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The Association of Depressive Symptoms and Intimate Partner Violence Against Women in Northwestern Botswana

Francis Barchi, MBE, PhD,[1]
Samantha C. Winter, MSc, PhD,[1]
Danielle Dougherty, MD,[2]
Peggie Ramaphane, BS,[3]
and Phyllis L. Solomon, PhD[4]

Abstract

Although links between mental health and intimate partner violence (IPV) have been discussed extensively in the scholarly literature, little empirical data exist about these phenomena in Botswana. This study addressed this gap by examining the nature, extent, and risk factors associated with symptoms of major depressive disorders (MDD) using cross-sectional data collected in 2009-2010 in northwestern Botswana. A random sample of 469 women participated in semistructured interviews about their lives, health, and experiences with violence. Thirty-one percent of respondents were found to meet the symptom criteria for MDD. Factors associated

[1]The State University of New Jersey, New Brunswick, USA
[2]Michigan State University, Flint, USA
[3]Women Against Rape, Maun, Botswana
[4]University of Pennsylvania, Philadelphia, USA

Corresponding Author:
Francis Barchi, Edward J. Bloustein School of Planning and Public Policy, Rutgers, The State University of New Jersey, 33 Livingston Avenue, 33 Livingston Avenue, New Brunswick, NJ 08901, USA.
Email: francis.barchi@rutgers.edu

with MDD included emotional or physical violence by an intimate partner and being in a relationship in which both partners consumed alcohol. One in five women reported a recent experience of emotional violence, while 37% of respondents reported recent physical IPV. Women who have experienced emotional or physical IPV in the last 12 months have 89% and 82% greater odds, respectively, of having symptoms of MDD ($p < .05$) than women who have not recently experienced either form of violence. Women in relationships in which both partners consumed alcohol had more than twice the odds of MDD compared with women in relationships where neither partner or only one partner drank. Given the significant association of violence, alcohol, and MDD, screening for all three conditions should be part of routine care in health care settings in Botswana. Interventions to reduce IPV and alcohol consumption may help alleviate the burden of MDD in women in this setting.

Keywords
Botswana, women's health, mental health, depression, major depressive disorders, intimate partner violence, violence against women, gender-based violence

Mental health disorders are a major contributor to morbidity and disability worldwide, with depression accounting for more than 7.5% of the global burden of disease in 2015 (World Health Organization [WHO], 2017a). Among these, depressive disorders accounted for over 50 million years lived with disability and globally were the single largest contributor to morbidity. Worldwide, women suffered a disproportionate burden of disease from depressive disorders, accounting for more than 40% of the global disability from neuropsychiatric disorders compared with less than 30% in men in 2015 (WHO, 2017b).

A complex web of biological and socioeconomic factors has been attributed to this burden. Among them are women's low or subordinate social status and rank compared with men; their disproportionate responsibility for the care of others, economic dependency, and inequality; and low levels of education and autonomy in decision making (Astbury, 2001; Gülçür, 2000; Patel et al., 2006; WHO, n.d.). Mental health problems in women are often associated with intimate partner violence (IPV) defined as any form of physical, emotional, or sexual violence against a woman by her intimate partner. This association has led some researchers to suggest that perhaps the disparity in prevalence rates of depression in men and women may be attributed to the gender difference in the prevalence of IPV (Campbell, 2002; Krug, Mercy,

Dahlberg, & Zwi, 2002). In a 2013 systematic review, DeVries and colleagues suggest that the relationship between depression and IPV is a complex one with different modes of association; various studies have found that IPV may be a cause or a consequence of depression, while still others suggest that the two phenomenon have risk factors in common that explains how they are related (Devries et al., 2013). Some studies of IPV among women have reported rates of depression as high as 61% and 68%, respectively (Dienemann et al., 2000; Stein & Kennedy, 2001). Several studies in the last decade have found that IPV and gender-based violence (GBV) are strongly correlated with psychological distress, ranging from depression and anxiety to posttraumatic stress, suicidal ideation, and suicide attempts (Devries et al., 2013; Devries et al., 2011; Lövestad, Löve, Vaez, & Krantz, 2017; Ludermir, Schraiber, D'Oliveira, França-Junior, & Jansen, 2008; Pico-Alfonso et al., 2006; Romito, Turan, & De Marchi, 2005).

A growing number of studies have examined depression and other mental health disorders in women living in low and lower-middle income countries (Fisher et al., 2012). While many of these studies involved only pregnant and post-partum women, they nonetheless offer a window on the factors most commonly associated with these conditions, including socioeconomic disadvantage, exposure to controlling behaviors by male partners, and emotional, sexual, and physical violence. A number of studies that have focused specifically on depression and IPV report a significant positive association (Bernstein et al., 2016; Gibbs et al., 2017; Halim et al., 2018; Manongi et al., 2020; Tsai, Tomlinson, Comulada, & Rotheram-Borus, 2016; Tsai et al., 2015). Still others report a positive association found between alcohol and depression in women (Davis, Rotheram-Borus, Weichle, Rezai, & Tomlinson, 2017; Kiene, Lule, Sileo, Silmi, & Wanyenze, 2017).

There is limited empirical data about depressive disorders and other mental health conditions in Botswana. Global health estimates from 2015 data report that slightly more than 100,000 people in Botswana, or roughly 4.7% of the population, suffered from depression and other common mental disorders (WHO, 2017a). The majority of studies that have specifically examined mental health disorders among women in Botswana have done so in the context of HIV/AIDS, an epidemic that disproportionately impacts women of reproductive age (Republic of Botswana, Government Portal, n.d.). Studies conducted in HIV-treatment settings in Botswana between 2004 and 2010 report prevalence rates of major depression ranging from 24% to 29% among HIV-positive women (Gupta et al., 2010; Lawler et al., 2011; Lewis, Mosepele, Seloilwe, & Lawler, 2012). Research on the protective or risk factors associated with depression in women in Botswana is also scarce. Correlates that have been identified in various studies to date include low

education, high income, and lack of control in sexual decision making (Gupta et al., 2010). Only one study was found which examined the potential relationship between depression and IPV in Botswana; university students who were female, younger, and had experienced sexual violence from a partner were more likely to report mental health symptoms than their peers (Jankey, Prósero, & Fawson, 2011).

Although the positive correlation between mental health and IPV has been extensively discussed in the scholarly literature, there exists a gap in our understanding of this relationship among women in Botswana. Given that two out of three women in Botswana are estimated to have experienced IPV in their lifetimes, more research is needed to examine depression within that context, not simply as a potential comorbidity of HIV/AIDS (Gender Links & Republic of Botswana, Ministry of Labor and Home Affairs, Women's Affairs Department, 2012). This analysis was undertaken to extend our knowledge in these areas by examining associations between depressive symptoms and women's experiences of IPV in northwestern Botswana. Specifically, the study was designed to answer the following research questions:

Research Question 1: What is the nature and extent of depressive symptoms among women in northwestern Botswana?
Research Question 2: To what extent are sociodemographic characteristics, health status, alcohol use, and IPV associated with depressive symptoms in women in this setting?

Method

Research Setting

This analysis uses cross-sectional data that were collected in 2009-2010 in Maun, Botswana, a peri-urban settlement of approximately 55,000 residents that sits at the gateway to the Okavango Delta. Although the town boasts flourishing cattle and tourism industries, rates of poverty and unemployment are high. The parent study was undertaken in collaboration with Women Against Rape (WAR), a local human rights organization that works to reduce the incidence of violence against women and children by providing support for survivors, public education programming, and advocacy and lobbying efforts that target legal and policy reform. The complete methodology used in the Maun Women's Study has been previously described elsewhere (Barchi, Winter, Dougherty & Ramaphane, 2018). The study protocol underwent ethics review and received research permits from the Ministry of Labor and Home Affairs in Botswana and the Institutional Review Boards at the University of Pennsylvania and Rutgers University–New Brunswick.

Study Sample

Multistage probability sampling at the ward, household, and individual level was used to identify prospective participants. To meet eligibility criteria, women had to be 18 years or older, able to speak either Setswana or English, and able to understand the purposes of the study and give their verbal consent. If more than one eligible woman lived in a household, the study participant was identified using a Kish Grid, a method by which an individual is selected from among other eligible members in a household using a grid of pre-assigned random numbers (Kish, 1965); once identified, that woman was the only member of the household who could be interviewed. Out of consideration for social norms that unmarried women age 18 to 21 years who still live at home are under the authority of their parents, initial permission was sought from a parent or legal guardian prior to the consent process taking place with women in this age category. A total of 491 women were invited to participate in this study, of whom 469 agreed to be interviewed. Of the 22 women who did not agree to participate, 20 declined to do so on their own; in the other two instances, parents or relatives refused to let them be interviewed.

Study Instrument

The interview instrument used in this study was comprised of 82 semistructured questions relating to sociodemographic characteristics, women's health, decision making about a variety of subjects, and experiences of violence. Anticipating that future cross-national comparisons might be desirable, the questions were largely drawn from three widely used survey instruments: the Women's Status and Domestic Violence modules used in Demographic and Health Surveys (DHS) (Measure DHS, 2009); the Health Status module used in the WHO multi-country study on women's health and domestic violence (Garcia-Moreno, Jansen, Ellsberg, Heise, & Watts, 2005); and the Prime-MD Patient Health Questionnaire (Spitzer et al., 1994). All materials were translated into Setswana (the predominant "local" language), back-translated and compared with the English version, and adjusted prior to being used in the field. A local field staff of eight women who were trained and supervised by one of the authors was responsible for conducting the interviews.

Measures

This study used a standard measure of major depressive disorders (MDD) to assess the extent to which women self-reported experiences with depression. The nine-item depression module (PRIME-MD) is a subset of the full Patient Health Questionnaire and uses criteria for depression based on those of the

Diagnostic and Statistical Manual of Mental Disorders (4th ed., text rev.; *DSM-IV-TR*; American Psychiatric Association, 2000). The PRIME-MD has been shown to have good reliability and validity in U.S. populations and has been recommended as a screen for depressive disorders in populations with good literacy levels (Ali, Ryan, & De Silva, 2016; Loretz, 2005). In 2010, the original version of PRIME-MD, with nine yes/no questions, was used easily and effectively in both English and Setswana to screen for depression at Princess Marina Hospital in Gaborone, Botswana, recommending it as a good instrument to use in this present study (Lawler et al., 2011). Cronbach's alpha for the PRIME-MD module in this study was $\alpha = .88$. In accordance with the PRIME-MD measures, women who answered at least five of the nine questions in the affirmative, of which one was in response to either Questions 4 ("in the past 2 weeks, have you felt little interest or pleasure in doing things") or 5 ("in the past 2 weeks, have you been feeling down, depressed, or hopeless"), were coded "1" to indicate that they met the clinical criteria for MDD.

IPV has been defined by Heise, Ellsberg, and Gottemoeller (2002) as "any act of verbal or physical force, coercion, or life-threatening deprivation, directed at an individual woman or girl that causes physical or psychological harm, humiliation, or arbitrary deprivation of liberty and that perpetuates female subordination" (p. 1165). The DHS domestic violence module used in this study is a widely used instrument developed in the 1990s that has been found to have construct validity across a large number of studies (Kishor & Johnson, 2004). Based on a previously validated scale for family violence, the Conflict Tactics Scale (Straus, Hamby, Boney-McCoy, & Sugarman, 1996), the DHS violence module examines three types of violence: emotional, sexual, and physical. IPV scores in this study were based on women's reports of their partner's behavior within the past 12 months. The Emotional Violence subscale consisted of three items focused on whether the respondent's husband/partner had in the past 12 months (a) said or done something to humiliate her in front of others, (b) threatened to hurt or harm her or someone close to her, or (c) insulted her to make her feel bad about herself. The Physical Violence subscale had nine items that ranged from *moderate violence* (e.g., in the last 12 months, did your husband/partner ever push you, shake you, or throw things at you) to *severe violence* (e.g., in the last 12 months, did your husband/partner ever threaten or attack you with a knife, gun, or any other weapon). Finally, the Sexual Violence subscale consisted of two questions about whether a respondent's husband/partner had (a) physically forced her to have sexual intercourse with him even when she did not want to and/or (b) forced her to perform any sexual acts she did not want to in the past 12 months. Responses to each of the IPV items were dichotomized. A score of "1" on a

subscale of violence reflected at least one affirmative response to questions within that subscale. A score of "0" reflected the absence of any affirmative response to questions within that subscale.

Women's responses to a series of questions regarding their partners' and their own drinking habits were separately coded into a partner's alcohol use variable and a respondent's alcohol use variable. A score of "1" reflected alcohol use, but did not reflect the frequency or quantity of alcohol consumed. A score of "0" was assigned when a respondent reported that her partner never drank or reported never drinking herself. To assess the extent to which "who" drank in a relationship might be of importance, the male and female variables were also collapsed into a single dummy variable to indicate whether both partners consumed alcohol or not.

Women in Maun have, for the most part, extremely limited access to preventive health care, visiting clinics only when they or their children are ill or injured, during pregnancy and delivery, or when seeking routine care for management of a chronic disease. In Botswana, antenatal care and delivery in clinical settings generally meet the WHO recommendation of at least four visits, but women would not typically seek medical attention for their pregnancies beyond this stipulated number. Treatment of three chronic diseases, however, require that patients visit a medical clinic on a monthly basis for monitoring and prescription refills—hypertension, diabetes, and HIV/AIDS (D. Ramagola-Masire, June 19, 2010, personal communication). For the purposes of this study, women who reported 10 or more medical visits per year were assumed to suffer from one of these three chronic conditions. A dichotomous variable was created to reflect a woman's chronic disease status either as "lives with chronic disease" ("1") or "does not live with chronic disease" ("0").

A number of demographic variables were employed in this analysis, including age, education, relationship status, employment status, and number of children. Income was measured as a four-level categorical variable that indicated a respondent's estimated monthly household income. Three monetary ranges were given as choices: ≤250 Botswana pula (BWP) (about US$37), >250 to ≤400 BWP (about US$60), and >400 BWP, and a fourth level indicating that the respondent did not know the amount.

Analysis

All data analyses were conducted using Stata/MP 13.1 statistical software. An item nonresponse analysis of the completed 469 interviews indicated minimal missing data (less than or equal to 3%) on the independent and dependent variables of interest and (<5%) on the control variables. List-wise deletion was used to remove cases with missing data on the primary measures, leaving

a sample of 401 women. Tests for independence were conducted to determine whether women who met the clinical criteria for MDD differed from women who did not on several demographic measures. In addition, three binary-logistic regressions were run to identify whether recent experiences of emotional, physical, or sexual IPV were significantly associated with MDD, while controlling for demographic information and potential confounders. All variables of interest were included in the models. For the purposes of the regression model, the alcohol variables were collapsed into a single dichotomous variable reflecting whether both partners in the relationship consumed alcohol or not. To address the issue of "don't know" responses on the "monthly household income" variable, these responses were imputed using multiple imputation with chained equations (MICE) in Stata (v.13) (Spratt et al., 2010). Preliminary correlations were computed and examined for evidence of multicollinearity between all independent variables in each model and all outcome variables to ensure that they were within an acceptable range (correlation coefficients between predictor variables, $|r| < .7$).

Results

Individual- and Household-Level Characteristics

The average age of women in the study was 31 years old (range = 18-71 years). Over 62% of them had attended secondary school, and 11% had attended university or the equivalent. Only about 7% of the sample of women were married, and just under 52% lived together/were in a union with their current partner. Approximately 30% of the women were single. Slightly more than 80% of the respondents had one or more children. Roughly 18% of the women in the sample were employed at the time of study. Almost half of them reported monthly household incomes of less than 400 BWP; another 31% did not know their income.

Thirty percent of women interviewed lived with a chronic disease, defined as the number of visits they made to the clinic. Approximately 31% of them met the PRIME-MD criteria for MDD. Just over 41% of the women in the sample reported experiencing some form of IPV in the 12 months leading up to the study, in the form of emotional (23%), physical (37%), or sexual (10%) violence. Approximately 26% of women indicated that their partner drank alcohol but they did not. Another 9% reported that they were the only one in the relationship to drink, and approximately 17% of the women noted that both they and their partners consumed alcohol. Chi-square tests were used to identify significant associations between various attributes of women in the sample and MDD. The results of these tests are detailed in Table 1. Attributes with

Table 1. Distribution of Respondents by Personal, Partner, and Household Characteristics, According to MDD (n = 401).

Variable Name	Values	Total	%	No	Yes	Adjusted χ^2
Symptoms of MDD	Meet symptom criteria for MDD	125	31.2	—	—	—
	Does not meet symptom criteria for MDD	276	68.8	—	—	—
Any violence	Has experienced some form of IPV	168	41.9	92	76	65.55**
	Has *not* experienced some form of IPV	233	58.1	184	49	
Emotional violence	Has experienced emotional IPV	92	22.9	46	46	40.96**
	Has *not* experienced emotional IPV	309	77.1	230	79	
Physical violence	Has experienced physical IPV	149	37.2	83	66	32.84**
	Has *not* experienced physical IPV	252	62.8	193	59	
Sexual violence	Has experienced sexual IPV	40	10.0	22	18	3.99
	Has *not* experienced sexual IPV	361	90.0	254	107	
Age (*M* = 31.2, *SD* = 10.0)	18-20	40	10.0	30	10	2.43
	21-29	198	49.4	139	59	
	30-49	137	34.2	94	43	
	50+	26	6.5	13	13	
Education	Higher	45	11.2	37	8	2.64
	Secondary	249	62.1	176	73	
	Primary	80	20.0	48	32	
	None	27	6.7	15	12	
Relationship status	Married	27	6.7	20	7	3.32
	Separated/divorced	30	7.5	18	12	
	Widowed	18	4.5	12	6	
	Living together/in union	203	50.6	128	75	
	Single	116	28.9	93	23	
Chronic disease status	Visited doctor 10+ times in last 12 months	122	30.4	74	48	4.12
	Visited doctor <10 times in last 12 months	279	69.6	202	77	
Employment	Works for wages	73	18.2	53	20	0.43
	Does *not* work for wages	328	81.8	223	105	
Monthly household income	Less than 250 pula/month	124	30.9	67	57	8.47**
	Between 250 and 400 pula/month	72	18.0	53	19	
	Over 400 pula/month	81	20.2	61	20	
	Not aware of household finances	124	30.9	95	29	14.46*
Number of children	No children	79	19.7	61	18	3.47
	1-2 children	191	47.6	136	55	
	3 or more children	131	32.7	79	52	
Alcohol use	Neither partner drinks alcohol	192	47.9	144	48	10.58*
	Woman *only* drinks alcohol	35	8.7	27	8	
	Partner *only* drinks alcohol	106	26.4	73	33	
	Both partners drink alcohol	68	17.0	32	36	
Partner exhibits controlling behavior	Exhibits controlling behavior	244	60.8	152	92	16.57*
	Does not exhibit controlling behavior	157	39.2	124	33	

Note. MDD = major depressive disorders; IPV = intimate partner violence. * $p < .05$, ** $p < .01$.

Table 2. Logistic Regression Models of MDD on Respondent Attributes Including Emotional, Physical, or Sexual Violence as an Independent Factor.

	Model 1 Emotional IPV		Model 2 Physical IPV		Model 3 Sexual IPV	
(*n* = 401)	Odds	95% CI	Odds	95% CI	Odds	95% CI
Experienced recent IPV	1.89*	[1.046, 3.427]	1.82*	[1.011, 3.275]	1.52	[0.579, 3.987]
Age	1.01	[0.97, 1.059]	1.02	[0.977, 1.055]	1.01	[0.975, 1.057]
Education (*ref: none*)						
Postsecondary	0.43	[0.133, 1.388]	0.41	[0.12, 1.398]	0.42	[0.121, 1.467]
Secondary	0.63	[0.367, 1.069]	0.62	[0.34, 1.123]	0.65	[0.337, 1.256]
Primary	0.85	[0.186, 3.897]	0.83	[0.191, 3.615]	0.88	[0.202, 3.814]
Relationship status (*ref: living together in union*)						
Single	0.72	[0.215, 2.373]	0.73	[0.216, 2.444]	0.79	[0.218, 2.886]
Separated/divorced	0.97	[0.334, 2.831]	1.00	[0.28, 3.584]	1.00	[0.349, 2.871]
Widowed	0.90	[0.182, 4.469]	0.89	[0.193, 4.149]	0.86	[0.171, 4.31]
Married	0.76	[0.226, 2.582]	0.79	[0.258, 2.438]	0.82	[0.243, 2.751]
Chronic disease status	1.19	[0.384, 3.682]	1.23	[0.378, 4.018]	1.25	[0.381, 4.086]
Employment	0.96	[0.234, 3.961]	1.00	[0.224, 4.488]	1.05	[0.238, 4.623]
Monthly household income (*ref: less than 250 pula/month*)						
250-400 pula/month	0.53	[0.135, 2.048]	0.52	[0.14, 1.897]	0.51	[0.141, 1.823]
Over 400 pula/month	0.64	[0.124, 3.35]	0.68	[0.126, 3.639]	0.62	[0.119, 3.196]
Aware of household finances	1.48	[0.904, 2.419]	1.46	[0.848, 2.507]	1.46	[0.835, 2.547]
Number of children (*ref: no children*)						
1-2 children	0.98	[0.278, 3.427]	0.99	[0.288, 3.378]	0.99	[0.3, 3.237]
3+ children	1.24	[0.36, 4.263]	1.32	[0.483, 3.601]	1.36	[0.551, 3.364]
Alcohol use (*ref: neither partner drinks*)						
Woman only drinks	1.04	[0.412, 2.601]	0.92	[0.329, 2.572]	0.98	[0.338, 2.844]
Man only drinks	1.13	[0.466, 2.728]	1.09	[0.475, 2.52]	1.21	[0.514, 2.865]
Both partners drink	2.42**	[1.737, 3.368]	2.28**	[1.602, 3.236]	2.75**	[1.847, 4.107]
Partner exhibits controlling behaviors	1.58	[0.767, 3.27]	1.51	[0.784, 2.915]	1.84	[0.95, 3.553]

Note. MDD = major depressive disorders; IPV = intimate partner violence; CI = confidence interval.
* $p < .05$, ** $p < .01$.

significant association with MDD in the bivariate analysis included recent experience with emotional or physical violence, monthly household income, number of children, alcohol use, and controlling behaviors by a spouse or male partner.

Associations Between Depressive Symptoms and IPV

Findings from the multivariate analyses are shown in Table 2. They suggest that women who have experienced emotional or physical IPV in the last 12 months have 89% and 82% greater odds, respectively, of having symptoms of

MDD ($p < .05$) than women who have not recently experienced either form of violence, when controlling for other potential predictors and covariates. In this sample, women's recent experience of sexual violence did not significantly increase the odds of MDD in comparison with women with no such experiences.

In each of the three models, women in a relationship where both partners drank have more than twice the odds of having symptoms of MDD when compared to women in relationships in which neither partner nor only one partner drinks alcohol ($p < .05$).

Discussion

This is one of a very few studies in Botswana to have examined MDD in women in a nontreatment setting and the only study to date in that country that has considered empirically the association between MDD and IPV. Despite a number of factors shown to be of significance in the bivariate analyses, only three—recent emotional or physical IPV and relationships in which both partners consumed alcohol—were significantly associated with MDD at the $p < .05$ level when controlling for other factors. Although the cross-sectional data used in this study did not permit the determination of a causal or temporal relationship between each of these factors and MDD, they do identify important areas of future inquiry.

Most of the descriptive statistics for this study are not unexpected given those previously reported in government surveys. Government education statistics report that 60% of all women have attained secondary education, a statistic that aligns with this study finding of 62.1% (Van Klaveren, Tijdins, Hughie-Williams, & Martin, 2009). Women's unemployment is reported nationally at 36% compared with the study finding of 81.4%; this differential is likely a reflection of the fact that the national statistic excludes women who are not employed for wages due to school, illness, and age; by contrast, this study coded all adult women as unemployed who were not currently working for wages regardless of the reason. The differential may also be explained by the higher concentration of people living below the poverty datum line in rural as compared with urban areas of Botswana (Greener, Jefferis, & Siphambe, 2000). Many women in Maun continue to eke out their living as subsistence farmers in the absence of formal employment opportunities or to earn income in the informal sector by selling handcrafts, running small "tuck" shops that sell fruits and candies, or selling cell phone air-time cards.

Thirty-one percent of the women in this study met the PRIME-MD criteria for MDD. This finding is similar to those reported in previous studies of major depression among women in Botswana. However, the majority of these studies

examined MDD within the context of the HIV/AIDS epidemic, treating it as a potential correlate of observed variability in high-risk sexual behaviors and treatment adherence in HIV-affected populations rather than as a mental health condition caused by other underlying socio-cultural determinants (Do et al., 2010; Gupta et al., 2010; Lawler et al., 2011). The fact that the percentages of women who screened positive in this study—a random sample—are similar to percentages found in studies situated in HIV-treatment settings or settings chosen because of their HIV prevalence rates offers strong evidence for the influence of factors beyond the presence of HIV itself.

In this study, women who reported recent emotional or physical IPV had approximately 1.8 times the odds of meeting the symptomatic criteria for MDD. Similar findings elsewhere on the relationship between violence and depression are well-documented in the literature (Campbell, 2002; Dienemann et al., 2000; Gelaye, Arnold, Williams, Goshu, & Berhane, 2009; Krug et al., 2002; Nduna, Jewkes, Dunkle, Jama Shai, & Colman, 2010; Stein & Kennedy, 2001). A meta-analysis of 18 studies by Golding (1999), for example, reported a weighted mean prevalence of mental health problems among battered women of 47.6%; in this study, nearly 46% of the women reporting IPV also screened positive for depressive symptoms using the Prime-MD criteria. Absent longitudinal studies, however, the direction of the relationship between women's experiences of violence and depression remains unclear.

Interestingly, no significant correlation was found between recent sexual violence and depression. While this is an accurate finding based on the data, understanding the true relationship between these two phenomena may require further inquiry. Women may not wish to disclose that they have been sexually assaulted for reasons of fear, shame, or stigma, and underreporting of sexual violence is well-documented in the literature (Dartnall & Jewkes, 2013). Methodological challenges also make it difficult to capture the full extent of sexual IPV reliably in settings like Botswana where women may not identify sexual coercion in an intimate relationship, forced sex/rape by a spouse or partner, or economic coercion as sexual IPV (Jewkes & Abrahams, 2002). If women do not report their recent experiences of sexual violence or fail to recognize them as such, the strength of any correlation between sexual IPV and MDD would be difficult to detect statistically.

A significant finding in this study is the link between MDD and alcohol consumption, which more than doubles the odds that women in relationships in which both partners consume alcohol will meet the criteria for MDD. While the correlation between alcohol and depression is well-documented worldwide, this study offers evidence of the phenomenon in Botswana and suggests that who is drinking in a relationship is of consequence. While alcohol consumption by either partner was significant in the bivariate analysis,

only consumption by both partners was a significant predictor of MDD when the analysis controlled for other factors. More research is needed in this area to examine the direction of the relationship, the presence of causality, and the potential variability in the relationship based on the timing and quantity of alcohol consumed.

Limited counseling and treatment services for depression exist at the community level in Botswana. Despite the issuance of a National Health Policy on Mental Health in 2003 that situated mental health services within the country's primary health care strategy, low priority and limited resources were allocated to this health sector in the face of tremendous disease burdens in HIV/AIDS and maternal and child mortality and is allocated inadequate resources to create a country-wide mental health services infrastructure (Seloilwe & Thupayagale-Tshweneagae, 2007). At the time of the Maun Women's Study, the mental health clinic in Maun, like many such centers throughout the country, existed to provide counseling services relating to voluntary testing and counseling (VCT) relating to HIV and had only limited capacity to screen for and treat depression. MDD in such a setting may easily be perceived as an understandable consequence of living with or caring for persons with HIV, rather than as its "own" health condition that required clinical attention.

This study has a number of limitations that warrant consideration in future research on women's mental health and IPV in Botswana. First, it examines a very specific community of women in Botswana. This was intentional given the study's exploratory nature and the needs of the collaborating organization, WAR, for information specific to the population it serves. However, the extent to which its findings can be generalized to women throughout Botswana or indeed southern Africa is limited. In the future, consideration should be given to more extensive studies on MDD that collect comparable data from women in other locations in Botswana and cross-comparison of these findings with those from other countries in the region. Second, this study offers a macro-level view of extremely complex social and behavioral phenomena. The conversion of women's responses to questions about particular topics into simple categorical, often dichotomous, variables made it possible to quickly generate a "big picture" of the issues of interest but at the cost of granularity. Future research should examine in greater detail those factors found to be significant in this study. Understanding, for example, that alcohol consumption plays a role in MDD is only a starting point; gaining insight on the direction and strength of that relationship, the timing of alcohol use relative to acts of violence, and the settings in which alcohol-related abuses occur might identify salient points for intervention in ways that the on/off function of the dummy variable cannot. Given the link

established in the literature between HIV status and depression, explicit information about women's HIV status would be a more useful control variable than the proxy variable, "lives with a chronic disease," which was used here. Finally, this study did not examine the temporal or causal relationships between respondent, household, and partner characteristics; MDD; and other variables of interest. Future research should attempt to identify the extent to which certain factors are the underlying causes of these phenomena in order that appropriate targets for intervention can be identified. To do so will require the harmonization of the time intervals used in measuring MDD, violence, and alcohol consumption; for example, the DHS violence module currently collects information on "recent" violence, defined as experience of violence within the past 12 months and violence "ever," whereas the MDD measure asks about feelings experienced in the past 2 weeks, and alcohol measures are often asked in connection with a recent week's behaviors. Under these circumstances, a number of intervening factors could explain the occurrence of MDD.

Conclusion

To date, there have been limited empirical data on the burden of mental health conditions among women in Botswana, and on the underlying factors that may be predictive of MDD. Although more research is needed to examine the possible temporal and causal relationships among depression, physical and emotional violence, and alcohol, the findings from this study suggest that interventions to reduce GBV may positively impact public health efforts to address the burden of depression in women in Botswana. Screening in primary health care settings for IPV and alcohol use may afford clues to the presence of underlying mental health disorders and should be a component of national mental health policy in the country. Findings from this study underscore the need for major expansion of counseling and treatment services for depression, particularly for women living in rural areas where such services are currently limited.

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Author Biographies

Francis Barchi, MBE, PhD, is an assistant professor in the Edward J. Bloustein School of Planning & Public Policy at Rutgers, the State University of New Jersey. Her research focuses on ethical issues in global health, with an emphasis on women's decision making and socioeconomic factors that affect their health and their health care choices. Her work is concentrated in countries in the Global South, particularly Botswana, Kenya, and Guatemala.

Samantha C. Winter, MS, MSW, PhD, is the Dorothy Byrne Fellow in Global Health the Edward J. Bloustein School of Planning and Public Policy at Rutgers, The State University of New Jersey. Her research focuses on women in urban environments in Nairobi, Kenya, where she now resides, and the relationship between women's experiences of violence and perceptions of safety and their access to and utilization of sanitation.

Danielle Dougherty, MD, is a surgical resident at Michigan State University. She holds an MD from the University of Michigan School of Medicine. She has been involved in programs addressing violence against women in Botswana since 2005 and is a part of an ongoing research collaboration with Women Against Rape (WAR) to document the nature and extent of gender-based violence against women in that country.

Peggie Ramaphane is the executive director of Women Against Rape, a human rights organization in Maun, Botswana, that works to reduce the incidence of violence against women and children by providing support for survivors, public education programming, and advocacy and lobbying efforts that target legal and policy reform. She is a lifelong advocate and activist for the rights and welfare of women and girls in Botswana.

Phyllis L. Solomon, PhD, is a professor of social work in the School of Social Policy & Practice, professor of social work in psychiatry in the Perelman School of Medicine, and senior fellow at the Center for Public Health Initiatives at the University of Pennsylvania. She has been conducting research on mental health issues, including family violence, particularly focused on persons with severe mental illness, for over 40 years.