Prevalence and Correlates of Forced Sex Perpetration and Victimization in Botswana and Swaziland

Alexander C. Tsai, MD, PhD, Karen Leiter, JD, MPH, Michele Heisler, MD, MPA, Vincent Iacopino, MD, PhD, William Wolfe, MD, Kate Shannon, PhD, MPH, Nthabiseng Phaladze, PhD, Zakhe Hlanze, MA, and Sheri D. Weiser, MD, MPH

Objectives. We sought to identify correlates of forced sex perpetration among men and victimization among women in Botswana and Swaziland.

Methods. We surveyed a 2-stage probability sample of 2074 adults from the 5 districts of Botswana with the highest HIV prevalence rates and all 4 regions of Swaziland. We used multivariable logistic regression to identify correlates of forced sex victimization and perpetration.

Results. Lifetime prevalence rates of forced sex victimization of women were 10.3% in Botswana and 11.4% in Swaziland; among men, rates of perpetration were 3.9% in Botswana and 5.0% in Swaziland. Lifetime history of forced sex victimization was the strongest predictor of forced sex perpetration by men in Botswana (adjusted odds ratio [OR]=13.70; 95% confidence interval [CI]=4.55, 41.50) and Swaziland (adjusted OR=5.98; 95% CI=1.08, 33.10). Problem or heavy drinking was the strongest predictor of forced sex victimization among women in Botswana (adjusted OR=2.55; 95% CI=1.19, 5.49) and Swaziland (OR=14.70; 95% CI=4.53, 47.60).

Conclusions. Sexual violence in Botswana and Swaziland is a major public health and human rights problem. Ending codified gender discrimination can contribute to fundamentally changing gender norms and may be an important lever for gender-based violence prevention in these countries. (*Am J Public Health.* 2011;101:1068–1074. doi:10.2105/AJPH.2010.300060)

Male-perpetrated sexual violence against women is recognized as an important human rights concern worldwide.[1] Not only is sexual violence a serious violation of women's human rights, but it is also associated with many adverse health and psychological sequelae,[2,3] including HIV.[4,5] Sexual violence and its associated harms create a social context for gender-based power differentials that further limit women's ability to refuse sex or negotiate safe-sex practices. Policy and programming discussions about sexual violence prevention should therefore consider the gendered contexts in which sexual violence occurs.[6–10]

The United Nations' Millennium Development Goals explicitly recognize achievement of gender equality as a critical foundation for human development. Gender-based violence is a key manifestation of gender inequality. Thus, identifying its risk factors is critical for devising appropriate preventive strategies. The Sexual Violence Research Initiative and the World Health Organization have also highlighted this as a key area for research.[11–13] Some research in this area has focused on identifying risk factors for sexual violence victimization among women in South Africa,[8,14,15] Uganda,[16] and India.[4,5] A smaller body of work has focused specifically on correlates of sexual violence perpetration among men in South Africa[17–21] and India.[4]

Despite the high priority of research in this area, correlates of gender-based violence have been little studied in Botswana and Swaziland. The prevalence and correlates of sexual violence vary across countries and regions[1,7,22] with different gender-focused policies and legislation, suggesting that effective prevention strategies will be context-specific.[23] Gender inequality in Botswana and Swaziland is well documented,[24] and these countries also have some of the highest HIV prevalence rates in sub-Saharan Africa.[25] Our goal in this study was to identify correlates of forced sex victimization among women and forced sex perpetration among men using population-based survey data from Botswana and Swaziland.

METHODS

We conducted a population-based cross-sectional study between November 2004 and May 2005 among adults randomly selected from households in the 5 districts of Botswana with the highest number of HIV-infected individuals (representing a population of 725 000 in the eastern corridor of the country, out of a total population of 1.7 million)[26] and in all 4 regions of Swaziland. We used a stratified 2-stage probability sample design to select the population-based sample of households.

Within each household, 1 adult member for whom the house was his or her primary residence and who met the study's inclusion criteria was randomly selected for inclusion in the study. Up to 2 repeat attempts were made to interview that person if the initial visit was unsuccessful. No replacements were made if participants could not be reached after the repeat attempts. We did not interview more than 1 member of the household. To be eligible for the study, individuals were required to be aged 18 to 49 years, have no cognitive disabilities, be residents of the country in which the interview took place, and be fluent in English, Setswana, or SiSwati. All interviewers were country nationals.

The survey instruments for both countries inquired about multiple domains, including sexual violence, sociodemographic characteristics, health and mental health, and HIV risk behaviors. All surveys and consent forms were translated into Setswana or SiSwati and then back-translated into English to ensure that translations were accurate. All interviews were conducted in private settings, and anonymity was assured. Any study participant who appeared to be in emotional distress after

answering sensitive questions was offered the opportunity to speak to one of the study health care providers and was referred to a local health care center for counseling.

The field research team consisted of country nationals who were trained by a team of Physicians for Human Rights research staff along with local field researchers. The supervisory team had extensive expertise in applied research, human rights, gender issues, mental health, and HIV/AIDS. All local field researchers had prior survey experience, and many had expertise in HIV/AIDS work. The training included detailed instruction in the study protocols and research ethics and consisted of classroom teaching and role play followed by field practice in interviewing. Continuous field supervision was provided throughout the study. The survey team received specific training on how to enumerate households (e.g., not counting nonresidential buildings, counting each separate household on the same property separately) and how to ask sensitive questions in an appropriate, nonjudgmental manner. Full details of the survey implementation have been published elsewhere.[24]

Outcome Measures

Among women, we gathered information on 12-month history of forced sex with the question "Were you forced to have sex against your will over the past 12 months?"[11,22] Information on lifetime history of victimization among men and women was obtained with the question "In your lifetime, have you ever been forced to have sex when you did not want to?" Among men, the question "Did you have sex with others when they did not want to over the past 12 months?" was used to gather data on perpetration of forced sex in the preceding year.[19,20] In the Swaziland survey, men were also asked a question about lifetime forced sex perpetration: "In your lifetime, have you ever had sex with someone when they did not want to?" This survey was implemented as a study of gender equity in general and therefore did not make use of multiple questions to inquire about different aspects of sexual violence.

Previous research has described how the social context in which sex occurs itself shapes women's risk for sexual violence, and sexual violence takes many forms (in addition to the act of forced sex).[8,11] Therefore, in supplementary analyses focusing on women we also examined correlates of lack of control in sexual decision-making, which was defined according to a Likert scale–based measure in which women described the extent to which their partners made decisions about when to have sex. Women were categorized as lacking control in sexual decision making if they stated that their partners "usually" or "always" made the decisions about when to have sex.

Key Covariates

Our decisions about which risk factors to investigate were guided by an integrated ecological framework that has been proposed for conceptualizing the etiology of gender-based violence[27] as well as consideration of previously identified risk factors from other developing country settings.[6,8,10,15,17–20] Sociodemographic variables included age, marital status (married, living with partner, other), educational level (high school vs less than high school), monthly household income (more than vs less than 5000 pula or emalangeni [approximately US $800–$1000]), and area of residence (urban vs rural). On the basis of prior research linking food insufficiency to risky sexual behaviors among women,[28] we included food insufficiency as a potential risk factor. The food insufficiency survey question was adapted from an analysis of data from the Third National Health and Nutrition Examination Survey,[29] in which food insufficiency was defined according to a Likert scale–based measure in which participants reported whether they "sometimes" or "often" had not had enough food to eat over the previous 12 months.

We defined problem drinking as consumption of 8 to 14 drinks per week for women and 15 to 21 drinks per week for men, and we defined heavy drinking as consumption of more than 14 drinks per week for women and more than 21 drinks per week for men.[30] We assessed self-reported health status on a Likert scale in which the categories were fair or poor and other.

We also included 3 variables related to risky sexual behaviors over the preceding 12 months: having had multiple partners (vs 1 or none), having had transactional sex, and having had an intergenerational sexual relationship. The latter 2 variables were defined differently for men and women. Women were asked whether they had exchanged sex for money, food, or other resources and whether they had been involved in a sexual relationship with someone 10 or more years older. Men were asked whether they had paid for or provided resources in exchange for sex and whether they had been involved in a sexual relationship with someone 10 or more years younger. Finally, we also included lifetime history of forced sex victimization. We did not have further data on the sex of the perpetrator.

Statistical Analysis

We used Stata version 11 (StataCorp LP, College Station, TX) to conduct our statistical analyses. Using univariable logistic regression, we calculated unadjusted odds ratios (ORs) to estimate the degree of association between each of the risk factors and outcomes assessed. We fit separate models by country to identify potential country-level differences, and we also fit pooled models with a binary indicator variable equal to 1 for residence in Botswana. Risk factors significant at $P<.25$ in univariable analyses were identified as candidates for multivariable logistic regression analyses,[31] and the final models retained only variables significant at $P<.05$.

Because of small cell sizes caused by the rarity of the outcome variables, we encountered the problem of separation, that is, covariates perfectly predicting the outcome of interest and therefore yielding infinitely large or infinitely small parameter estimates. To eliminate this small-sample bias, we used the penalized-likelihood correction proposed by Firth[32–35] when fitting the logistic regression models.

RESULTS

In Botswana, 1433 individuals were randomly selected and approached to take part in the study. Of these individuals, 46 (3.2%) could not be located after 2 repeat visits, 78 (5.4%) refused to take part or did not meet the study criteria, and 41 (2.9%) were unable to complete the survey. We obtained completed surveys from 613 men and 654 women in Botswana (88.4% response rate). In Swaziland, 876 men and women were randomly selected and approached to take part in the study. Of these individuals, 35 (4.0%) could not be

located after 2 repeat visits, 32 (3.7%) refused to take part or did not meet the criteria, and 3 (0.3%) were unable to complete the survey. We obtained completed surveys from 398 men and 407 women in Swaziland (91.9% response rate).

Among women, 12-month prevalence rates of forced sex victimization were 4.6% in Botswana and 4.7% in Swaziland (Table 1). Lifetime prevalence of forced sex victimization was 10.3% in Botswana and 11.4% in Swaziland. Among men, lifetime prevalence rates of forced sex victimization were 3.9% in Botswana and 5.0% in Swaziland. The 12-month prevalence of forced sex perpetration among men was 4.2% in Botswana and 1.8% in Swaziland. In Swaziland, the lifetime prevalence of forced sex perpetration among men was 7.4%. Other characteristics of the sample are provided in Table 2.

History of forced sex victimization was strongly correlated with past-year perpetration of forced sex by men in both Botswana (adjusted OR=13.70; 95% confidence interval [CI]=4.55, 41.50) and Swaziland (adjusted OR=5.98; 95% CI=1.08, 33.10; Table 3). Engaging in transactional sex during the past year was also consistently associated with perpetration of forced sex among men in Botswana (adjusted OR=2.63; 95% CI=1.08, 6.40) and Swaziland (adjusted OR=7.53; 95% CI=1.25, 45.20).

Other HIV risk behaviors were less consistently associated with perpetration of forced sex. Having multiple sexual partners during the past year was a statistically significant correlate of forced sex perpetration by men in Botswana, whereas having an intergenerational sexual relationship during the past year was statistically significant only in Swaziland. When both country samples were pooled for men, other factors did not emerge as statistically significant; however, the significance levels for factors identified in the country-specific analyses narrowed. The country-level coefficient was of borderline statistical significance (adjusted OR=2.14; 95% CI=0.89, 5.15).

Problem or heavy drinking was the risk factor most strongly correlated with past-year victimization among women in Botswana (adjusted OR=2.55; 95% CI=1.19, 5.49; Table 4). Food insufficiency (adjusted OR=2.40; 95% CI=1.03, 5.57) and having multiple

TABLE 1—Past-Year and Lifetime Prevalence of Forced Sex Perpetration by Men and Forced Sex Victimization of Men and Women in Botswana and Swaziland, 2004–2005

	Botswana, No. (%; 95% CI)	Swaziland, No. (%; 95% CI)
Forced sex perpetration		
Past 12 mo	26 (4.3; 2.7, 5.9)	7 (1.8; 0.5, 3.1)
Lifetime	. . .[a]	29 (7.4; 4.8, 10.0)
Forced sex victimization		
Past 12 mo: women	30 (4.6; 3.0, 6.2)	19 (4.7; 2.6, 6.8)
Lifetime: women	67 (10.3; 7.9, 12.6)	46 (11.4; 8.3, 14.5)
Lifetime: men	24 (3.9; 2.4, 5.5)	20 (5.0; 2.9, 7.2)

Note. CI = confidence interval.
[a]Question was not asked of male participants in the Botswana survey.

TABLE 2—Characteristics of Male and Female Study Participants: Botswana and Swaziland, 2004–2005

	Men, Mean ±SD or No. (%)	Women, Mean ±SD or No. (%)
	Botswana[a]	
Age, y	31.3 ±11.3	31.6 ±11.3
Married	105 (17.2)	136 (20.8)
Living with partner	149 (24.4)	191 (29.3)
Completed high school	335 (55.3)	349 (53.7)
Monthly household income > 5000 pula	114 (18.6)	88 (13.6)
Food insufficiency	113 (18.5)	184 (28.2)
Urban residence	456 (74.4)	478 (73.1)
Problem or heavy drinking	238 (39.3)	163 (25.1)
Fair or poor self-reported health status	191 (31.4)	179 (27.5)
Multiple sexual partners, last 12 mo	246 (40.1)	164 (25.1)
Transactional sex, last 12 mo	8 (1.3)	45 (6.9)
Intergenerational sexual relationship, last 12 mo	55 (9.1)	116 (17.8)
	Swaziland[b]	
Age, y	29.1 ±8.6	29.8 ±9.0
Married	111 (27.9)	156 (38.4)
Living with partner	75 (19.0)	74 (18.5)
Completed high school	189 (47.5)	147 (36.1)
Monthly household income > 5000 emalangeni	66 (16.6)	42 (10.3)
Food insufficiency	113 (28.5)	154 (38.2)
Urban residence	192 (48.2)	221 (54.3)
Problem or heavy drinking	51 (13.0)	14 (3.5)
Fair or poor self-reported health status	126 (31.7)	182 (44.7)
Multiple sexual partners, last 12 mo	157 (39.5)	33 (8.1)
Transactional sex, last 12 mo	5 (1.3)	5 (1.2)
Intergenerational sexual relationship, last 12 mo	49 (12.5)	51 (12.6)

Note. 5000 pula or emalangeni is roughly equivalent to US $800–$1000. Based on an analysis of data from the Third National Health and Nutrition Examination Survey,[29] food insufficiency was defined according to a Likert scale–based measure in which participants reported whether they "sometimes" or "often" had not had enough food to eat over the previous 12 months. Problem drinking was defined as consumption of 8 to 14 drinks per week for women and 15 to 21 drinks per week for men, and heavy drinking was defined as consumption of more than 14 drinks per week for women and more than 21 drinks per week for men.[30]
[a]Men, n = 604; women, n = 649.
[b]Men, n = 393; women, n = 405.

TABLE 3—Risk Factors for Forced Sex Perpetration by Men in the Preceding 12 Months: Botswana and Swaziland, 2004–2005

	Botswana (n = 604)		Swaziland (n = 393)		Pooled Analysis (n = 997)	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age, y	1.01 (0.97, 1.04)		1.01 (0.94, 1.10)		1.01 (0.98, 1.05)	
Married	0.96 (0.34, 2.71)		1.20 (0.26, 5.43)		0.87 (0.37, 2.08)	
Living with partner	1.19 (0.50, 2.81)		1.92 (0.42, 8.74)		1.35 (0.63, 2.90)	
Completed high school	2.47* (1.00, 6.08)		0.25 (0.04, 1.47)		1.50 (0.73, 3.06)	
Monthly household income >5000 pula or emalangeni	0.87 (0.31, 2.44)		0.32 (0.02, 5.81)		0.69 (0.25, 1.90)	
Food insufficiency	1.12 (0.43, 2.92)		0.57 (0.10, 3.44)		0.81 (0.34, 1.93)	
Urban residence	1.13 (0.46, 2.78)		16.70 (0.94, 297)		1.87 (0.85, 4.11)	
Problem or heavy drinking	3.49** (1.52, 7.99)		3.17 (0.69, 14.60)		3.89*** (1.93, 7.85)	
Fair or poor self-reported health status	1.27 (0.56, 2.88)		4.85* (1.07, 22.00)		1.73 (0.86, 3.49)	
Multiple sexual partners, last 12 mo	10.8*** (3.48, 33.7)	9.41*** (2.91, 30.50)	6.97* (1.17, 41.60)		10.60*** (3.89, 28.70)	8.86*** (3.19, 24.60)
Transactional sex, last 12 mo	5.26*** (2.32, 11.90)	2.63* (1.08, 6.40)	10.80** (2.21, 52.50)	7.53* (1.25, 45.20)	7.04*** (3.37, 14.70)	3.13** (1.39, 7.06)
Intergenerational sexual, last 12 mo relationship	2.67* (1.00, 7.13)		9.79** (2.34, 41.00)	5.97* (1.36, 26.30)	3.56*** (1.63, 7.75)	
History of forced sex victimization	12.30*** (4.66, 32.30)	13.70*** (4.55, 41.50)	8.96** (1.86, 43.10)	5.98* (1.08, 33.10)	10.10*** (4.44, 23.00)	11.90*** (4.69, 30.00)
Residence in Botswana						2.14 (0.89, 5.15)

Note. CI = confidence interval; OR = odds ratio. 5000 pula or emalangeni is roughly equivalent to US $800–$1000. Food insufficiency was defined based on analysis of data from the Third National Health and Nutrition Examination Survey,[29] in which food insufficiency was defined according to a Likert scale–based measure in which participants reported whether they "sometimes" or "often" had not had enough food to eat over the previous 12 months. Problem drinking was defined as consumption of 8 to 14 drinks per week for women and 15 to 21 drinks per week for men, and heavy drinking was defined as consumption of more than 14 drinks per week for women and more than 21 drinks per week for men.
*$P < .05$; **$P < .01$; ***$P < .001$.

sexual partners (adjusted OR=2.83; 95% CI=1.17, 6.84) were also associated with past-year victimization. Among women in Swaziland, problem (or heavy) drinking was the only variable identified as a statistically significant risk factor (OR=14.70; 95% CI=4.53, 47.60). Pooled analyses among women in both countries confirmed these associations; the country-level coefficient was of borderline statistical significance (adjusted OR=0.55; 95% CI= 0.25, 1.09), and greater household income was also found to be associated with past-year victimization (adjusted OR=2.67; 95% CI=1.20, 5.95).

In supplemental analyses, we identified correlates of lack of control in sexual decision-making. Food insufficiency during the past year was a statistically significant risk factor for lack of control in sexual decision-making among women in Botswana (adjusted OR=1.62; 95% CI=1.07, 2.44) and Swaziland (adjusted OR=1.67; 95% CI=1.06, 2.64). Involvement in a sexual relationship with someone 10 or more years older during the past year was also consistently associated with elevated odds of lack of control for women in Botswana (adjusted OR=2.79; 95% CI=1.77, 4.41) and Swaziland (adjusted OR=2.21; 95% CI=1.19, 4.10). In addition, having multiple sexual partners during the past year was a risk factor among women in Botswana (adjusted OR=2.00; 95% CI=1.32, 3.04), whereas being married was a risk factor among women in Swaziland (adjusted OR=1.74; 95% CI=1.11, 2.74).

DISCUSSION

Using population-based survey data from 2 countries with some of the highest HIV prevalence rates in the world, we documented a high lifetime prevalence of forced sex victimization among women in both countries. Sexual victimization was not limited to women, however, and men who reported a lifetime history of sexual victimization were more likely to report having perpetrated sexual violence. Although we confirmed other previously reported findings such as the association between alcohol use and victimization of women,[28] we found that variables related to women's unequal position in Botswana and Swaziland, including food insufficiency, were also risk factors. Thus, our findings highlight interconnections between sexual violence and social forces that should be addressed in policies and programs targeted at preventing gender-based violence.

More than 10% of women in Botswana and Swaziland had been sexually victimized during their lifetime, and approximately half of these women had been sexually victimized in the preceding year. Data on the national scope of this problem in Botswana have not been reported previously, and only 1 published study has reported on the scope of the problem in Swaziland. In that investigation, a nationally representative study on the sequelae of sexual violence among girls and young women aged 13 to 24 years, the lifetime prevalence of sexual violence was 33.2% when a broad definition of sexual violence (one that also included coerced sex, attempted unwanted sex,

TABLE 4—Risk Factors for Forced Sex Victimization of Women in the Preceding 12 Months: Botswana and Swaziland, 2004–2005

	Botswana (n = 649)		Swaziland (n = 405)		Pooled Analysis (n = 1054)	
	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
Age, y	1.01 (0.98, 1.04)		1.02 (0.97, 1.07)		1.01 (0.99, 1.04)	
Married	0.46 (0.15, 1.43)		1.81 (0.73, 4.45)		0.96 (0.51, 1.82)	
Living with partner	1.68 (0.80, 3.52)		1.27 (0.43, 3.75)		1.49 (0.81, 2.74)	
Completed high school	0.85 (0.41, 1.75)		1.05 (0.42, 2.66)		0.92 (0.52, 1.62)	
Monthly household income > 5000 pula or emalangeni	1.81 (0.73, 4.44)		1.86 (0.56, 6.18)		1.75 (0.84, 3.65)	2.67* (1.20, 5.95)
Food insufficiency	3.09** (1.49, 6.39)	2.81** (1.35, 5.85)	0.70 (0.25, 1.95)		1.77 (0.99, 3.18)	1.95* (1.03, 3.70)
Urban residence	0.53 (0.25, 1.12)		1.49 (0.59, 3.76)		0.76 (0.42, 1.36)	
Problem or heavy drinking	3.64*** (1.75, 7.55)	2.55* (1.19, 5.49)	14.70*** (4.53, 47.60)	14.70*** (4.53, 47.60)	4.06*** (2.26, 7.29)	3.72*** (1.84, 7.50)
Fair or poor self-reported health status	1.38 (0.64, 2.96)		1.12 (0.46, 2.77)		1.25 (0.70, 2.24)	
Multiple sexual partners, last 12 mo	4.15*** (1.99, 8.65)	3.01** (1.39, 6.48)	3.51* (1.15, 10.70)		3.55*** (1.98, 6.35)	2.82** (1.45, 5.48)
Transactional sex, last 12 mo	4.93*** (2.03, 12.00)		6.66 (0.95, 46.50)		4.75*** (2.13, 10.60)	
Intergenerational sexual, last 12 mo relationship	3.94*** (1.88, 8.27)		2.07 (0.69, 6.16)		3.11*** (1.69, 5.70)	
Residence in Botswana						0.55 (0.27, 1.09)

Note. OR = odds ratio; CI = confidence interval. 5000 pula or emalangeni is roughly equivalent to US $800–$1000. Food insufficiency was defined based on analysis of data from the Third National Health and Nutrition Examination Survey,[29] in which food insufficiency was defined according to a Likert scale–based measure in which participants reported whether they "sometimes" or "often" had not had enough food to eat over the previous 12 months. Problem drinking was defined as consumption of 8 to 14 drinks per week for women and 15 to 21 drinks per week for men, and heavy drinking was defined as consumption of more than 14 drinks per week for women and more than 21 drinks per week for men.
*$P < .05$; **$P < .01$; ***$P < .001$.

and unwanted touching) was used.[36] When the definition was narrowed to include forced sex only, the lifetime prevalence was 4.9%. This rate was lower than the lifetime prevalence of 11.3% among women in our Swaziland sample; however, this is not unexpected given the higher mean age of the participants in our study.

A second important finding of our study is that nearly 5% of men in Botswana and Swaziland reported having been sexually victimized in their lifetimes, and this was associated with forced sex perpetration even after other potentially influential variables, such as risky alcohol use, were taken into account. Although the World Health Organization has identified sexual violence against men and boys as "a significant problem," the issue "has largely been neglected in research."[12(p154)] An analysis of data from male volunteers in a cluster-randomized HIV prevention trial in South Africa showed that perpetrators of sexual violence were more likely to have experienced childhood physical and sexual abuse.[19] This finding is consistent with previous research on childhood experiences of violence and subsequent perpetration of intimate partner violence during adulthood.[37] Our results thus extend these findings by suggesting an important impact of unaddressed sexual violence among boys and men in Botswana and Swaziland.

A third primary finding of our study is that several factors related to women's inferior and unequal position in Botswana and Swaziland societies were associated with past-year sexual violence victimization. Women who had experienced food insufficiency during the past year were more likely to have been sexually victimized and were more likely to report that they lacked control in sexual decision-making. Given that food insufficiency has also been associated with transactional sex and other HIV transmission risk behaviors among women,[28] our findings emphasize the potential for economic empowerment and hunger alleviation to be integral components of gender-based violence prevention programs worldwide. In Swaziland, food insufficiency was also found to be a risk factor for lack of sexual control, along with marital status. This finding is consistent with how Swazi women are disadvantaged by customary marriage rites that tie women's social status to their reproductive capabilities and by customary laws that permit polygamy, as well as by property and other civil laws that place them at disadvantaged social status.[24]

Our finding that increased household wealth was associated with greater odds of victimization among women was unexpected and was inconsistent with the results of prior studies. This association is probably explained by the fact that there was greater reporting of sexual violence in that subpopulation, perhaps because women in wealthier households were more likely to recognize sexual violence as such or felt more comfortable discussing this sensitive topic with field interviewers.

Taken together, our findings suggest multiple targets for primary prevention of gender-based violence. Our study demonstrates that sexual victimization of women in Botswana and Swaziland occurs in a male-dominated economic environment characterized by gender norms that further increase women's susceptibility to sexual violence. Women's lack of control in sexual decision-making and compromised ability to negotiate safe sex practices also heighten their susceptibility to HIV.[38] These features strongly argue for addressing sexual violence from human rights and public health perspectives.[10,11]

With regard to human rights, gender-discriminatory norms resulting from gender biases in the customary and civil laws of Botswana and Swaziland are well documented[24] and may be amenable to legal reform. For example, legislative interventions have been shown to induce durable changes in some aspects of gender bias in India.[39] Public health interventions should be considered especially in countries with high HIV prevalence rates. For example, in rural South Africa a cluster-randomized trial of a microfinance intervention combined with participatory training on HIV prevention, gender norms, domestic violence, and sexuality reduced intimate partner violence[40] as well as risky sexual behaviors.[41] However, our study also highlights the need for targeting sexual victimization of men as well as women as a strategy to prevent subsequent perpetration of sexual violence.

Limitations

Our findings should be considered in light of the methodological constraints of the study. First, because the risk factors we investigated were all measured concurrently with the outcome, we are by definition limited in our ability to make causal inferences. We are also unable to determine whether these risk factors are predictive of victimization occurring over women's lifetimes. Second, privacy and anonymity were assured by a field research staff that had extensive expertise in applied research, human rights, gender issues, mental health, and HIV/AIDS. However, in light of the high prevalence of sexual violence reported in other sub-Saharan African settings,[1,8,16,22] we believe participants probably underreported their experiences of sexual violence, especially in household settings where women faced fear of reprisal by male partners. This limitation, common to studies in this area of research,[10] suggests that our prevalence estimates are likely underestimates.

Third, small cell sizes weakened our ability to identify statistically significant correlates of forced sex, but this strengthens our confidence in the associations identified. Related to this limitation, we cannot discount the possibility that response bias affected our results. Compared with data from demographic and health surveys conducted in these countries,[42,43] women aged 40 to 49 years were relatively overrepresented in our Botswana sample, and women younger than 20 years were relatively underrepresented in our Swaziland sample. Survey data were collected only from people who consented to participate in the study, so response rates disaggregated by sex were unavailable. If, for example, women who had recently been victimized were more likely to refuse participation, our prevalence estimates would be downward biased. However, the response rate was high overall (approximately 90%), suggesting that any potential bias would have limited effects.

A significant risk factor identified in previous work that was not measured in our study was physical violence. We focused specifically on forced sex and did not explicitly address other forms of gender-based violence, including physical violence, sexual exploitation caused by economic vulnerability, coerced sex, and unwanted sex caused by threats.[8,11] Because the original survey was intended as a general study of gender equity (rather than as a specific study of sexual violence), the survey instrument did not implement some of the research techniques that are standardized in this field for maximizing reporting of sexual violence by women, such as using multiple questions to ask about sexual violence and providing more than one opportunity to report sexual violence. As has been shown previously in Swaziland, broader construals of gender-based violence may yield larger and more accurate prevalence estimates.[36]

The findings related to victimization of men are subject to 2 additional limitations. First, our survey instrument did not clarify whether the victimization occurred during childhood or adulthood. Furthermore, previous qualitative work from South Africa has shown that the meaning of men's accounts of forced sex victimization differs considerably depending on whether the perpetrator was a man or woman,[44] and therefore whether the 2 sets of experiences should be included in the same category is questionable. Future research should confirm our findings with more specific quantitative and qualitative data on the sex of the perpetrator and the timing and context of the encounter.

Conclusions

Sexual violence in Botswana and Swaziland is a major public health and human rights problem. Risk of sexual violence among women is significantly compounded by the high prevalence of HIV in these 2 countries. The impact of past victimization on recent perpetration suggests that gender-transformative work with men and boys[45] may have lasting effects by preventing the long-term psychological sequelae that perpetuate further cycles of violence. However, interventions should not only target the individual psychological dimensions of risk, interpersonal relationships, and behavior. Effectively ending codified gender discrimination in civil, political, and economic rights can also play a role in fundamentally changing gender norms and may be an important lever for gender-based violence prevention in these countries. ■

About the Authors

At the time of the study, Alexander C. Tsai was with the Department of Psychiatry, University of California, San Francisco. Karen Leiter was with Physicians for Human Rights, Cambridge, MA. Michele Heisler is with the Veterans Affairs Ann Arbor Health System and Department of Internal Medicine, School of Medicine, University of Michigan, Ann Arbor. Vincent Iacopino is with the Physicians for Human Rights. William Wolfe is with the Department of Psychiatry, University of California, San Francisco. Kate Shannon is with the British Columbia Centre for Excellence in HIV/AIDS, Division of AIDS, Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada. Nthabiseng Phaladze is with the School of Nursing, University of Botswana, Gaborone, Botswana. Zakhe Hlanze is with the Women and Law in Southern Africa Research Trust, Mbabane, Swaziland. Sheri D. Weiser is with the Division of HIV/AIDS and Center for AIDS Prevention Studies, San Francisco General Hospital, University of California, San Francisco.

Correspondence should be sent to Alexander C. Tsai, Robert Wood Johnson Health & Society Scholars Program, Harvard Center for Population and Development Studies, 9 Bow St, Cambridge, MA 02138 (e-mail: atsai@hsph.harvard.edu). Reprints can be ordered at http://www.ajph.org by clicking the "Reprints/Eprints" link.

This article was accepted October 31, 2010.

Contributors

A. C. Tsai contributed to the conception and design of the study, analysis and interpretation of the data, and drafting and revision of the article. K. Leiter, W. Wolfe, M. Heisler, and V. Iacopino contributed to the conception and design of the study, acquisition and interpretation of the data, and revision of the article. K. Shannon contributed to analysis and interpretation of the data and revision of the article. N. Phaladze and Z. Hlanze contributed to the conception and design of the study, acquisition of the data, and revision of the article. S. D. Weiser contributed to the conception and design of the study; acquisition, analysis, and interpretation of the data; and drafting and revision of the article.

Acknowledgments

This study was funded by Physicians for Human Rights and the Tides Foundation. Alexander C. Tsai received support from the National Institute of Mental Health (NIMH) Institutional Training Award (R25 MH-060482), and Sheri Weiser received support from an NIMH grant (K23 MH079713-01). Michele Heisler is a Department of Veterans Affairs Health Services Research and Development Service Career Development Awardee.

Alexander C. Tsai presented a preliminary version of this study at the 1st Research Forum, Sexual Violence Research Initiative, Johannesburg, South Africa, July 2009.

We thank the numerous research design and data collection team members, as well as the men and women who participated in this study. We also thank Frank Davidoff for critically reading the article and providing invaluable suggestions for revision.

Note. The funders had no role in the study design, data collection and analysis, or preparation of the article.

Human Participant Protection

All study procedures were approved by the Committee on Human Research at the University of California, San Francisco. Study procedures in Botswana were approved by the Botswana Ministry of Health Research and Development Committee. Study procedures in Swaziland were approved by an ethics review board (composed of key stakeholders in Swaziland from the government, the University of Swaziland, and local nongovernmental organizations) convened by Physicians for Human Rights, as well as by the chair of the newly reconstituted Ethics Committee of the Swaziland Ministry of Health. Written consent was obtained from participants in Botswana according to local institutional review board regulations. Oral consent was obtained from participants in Swaziland (according to World Health Organization guidelines) because this form of consent was thought to be more culturally appropriate by in-country investigators given the country's high rates of illiteracy.

References

1. Watts C, Zimmerman C. Violence against women: global scope and magnitude. *Lancet.* 2002;359(9313):1232–1237.

2. Campbell JC. Health consequences of intimate partner violence. *Lancet.* 2002;359(9314):1331–1336.

3. Ellsberg M, Jansen HA, Heise L, Watts CH, Garcia-Moreno C. Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: an observational study. *Lancet.* 2008;371(9619):1165–1172.

4. Decker MR, Seage GR III, Hemenway D, et al. Intimate partner violence functions as both a risk marker and risk factor for women's HIV infection: findings from Indian husband-wife dyads. *J Acquir Immune Defic Syndr.* 2009;51(5):593–600.

5. Silverman JG, Decker MR, Saggurti N, Balaiah D, Raj A. Intimate partner violence and HIV infection among married Indian women. *JAMA.* 2008;300(6):703–710.

6. Jewkes R, Levin J, Penn-Kekana L. Risk factors for domestic violence: findings from a South African cross-sectional study. *Soc Sci Med.* 2002;55(9):1603–1617.

7. Jewkes R. Intimate partner violence: causes and prevention. *Lancet.* 2002;359(9315):1423–1429.

8. Jewkes R, Abrahams N. The epidemiology of rape and sexual coercion in South Africa: an overview. *Soc Sci Med.* 2002;55(7):1231–1244.

9. Zierler S, Krieger N. Reframing women's risk: social inequalities and HIV infection. *Annu Rev Public Health.* 1997;18:401–436.

10. Heise LL, Raikes A, Watts CH, Zwi AB. Violence against women: a neglected public health issue in less developed countries. *Soc Sci Med.* 1994;39(9):1165–1179.

11. Garcia-Moreno C, Jansen HA, Ellsberg M, Watts C. *WHO Multi-Country Study on Women's Health and Domestic Violence Against Women: Initial Results on Prevalence, Health Outcomes, and Women's Response.* Geneva, Switzerland: World Health Organization; 2005.

12. Krug E, Dahlberg LL, Mercy JA, Zwi A, Lozano R. *World Report on Violence and Health.* Geneva, Switzerland: World Health Organization; 2002.

13. *Violence Against Women and HIV/AIDS: Setting the Research Agenda.* Geneva, Switzerland: World Health Organization; 2000.

14. Jewkes R, Penn-Kekana L, Levin J, Ratsaka M, Schrieber M. Prevalence of emotional, physical and sexual abuse of women in three South African provinces. *S Afr Med J.* 2001;91(5):421–428.

15. Jewkes R, Levin J, Mbananga N, Bradshaw D. Rape of girls in South Africa. *Lancet.* 2002;359(9303):319–320.

16. Koenig MA, Lutalo T, Zhao F, et al. Coercive sex in rural Uganda: prevalence and associated risk factors. *Soc Sci Med.* 2004;58(4):787–798.

17. Gupta J, Silverman JG, Hemenway D, Acevedo-Garcia D, Stein DJ, Williams DR. Physical violence against intimate partners and related exposures to violence among South African men. *CMAJ.* 2008;179(6):535–541.

18. Dunkle KL, Jewkes RK, Nduna M, et al. Perpetration of partner violence and HIV risk behaviour among young men in the rural Eastern Cape, South Africa. *AIDS.* 2006;20(16):2107–2114.

19. Jewkes R, Dunkle K, Koss MP, et al. Rape perpetration by young, rural South African men: prevalence, patterns and risk factors. *Soc Sci Med.* 2006;63(11):2949–2961.

20. Abrahams N, Jewkes R, Hoffman M, Laubsher R. Sexual violence against intimate partners in Cape Town: prevalence and risk factors reported by men. *Bull World Health Organ.* 2004;82(5):330–337.

21. Jewkes R, Sikweyiya Y, Morrell R, Dunkle K. *Understanding Men's Health and Use of Violence: Interface of Rape and HIV in South Africa.* Pretoria, South Africa: Medical Research Council of South Africa; 2009.

22. Garcia-Moreno C, Jansen HA, Ellsberg M, Heise L, Watts CH. Prevalence of intimate partner violence: findings from the WHO multi-country study on women's health and domestic violence. *Lancet.* 2006;368(9543):1260–1269.

23. Garcia-Moreno C. Dilemmas and opportunities for an appropriate health-service response to violence against women. *Lancet.* 2002;359(9316):1509–1514.

24. *Epidemic of Inequality: Women's Rights and HIV/AIDS in Botswana and Swaziland.* Cambridge, MA: Physicians for Human Rights; 2007.

25. Gouws E, Stanecki KA, Lyerla R, Ghys PD. The epidemiology of HIV infection among young people aged 15–24 years in southern Africa. *AIDS.* 2008;22(suppl 4):S5–S16.

26. *Botswana 2003 Second Generation HIV/AIDS Surveillance.* Gaborone, Botswana: National AIDS Coordinating Agency; 2003.

27. Heise LL. Violence against women: an integrated, ecological framework. *Violence Against Women.* 1998;4(3):262–290.

28. Weiser SD, Leiter K, Bangsberg DR, et al. Food insufficiency is associated with high-risk sexual behavior among women in Botswana and Swaziland. *PLoS Med.* 2007;4(10):1589–1597.

29. Alaimo K, Olson CM, Frongillo EA. Family food insufficiency, but not low family income, is positively associated with dysthymia and suicide symptoms in adolescents. *J Nutr.* 2002;132(4):719–725.

30. *The Physician's Guide to Helping Patients With Alcohol Problems.* Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism; 1995.

31. Hosmer D, Lemeshow S. *Applied Logistic Regression.* New York, NY: John Wiley & Sons Inc; 2000.

32. Zorn C. A solution to separation in binary response models. *Polit Anal.* 2005;13(2):157–170.

33. Heinze G, Ploner M. Fixing the nonconvergence bug in logistic regression with SPLUS and SAS. *Comput Methods Programs Biomed.* 2003;71(2):181–187.

34. Heinze G, Schemper M. A solution to the problem of separation in logistic regression. *Stat Med.* 2002;21(16):2409–2419.

35. Firth D. Bias reduction of maximum likelihood estimates. *Biometrika.* 1993;80(1):27–38.

36. Reza A, Breiding MJ, Gulaid J, et al. Sexual violence and its health consequences for female children in Swaziland: a cluster survey study. *Lancet.* 2009;373(9679):1966–1972.

37. Gil-Gonzalez D, Vives-Cases C, Ruiz MT, Carrasco-Portino M, Alvarez-Dardet C. Childhood experiences of violence in perpetrators as a risk factor of intimate partner violence: a systematic review. *J Public Health (Oxf).* 2008;30(1):14–22.

38. Dunkle KL, Jewkes RK, Brown HC, Gray GE, McIntryre JA, Harlow SD. Gender-based violence, relationship power, and risk of HIV infection in women attending antenatal clinics in South Africa. *Lancet.* 2004;363(9419):1415–1421.

39. Beaman L, Chattopadhyay R, Duflo E, Pande R, Topalova P. Powerful women: does exposure reduce bias? *Q J Econ.* 2009;124(4):1497–1540.

40. Pronyk PM, Hargreaves JR, Kim JC, et al. Effect of a structural intervention for the prevention of intimate-partner violence and HIV in rural South Africa: a cluster randomised trial. *Lancet.* 2006;368(9551):1973–1983.

41. Pronyk PM, Kim JC, Abramsky T, et al. A combined microfinance and training intervention can reduce HIV risk behaviour in young female participants. *AIDS.* 2008;22(13):1659–1665.

42. *Botswana Family Health Survey II: 1988.* Gaborone, Botswana: Central Statistics Office and Institute for Resource Development/Macro Systems Inc; 1989.

43. *Swaziland Demographic and Health Survey 2006–07.* Mbabane, Swaziland: Central Statistical Office and Macro International Inc; 2008.

44. Sikweyiya Y, Jewkes R. Force and temptation: contrasting South African men's accounts of coercion into sex by men and women. *Cult Health Sex.* 2009;11(5):529–541.

45. Dunkle KL, Jewkes R. Effective HIV prevention requires gender-transformative work with men. *Sex Transm Infect.* 2007;83(3):173–174.