currently enrolled in middle school/high school
   77 □ Refuse

6. How many people, including you, live in your home?
   1 □ 1
   2 □ 2
   3 □ 3
   4 □ 4
   5 □ 5
   6 □ 6 or more
   77 □ Refuse

7. Does your family currently receive any of the following?
   a. Food stamps   Yes No DK Refuse
      1 □ 0 □ 88 □ 77 □
   b. WIC           Yes No DK Refuse
      1 □ 0 □ 88 □ 77 □
   c. Section 8 Housing Yes No DK Refuse
      1 □ 0 □ 88 □ 77 □
   d. Welfare       Yes No DK Refuse
      1 □ 0 □ 88 □ 77 □
   e. Medicaid      Yes No DK Refuse
      1 □ 0 □ 88 □ 77 □

8. Have you taken any antibiotics in the past two weeks?
   1 □ Yes
   0 □ No
   77 □ Refuse
DEPRESSION

9. Please indicate how often you have felt this way during the last week.

<table>
<thead>
<tr>
<th></th>
<th>Rarely or none</th>
<th>Some or a little</th>
<th>Occasionally or a moderate</th>
<th>Most or all of the time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(&lt; 1 day)</td>
<td>(1-2 days)</td>
<td>(3-4 days)</td>
<td>(5-7 days)</td>
</tr>
<tr>
<td>a. I felt depressed</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. I felt fearful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. I felt lonely</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. I had crying spells</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. I felt sad</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Now we are going to ask you a little bit about some women’s issues—things like your period, feminine hygiene, and birth control. Again, please pick the response to each question that best fits for you.

MENSTRUATION

10. How old were you when you had your first period?

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>99 I don’t have a period yet</td>
<td>Skip to Q12</td>
<td>1 11 or younger</td>
<td>2 12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 13</td>
<td>4 14</td>
<td>5 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 16</td>
<td>7 17</td>
<td>8 18 or older</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>88 Don’t know/Not sure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>77 Refuse</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

111
11. How often do you have your period?
   1 □ More than once a month
   2 □ Once a month
   3 □ Every other month
   4 □ Every three months
   5 □ Every four to six months
   6 □ I don’t currently have a period
   88 □ Don’t know/not sure
   77 □ Refuse

FEMININE HYGIENE PRODUCTS
12. In the past 3 months have you used any of the following products?
   №  Yes  No  Refuse
   a. Feminine washes? (i.e. Summer’s Eve feminine wash, Intimates daily feminine wash, Sliquid, Nirena, etc.)
      1 □ 0 □ 77 □
   b. Vaginal sprays, like a deodorant or perfume? (i.e. Summer’s Eve feminine deodorant spray, FDS feminine deodorant spray, FemaFresh natural feminine hygiene spray, etc.)
      1 □ 0 □ 77 □
   c. Vaginal wipes? (i.e. Monistat Coolwipes, Summer’s Eve cleansing cloths, Always wipes, etc.)
      1 □ 0 □ 77 □
   d. Feminine powder for the vagina? (i.e. Monistat soothing care, Vagisil deodorant powder, Summer’s Eve feminine powder, etc.)
      1 □ 0 □ 77 □
   e. Vaginal anti-itch creams or gels? (i.e. Monistat soothing itch cream, Vagisil anti-itch cream, etc.)
      1 □ 0 □ 77 □

BIRTH CONTROL USE

13. Are you currently trying to get pregnant?
   1 □ Yes
   0 □ No
   77 □ Refuse

14. In the past 3 months, have you used any kind of birth control?
   1 □ Yes
   0 □ No      Skip to Q16
   77 □ Refuse      Skip to Q16
15. What kind(s) of birth control have you used in the last three months?

- a. Depo-Provera (“the shot”)  [ ] Yes  [ ] No  [ ] Refuse
- b. IUD  [ ] Yes  [ ] No  [ ] Refuse
- c. Nuvaring (“the ring”)  [ ] Yes  [ ] No  [ ] Refuse
- d. The patch  [ ] Yes  [ ] No  [ ] Refuse
- e. The pill (but you have a monthly period)  [ ] Yes  [ ] No  [ ] Refuse
- f. Lybrel (the pill that stops your period)  [ ] Yes  [ ] No  [ ] Refuse
- g. Condoms  [ ] Yes  [ ] No  [ ] Refuse
- h. The rhythm method (or not having sex on the days when you know you are most likely to get pregnant)  [ ] Yes  [ ] No  [ ] Refuse
- i. Withdrawal (or pulling out just before your partner cums)  [ ] Yes  [ ] No  [ ] Refuse
- j. Other  [ ] Yes  [ ] No  [ ] Refuse

---

HPV VACCINE

16. Have you ever heard of HPV (Human Papillomavirus—a virus that can cause cervical cancer)?

- 1 [ ] Yes
- 0 [ ] No  Skip to Q19
- 77 [ ] Refuse

17. Have you received the new vaccine (all three shots) that helps protect against HPV?

- 1 [ ] Yes  Skip to Q19
- 2 [ ] No
- 3 [ ] I have only received one or two shots so far  Skip to Q19
- 77 [ ] Refuse

---

18. What would you say is the MAIN REASON that you have not had the HPV vaccine? ONLY PICK ONE ANSWER

- 1 [ ] I didn’t know there was a vaccine against HPV
- 2 [ ] A doctor or nurse has never recommended the HPV vaccine to me
- 3 [ ] My parent(s) do not want me to get the HPV vaccine
- 4 [ ] I believe the HPV vaccine is not safe
- 5 [ ] My insurance does not cover the cost of the HPV vaccine
- 6 [ ] I do not think I am at risk for HPV
- 7 [ ] I am scared to get the HPV vaccine
- 88 [ ] DK/NS
- 77 [ ] Refuse
The next sets of questions can be a little personal and will ask you about things like sex, STDs, pregnancy and condoms. Remember, your answers are private and will not be linked to your name. Pick the answer to each question that fits the best for you. Your responses are very important to us, but you can choose not to answer any question that makes you feel uncomfortable.

**SEXUAL INITIATION**

19. Have you ever had any kind of sex (vaginal, anal, and /or oral)?
   - 1 □ Yes
   - 0 □ No Skip to Q68
   - 77 □ Refuse Skip to Q68

20. Have your sex partner(s) been:
   - 1 □ Male only skip to Q22
   - 2 □ Female only skip to Q28
   - 3 □ Both male and female
   - 77 □ Refuse

21. During the past 3 months, have your sex partner(s) been:
   - 1 □ Male only
   - 2 □ Female only skip to Q28
   - 3 □ Both male and female
   - 99 □ I have not had any kind of sex (vaginal, anal, or oral) in the past 3 months Skip to Q69
     (Q34 at 12 months)
   - 77 □ Refuse

22. Have you ever had vaginal sex (when a male puts his penis inside your vagina)?
   - 1 □ Yes
   - 0 □ No Skip to Q25
   - 77 □ Refuse Skip to Q25
23. How old were you the first time you had vaginal sex?
   1. ☐ Younger than 12
   2. ☐ 12
   3. ☐ 13
   4. ☐ 14
   5. ☐ 15
   6. ☐ 16
   7. ☐ 17
   8. ☐ 18
   9. ☐ 19
   10. ☐ 20 or older
   88. ☐ Don’t know/Not sure
   77. ☐ Refuse

24. During the past 3 months, how many people did you have vaginal sex with?
   0. ☐ None
   1. ☐ 1
   2. ☐ 2
   3. ☐ 3
   4. ☐ 4
   5. ☐ 5 or more
   88. ☐ DK/NS
   77. ☐ Refuse

25. Have you ever had anal sex (when a penis is put in your anus or butt hole)?
   1. ☐ Yes
   0. ☐ No Skip to Q28
   77. ☐ Refuse Skip to Q28

26. How old were you the first time you had anal sex?
   1. ☐ Younger than 12
   2. ☐ 12
   3. ☐ 13
   4. ☐ 14
   5. ☐ 15
   6. ☐ 16
   7. ☐ 17
   8. ☐ 18
   9. ☐ 19
   10. ☐ 20 or older
   88. ☐ Don’t know/Not sure
   77. ☐ Refuse
27. **During the past 3 months**, how many people did you have anal sex with?  
0 □ None  
1 □ 1  
2 □ 2  
3 □ 3  
4 □ 4  
5 □ 5 or more  
88 □ DK/NS  
77 □ Refuse

28. Have you ever received oral sex (had someone else’s mouth or tongue in or around your vagina)?  
1 □ Yes  
0 □ No  
Skip to Q3  
77 □ Refuse  
Skip to Q31

29. How old were you the first time you received oral sex?  
1 □ Younger than 12  
2 □ 12  
3 □ 13  
4 □ 14  
5 □ 15  
6 □ 16  
7 □ 17  
8 □ 18  
9 □ 19  
10 □ 20 or older  
88 □ Don’t know/Not sure  
77 □ Refuse

30. **During the past 3 months**, how many people did you receive oral sex from?  
0 □ None  
1 □ 1  
2 □ 2  
3 □ 3  
4 □ 4  
5 □ 5 or more  
88 □ DK/NS  
77 □ Refuse

31. Have you ever given someone oral sex (put your mouth or tongue on someone’s penis or vagina)?  
1 □ Yes  
0 □ No  
77 □ Refuse
ALCOHOL/DRUG USE BEFORE SEX

32. **In the past 3 months**, how often did you drink enough alcohol to feel tipsy or woozy before having ANY kind of sex (vaginal, anal, and/or oral)?
   4 □ Every time
   3 □ Most of the time
   2 □ Sometimes
   1 □ Hardly ever
   0 □ Never
   88 □ DK/NS
   77 □ Refuse

STI HISTORY

33. Has a doctor or nurse EVER told you that you had the following?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Bacterial vaginosis (BV)</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>b) Cervical cancer</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □  (if a, b &amp; c = no, then skip to Q35)</td>
</tr>
<tr>
<td>c) PID (Pelvic Inflammatory Disease)</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
</tbody>
</table>

34. **In the past 3 months**, has a doctor or nurse told you that you had the following?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Bacterial vaginosis (BV)</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>b) Cervical cancer</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>c) PID (Pelvic Inflammatory Disease)</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
</tbody>
</table>

35. Has a doctor or nurse EVER told you that you had a sexually transmitted disease (STD)?
   1 □ Yes
   0 □ No    Skip to Q39
   77 □ Refuse  Skip to Q39

36. Was the STD called:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Chlamydia (CT)</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>b) Gonorrhea (GC, or the clap)</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>c) Trichomoniasis (trich)</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>d) HIV</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>e) Herpes</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>f) HPV</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
<tr>
<td>g) Syphilis</td>
<td>1 □</td>
<td>0 □</td>
<td>88 □</td>
<td>77 □</td>
</tr>
</tbody>
</table>

37. **In the past 3 months**, has a doctor or nurse told you that you had a sexually transmitted disease (STD)?
   1 □ Yes
   0 □ No    Skip to Q39
   77 □ Refuse  Skip to Q39
38. Was the STD called:  
   a) Chlamydia (CT)  
      Yes 0 88 77 
   b) Gonorrhea (GC, or the clap)  
      Yes 0 88 77 
   c) Trichomoniasis (trich)  
      Yes 0 88 77 
   d) HIV  
      Yes 0 88 77 
   e) Herpes  
      Yes 0 88 77 
   f) HPV  
      Yes 0 88 77 
   g) Syphilis  
      Yes 0 88 77 

**PREGNANCY**

39. Have you ever been pregnant?  
   1 □ Yes  
   0 □ No Skip to Q44  
   88 □ Don’t know/Not Sure Skip to Q44  
   77 □ Refuse Skip to Q44  

40. How many times have you been pregnant? Please think about all pregnancies, including those that ended in miscarriage, abortion or stillbirth (where a full-term baby is not alive when born).  
   1 □ 1 time  
   2 □ 2 times  
   3 □ 3 times  
   4 □ 4 times  
   5 □ 5 or more times  
   77 □ Refuse  

41. Of the times you have been pregnant, how many of your babies were born early (born before 9 months)?  
   0 □ None  
   1 □ 1  
   2 □ 2  
   3 □ 3  
   4 □ 4  
   5 □ 5 or more  
   88 □ DK/NS  
   77 □ Refuse  

42. Of the times you have been pregnant, how many of your babies were born with a low birth weight (less than 5 pounds 8 ounces)?  
   0 □ None  
   1 □ 1  
   2 □ 2  
   3 □ 3  
   4 □ 4  
   5 □ 5 or more  
   88 □ DK/NS  
   77 □ Refuse
43. Of the times you have been pregnant, how many of your pregnancies were ectopic (where the baby grows in a fallopian tube)?
   0 □ None
   1 □ 1
   2 □ 2
   3 □ 3
   4 □ 4
   5 □ 5 or more
   88 □ DK/NS
   77 □ Refuse

For the following set of questions, please think ONLY of your main or steady male sex partner (or the male partner you have sex with most often).

CONDOM USE WITH MAIN SEX PARTNER

44. Do you currently have a main or steady MALE partner that you have vaginal sex with?
   1 □ Yes
   0 □ No Skip to Q56
   77 □ Refuse Skip to Q56

45. How long have you been having vaginal sex with your current MAIN partner?
   1 □ 1 month or less
   2 □ More than 1 month, but less than 1 year
   3 □ At least 1 year, but less than 2 years
   4 □ 2 years or more
   88 □ I don’t know/I’m not sure
   77 □ Refuse

46. Choose the ONE statement that best describes the age of your current MAIN sex partner:
   1 □ My current partner is 1-2 years younger than me.
   2 □ My current partner is 3-4 years younger than me.
   3 □ My current partner is 5 or more years younger than me.
   4 □ My current partner and I are the same age.
   5 □ My current partner is 1-2 years older than me.
   6 □ My current partner is 3-4 years older than me.
   7 □ My current partner is 5 or more years older than me.
   88 □ I don’t know / I’m not sure
   77 □ Refuse

47. Has your current MAIN sex partner:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever been in juvenile detention?</td>
<td>□</td>
<td>□</td>
<td>88□</td>
<td>77□</td>
</tr>
<tr>
<td>Ever been on probation?</td>
<td>□</td>
<td>□</td>
<td>88□</td>
<td>77□</td>
</tr>
<tr>
<td>Ever been in jail?</td>
<td>□</td>
<td>□</td>
<td>88□</td>
<td>77□</td>
</tr>
<tr>
<td>Ever served time in prison?</td>
<td>□</td>
<td>□</td>
<td>88□</td>
<td>77□</td>
</tr>
</tbody>
</table>
48. In the past 3 months, how often did your current MAIN sex partner drink enough alcohol to feel tipsy or woozy before having ANY kind of sex (vaginal, anal, and/or oral) with you?

☐ Every time
☐ Most of the time
☐ Sometimes
☐ Hardly ever
☐ Never
88 ☐ DK/NS
77 ☐ Refuse

49. In the past 3 months, how often did your current MAIN sex partner take any kind of drug before having ANY kind of sex (vaginal, anal, and/or oral) with you?

☐ Every time
☐ Most of the time
☐ Sometimes
☐ Hardly ever
☐ Never
88 ☐ DK/NS
77 ☐ Refuse

50. In the past 3 months, has your current MAIN sex partner had a sexually transmitted disease (STD)?

☐ Yes
☐ No
88 ☐ Don’t know/Not Sure
77 ☐ Refuse

51. Was the STD called:

<table>
<thead>
<tr>
<th>STD</th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Chlamydia (CT)</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>b) Gonorrhea (GC, or the clap)</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>c) Trichomoniasis (trich)</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>d) HIV</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>e) Herpes</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>f) HPV</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>g) Syphilis</td>
<td>1</td>
<td>0</td>
<td>88</td>
<td>77</td>
</tr>
</tbody>
</table>
52. Of the last 5 times you had vaginal sex with your main partner, how many times did you use a condom?

- 0 □ 0 times  
- 1 □ 1 time  
- 2 □ 2 times  
- 3 □ 3 times  
- 4 □ 4 times  
- 5 □ 5 times  
- 88 □ I don’t know/ I’m not sure  
- 99 □ I have not had sex 5 times with my main partner  

53. In the past 3 months, when you had vaginal sex with your main partner, did you use a condom EVERY SINGLE TIME?

- 1 □ Yes, I use a condom every single time with my main partner and have been doing so for MORE THAN 6 MONTHS  
- 2 □ Yes, I use a condom every single time with my main partner but have been doing so for LESS THAN 6 MONTHS  
- 3 □ No, I do not use a condom every single time with my main partner, but I plan to start doing so in the NEXT 30 DAYS  
- 4 □ No, I do not use a condom every single time with my main partner, but I plan to start doing so some time in the NEXT 6 MONTHS.  
- 5 □ No, I do not use a condom every single time and I am NOT thinking about starting to do so any time in the NEXT 6 MONTHS.  
- 99 □ I have not had vaginal sex with my main partner in the last three months.  

54. In the past 3 months, do you think that your MAIN sex partner had ANY kind of sex with someone other than you?

- 1 □ Yes  
- 0 □ No  

OTHER SEX PARTNER(S)

55. Have you had ANY kind of sex with another person since you first had sex with your current MAIN partner?

- 1 □ Yes  
- 0 □ No (skip to Q6)  
- 77 □ Refuse (skip to Q6)

56. In the past 3 months, have you had vaginal sex with a partner who you do not consider a main or steady sex partner?

- 1 □ Yes  
- 0 □ No  
- 77 □ Refuse  

121
57. How many partners have you had vaginal sex with in the past 3 months? (do not include your main sex partner if you have one).
1  
2  
3  
4  
5  
6  
7  
8  
9  
10 or more
88 I don’t know/I’m not sure
77 Refuse

58. Of the last 5 times you had vaginal sex with someone who you don’t think of as your main partner—a more casual partner—how many times did you use a condom?
0  
1  
2  
3  
4  
5  
88 Don’t know/Not Sure
99 I have not had sex 5 times with a casual partner
77 Refuse

59. When you have vaginal sex with someone who you don’t think of as your main partner—a more casual partner—do you use a condom EVERY SINGLE TIME?
1  
2  
3  
4  
5  
77 Refuse
60. In the **past 3 months**, have you had any of the following types of sex with a partner who you do not consider a main or steady sex partner?

<table>
<thead>
<tr>
<th>Type</th>
<th>Yes</th>
<th>No</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>(0/77 &amp;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anal (if a</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Q67: other</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

61. Choose the ONE statement that best describes the age of your **last NON-MAIN sex partner**:

1. ☐ My last NON-MAIN partner is 1-2 years younger than me.
2. ☐ My last NON-MAIN partner is 3-4 years younger than me.
3. ☐ My last NON-MAIN partner is 5 or more years younger than me.
4. ☐ My last NON-MAIN partner and I are the same age.
5. ☐ My last NON-MAIN partner is 1-2 years older than me.
6. ☐ My last NON-MAIN partner is 3-4 years older than me.
7. ☐ My last NON-MAIN partner is 5 or more years older than me.
8. ☐ I don’t know / I’m not sure
77 ☐ Refuse

62. Has your **last NON-MAIN sex partner**:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever been in juvenile detention?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ever been on probation?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ever been in jail?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ever served time in prison?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

63. **In the past 3 months**, how often did your last NON-MAIN sex partner drink enough alcohol to feel tipsy or woozy before having ANY kind of sex with you?

4. ☐ Every time
3. ☐ Most of the time
2. ☐ Sometimes
1. ☐ Hardly ever
0. ☐ Never
88. ☐ I don’t know/I’m not sure
77. ☐ Refuse
64. **In the past 3 months**, how often did your last NON-MAIN sex partner take any kind of drug before having ANY kind of sex with you?

4 ☐ Every time
3 ☐ Most of the time
2 ☐ Sometimes
1 ☐ Hardly ever
0 ☐ Never
88 ☐ I don’t know/I’m not sure
77 ☐ Refuse

65. **In the past 3 months**, has your last NON-MAIN sex partner had a sexually transmitted disease (STD)?

1 ☐ Yes
0 ☐ No  (Skip to Q67)
88 ☐ I don’t know/I’m not sure (Skip to Q67)
77 ☐ Refuse (Skip to Q67)

66. Was the STD called:

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chlamydia (CT)?</td>
<td>1☐</td>
<td>0☐</td>
<td>88☐</td>
<td>77☐</td>
</tr>
<tr>
<td>Gonorrhea (GC, or the clap)?</td>
<td>1☐</td>
<td>0☐</td>
<td>88☐</td>
<td>77☐</td>
</tr>
<tr>
<td>Trichomoniasis (trich)?</td>
<td>1☐</td>
<td>0☐</td>
<td>88☐</td>
<td>77☐</td>
</tr>
<tr>
<td>HIV?</td>
<td>1☐</td>
<td>0☐</td>
<td>88☐</td>
<td>77☐</td>
</tr>
<tr>
<td>Herpes?</td>
<td>1☐</td>
<td>0☐</td>
<td>88☐</td>
<td>77☐</td>
</tr>
<tr>
<td>HPV?</td>
<td>1☐</td>
<td>0☐</td>
<td>88☐</td>
<td>77☐</td>
</tr>
<tr>
<td>Syphilis?</td>
<td>1☐</td>
<td>0☐</td>
<td>88☐</td>
<td>77☐</td>
</tr>
</tbody>
</table>

**SEXUAL ABUSE**

67. Have you ever been forced to have vaginal, anal and/or oral sex with someone when you really didn’t want to?

1  ☐ Yes
0  ☐ No
77  ☐ Refuse

**PHYSICAL ABUSE**

68. Have any of your boyfriends or partners ever hit, slapped or physically hurt you on purpose?

1  ☐ Yes
0  ☐ No
99  ☐ I have never had a boyfriend or partner
77  ☐ Refuse
The next questions will ask you a little bit about vaginal douching. Vaginal douche products are any store-bought or homemade liquid that is squirted up into the vagina for any reason. Pick the answer to each question that best fits for you.

**VAGINAL DOUCHING**

69. **In the past three months**, has anybody outside Project pHree talked to you about douching?
   1. ☐ Yes
   0. ☐ No   Skip to Q71
   77. ☐ Refuse   Skip to Q71

70. Other than somebody from Project pHree, who talked to you about douching in the past three months?
   a. Mother  ☐ Yes  ☐ No  ☐ Refuse
   b. Grandmother  ☐ Yes  ☐ No  ☐ Refuse
   c. Sister or other female relative  ☐ Yes  ☐ No  ☐ Refuse
   d. Boyfriend or husband  ☐ Yes  ☐ No  ☐ Refuse
   e. Girlfriends  ☐ Yes  ☐ No  ☐ Refuse
   f. Male friend, guy at school or work, or other guy about your age  ☐ Yes  ☐ No  ☐ Refuse
   g. A doctor or nurse  ☐ Yes  ☐ No  ☐ Refuse
   h. Teacher  ☐ Yes  ☐ No  ☐ Refuse
   i. Father  ☐ Yes  ☐ No  ☐ Refuse
   j. Brother or other male relative  ☐ Yes  ☐ No  ☐ Refuse
   k. Other  ☐ Yes  ☐ No  ☐ Refuse

71. Did any of the following people ever tell you that you **needed to douche**?
   l. Mother  ☐ Yes  ☐ No  ☐ Refuse
   m. Grandmother  ☐ Yes  ☐ No  ☐ Refuse
   n. Sister or other female relative  ☐ Yes  ☐ No  ☐ Refuse
   o. Boyfriend or husband  ☐ Yes  ☐ No  ☐ Refuse
   p. Girlfriends  ☐ Yes  ☐ No  ☐ Refuse
   q. Male friend, guy at school or work, or other guy about your age  ☐ Yes  ☐ No  ☐ Refuse
   r. A doctor or nurse  ☐ Yes  ☐ No  ☐ Refuse
   s. Teacher  ☐ Yes  ☐ No  ☐ Refuse
   t. Father  ☐ Yes  ☐ No  ☐ Refuse
   u. Brother or other male relative  ☐ Yes  ☐ No  ☐ Refuse
72. Did any of the following make you think that you **needed to douche**?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Music, songs, or raps</td>
<td>1</td>
<td>0</td>
<td>77</td>
</tr>
<tr>
<td>b. Television or radio</td>
<td>1</td>
<td>0</td>
<td>77</td>
</tr>
<tr>
<td>c. Magazines or newspapers</td>
<td>1</td>
<td>0</td>
<td>77</td>
</tr>
<tr>
<td>d. The Internet</td>
<td>1</td>
<td>0</td>
<td>77</td>
</tr>
</tbody>
</table>

73. Who would you be **most likely** to listen to if he/she said you should douche? **Pick only one answer.**

1. Mother
2. Grandmother
3. Sister or other female relative
4. Boyfriend or husband
5. Girlfriends
6. Male friend, guy at school or work, or other guy about your age
7. Doctor or nurse
8. Teacher
9. Father
10. Brother or other male relative
88. DK/NS
77. Refuse

74. Have you ever used vaginal douche products?

1. Yes
2. No

0 (If never doucher, skip to Q89 (ASSIGN TO NEVER-DOUCHER GROUP))

75. Have you ever douched regularly, that is at least once a month for 3 months?

1. Yes
2. No

88. Don’t know/not sure (If never doucher, skip to Q89, else continue)
77. Refuse (If never doucher, skip to Q89, else continue)

76. How old were you when you first douched?

1. Younger than 12
2. 12
3. 13
4. 14
5. 15
6. 16
7. 17
8. 18
9. 19
10. 20
11. 21
12. 22
13. 23
14. 24
15. 25 or older
88. Don’t know/not sure
77. Refuse
77. What would you say was your **MAIN** reason for starting to douche? **Only pick one answer.**

1. To clean myself after my period ends
2. I was curious
3. I started having sex
4. I was told that I should douche
5. I think it is normal to douche
6. I thought I would smell better
7. I thought it would make me feel fresh and clean
8. I had some discharge, itching or burning
9. To prevent pregnancy
10. I knew somebody who doused (i.e. mother, sister, friend, etc.)
11. Other
88. DK/NS
77. Refuse

78. When you douche, how far into your vagina do/did you usually insert the douche nozzle?

1. As far as it can go
2. Halfway
3. An inch or less
88. Don’t know/not sure
77. Refuse
79. How confident or how sure are you that you could GO WITHOUT DOUCHING in the following situations?

<table>
<thead>
<tr>
<th></th>
<th>Very unsure</th>
<th>Not too sure</th>
<th>Neither sure or unsure</th>
<th>Sure</th>
<th>Very sure</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. After your period ends</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>b. When you think you have an odor</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>c. After having sex</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>d. Before having sex</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>e. When you have a discharge</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>f. After playing sports, dancing, or being physically active</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>g. When you have vaginal itching or burning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
<tr>
<td>h. Before having a pelvic exam or pap smear</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>77</td>
</tr>
</tbody>
</table>

80. Have you douched in the last 3 months?
1 □ Yes
0 □ No    Skip to Q86
77 □ Refuse

81. During the past 3 months, how frequently did you douche?
1 □ Less than once a month
2 □ Once a month
3 □ More than once a month
4 □ Once a week
5 □ More than once a week
88 □ Don’t know/not sure
77 □ Refuse
82. How often do you douche…

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Some of the time</th>
<th>Most of the time</th>
<th>Always</th>
<th>DK</th>
<th>Refuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. After your period ends?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>b. Before having sex?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>c. After having sex?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>d. Before having a pelvic exam or pap smear?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>e. When you think you have an odor?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>f. When you have vaginal itching or burning?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>g. When you have a discharge?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
<tr>
<td>h. After playing sports, dancing, or being physically active?</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>88</td>
<td>77</td>
</tr>
</tbody>
</table>

83. Have you ever seriously thought about stopping douching?

1  □ Yes
0  □ No  [PRECONTEMPLATION] IF Tx group skip to Q87, ELSE skip to Q89

84. Are you thinking about stopping douching in the next 6 months?

1  □ Yes
0  □ No  [PRECONTEMPLATION] IF Tx group skip to Q87, ELSE skip to Q89

85. Are you thinking about stopping douching in the next 30 days?

1  □ Yes  [PREPARATION] IF Tx group skip to Q87, ELSE skip to Q89
0  □ No  [CONTEMPLATION] IF Tx group skip to Q87, ELSE skip to Q89

86. How long ago did you completely stop douching?

1  □ Less than 6 months ago [ACTION] IF Tx group go on to Q87, ELSE skip to Q89
0  □ More than 6 months ago [MAINT.] IF Tx group go on to Q87, ELSE skip to Q89
87. How strongly do you agree with the following statements?

<table>
<thead>
<tr>
<th>Strongly disagree/disagree/neither d or a/agree/strongly agree</th>
<th>SD D N A SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DK</td>
<td>-------------</td>
</tr>
<tr>
<td>a. I feel “cleaner or fresher” when I douche</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>b. Douching has been linked to cervical cancer</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>c. Douching is good for taking away vaginal itching</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>d. Douching has been linked to infertility</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>(not being able to have a baby)</td>
<td></td>
</tr>
<tr>
<td>e. I feel more confident (or, feel more sure)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>about myself when I douche.</td>
<td></td>
</tr>
<tr>
<td>f. Douching may push bacteria that cause infection</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>up into the vagina</td>
<td></td>
</tr>
</tbody>
</table>

88. How strongly do you agree with the following statements?

<table>
<thead>
<tr>
<th>Strongly disagree/disagree/neither d or a/agree/strongly agree</th>
<th>SD D N A SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>DK</td>
<td>-------------</td>
</tr>
<tr>
<td>a. Douching helps to control vaginal odor</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>b. Young women who douche are more likely to have</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>premature births [have their babies early] than young</td>
<td></td>
</tr>
<tr>
<td>women who don’t douche</td>
<td></td>
</tr>
<tr>
<td>c. I feel more feminine when I douche</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>d. Douching may increase my risk for</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>pelvic inflammatory disease (PID)</td>
<td></td>
</tr>
<tr>
<td>e. Douching helps clean out a woman’s vagina</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>after her period</td>
<td></td>
</tr>
<tr>
<td>f. Douching can hide the signs and symptoms of a</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>sexually transmitted disease (STD)</td>
<td></td>
</tr>
</tbody>
</table>

**IF ANSWER Q88, END SURVEY → INTERVENTION MESSAGE**
This last set of questions will ask you a little bit about some health issues like exercise, diet, violence, or smoking. For each question, choose the response that best fits what you do or what you think. When you are finished, click on the “submit” button to end the survey.

EXERCISE

89. During the past 7 days, how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spend in any kind of physical activity that increases your heart rate and makes you breathe hard some of the time).
- 0 days
- 1 day
- 2 days
- 3 days
- 4 days
- 5 days
- 6 days
- 7 days
- Refuse

DIET/WEIGHT CONTROL

90. How do you describe your weight?
- Very underweight
- Slightly underweight
- About the right weight
- Slightly overweight
- Very overweight
- Refuse

91. Which of the following are you trying to do about your weight?
- Lose weight
- Gain weight
- Stay the same weight
- I am not trying to do anything about my weight
- Refuse

ALCOHOL

92. During the past 30 days, on how many days did you have at least one drink of alcohol?
- 0 days
- 1 or 2 days
- 3 to 5 days
- 6 to 9 days
- 10 to 19 days
- 20 to 29 days
- All 30 days
- Refuse
TRUST

93. Most people can be trusted
1 □ Strongly Agree
2 □ Agree
3 □ Neutral
4 □ Disagree
5 □ Strongly disagree
77 □ Refuse

94. I completely trust doctors' decisions about which medical treatments are best.
1 □ Strongly Agree
2 □ Agree
3 □ Neutral
4 □ Disagree
5 □ Strongly disagree
77 □ Refuse

VIOLENCE

95. How much of the time do you feel unsafe in your neighborhood?
0 □ Never
1 □ Sometimes
2 □ Most of the time, but not all the time
3 □ All the time
77 □ Refuse

96. How much of the time do you feel unsafe at school?
99 □ I don’t go to school
0 □ Never
1 □ Sometimes
2 □ Most of the time, but not all the time
3 □ All the time
77 □ Refuse

97. How much of the time do you feel unsafe at work?
99 □ I don’t work
0 □ Never
1 □ Sometimes
2 □ Most of the time, but not all the time
3 □ All the time
77 □ Refuse

98. Has a friend or anyone in your family ever been shot or stabbed?
1 □ Yes
0 □ No
88 □ DK/NS
77 □ Refuse
99. During the past 3 months, have you been in a physical fight?
   1  ☐ Yes
   0  ☐ No
   88 ☐ DK/NS
   77 ☐ Refuse

SMOKING

100. Do you smoke cigarettes?
   1  ☐ Yes
   0  ☐ No
   77 ☐ Refuse

Thank you! Before you leave, please talk to someone from Project pHree to schedule your next appointment.

(final assessment: Thank you for participating in Project pHree!)
APPENDIX B (IRB Approval)

Form 4: IRB Approval Form
Identification and Certification of Research
Projects Involving Human Subjects

UAB’s Institutional Review Boards for Human Use (IRBs) have an approved Federalwide Assurance with the Office for Human Research Protections (OHRP). The Assurance number is FWA00005960 and it expires on September 29, 2013. The UAB IRBs are also in compliance with 21 CFR Parts 30 and 36.

| Principal Investigator: | GRIFFIN, KERI J |
| Co-Investigator(s): | |
| Protocol Number: | X100205014 |
| Protocol Title: | The Potential Mediating Effect of Vaginal Douching on the Relationship Between Sexual Risk Behaviors and Reproductive Health Outcomes (Dissertation Application) |

The IRB reviewed and approved the above named project on 6-3-11. The review was conducted in accordance with UAB's Assurance of Compliance approved by the Department of Health and Human Services. This Project will be subject to Annual continuing review as provided in that Assurance.

This project received EXPEDITED review.
IRB Approval Date: 6-3-11
Date IRB Approval Issued: 6-3-11

Marilyn Doss, M.A.
Vice Chair of the Institutional Review Board for Human Use (IRB)

Investigators please note:

The IRB approved consent form used in the study must contain the IRB approval date and expiration date.

IRB approval is given for one year unless otherwise noted. For projects subject to annual review research activities may not continue past the one year anniversary of the IRB approval date.

Any modifications in the study methodology, protocol and/or consent form must be submitted for review and approval to the IRB prior to implementation.

Adverse Events and/or unanticipated risks to subjects or others at UAB or other participating institutions must be reported promptly to the IRB.