Domestic violence as a risk factor for symptoms of psychosis in Bolivia (DRAFT)

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Introduction

Both domestic violence and poor mental health are global health problems each of which is underreported and feminized. Domestic violence is a stark marker of inequality in intra-household and societal power relations, and thus has important implications for human rights and gender equality. From a public health perspective, it also has important implications for a range of physical and mental health outcomes for women and members of their households. In terms of mental health, the experience of domestic violence is associated with an increased probability of experiencing poor mental health outcomes, including depression (Campbell et al. 1994), anxiety (Sutherland, Bybee & Sullivan 1998), post-traumatic stress disorder (Lemieux & Coe 1995; Letourneau et al. 1996; Kubany et al. 1996), and substance abuse (Vos et al. 2006). However, it remains unsettled in the literature as to whether traumatic life events such as the experience of violence actually play a causal role in the development of a psychiatric disorder.

Poor mental health is both a negative outcome in and of itself and it is also associated with an array of deleterious sequelae. For example, those who have suffered a psychotic episode often have impaired decisionmaking ability, which in turn increases risks for substance abuse (Kester et al. 2006). They also may experience harassment, stigma and social exclusion, as well as suicidal ideation or attempted suicide (Tarrier 2006). The 1990 Global Burden of Disease estimates found that suicide was second only to tuberculosis as a cause of death for women of reproductive age: more than 180,000 women in China killed themselves and another 87,000 women in India died in fires (Murray & Lopez 1996). Suicidal ideation and attempted suicide are associated with depression, which is a leading contributor to the global burden of disease, and is disproportionately experienced by women: cross-nationally, it affects twice as many women as men (Astbury & Cabral 2000).

Few studies have specifically explored the association between women's experience of domestic violence and the reporting of psychotic symptoms (as opposed to symptoms of other mental health conditions such as depression or anxiety). However, research suggests that traumatic, victimizing events are at least in part causally associated with the experience of symptoms of psychosis (c.f. Bebbington et al. 2004), a condition in which a person has lost contact with reality, often experiencing hallucinations, delusions, confused thought, and lack of insight. To the author's knowledge, research exploring the links between domestic violence and psychosis has not been conducted in a developing country context, likely due to the fact that nationally-representative epidemiological research on both domestic violence and on mental health is at a fairly nascent stage in the developing world (Vicente et al. 2006).

The purpose of this paper, therefore, is to describe the prevalence and correlates of both domestic violence and symptoms of psychosis in the population of Bolivia, and to

analyze the risk factors for experiencing symptoms of psychosis in Bolivia, with special attention paid to the experience of domestic violence.

Context: Bolivia

Bolivia (population 9.2 million) is one of the poorest countries in Latin America, with an annual average income of US$1,010 per person in 2005. It is estimated that 63 percent of the population subsists below the national poverty line (World Bank 2006). The government of Bolivia does have a written mental health plan, and coverage of mental health services is national, but Bolivia has not integrated their mental health programs into the primary health care structure. As in many countries, mental health does not have the same policy priority as other health issues such as transmissible diseases and maternal and child health and nutrition (Larrobla & Botega 2000). While the problem of domestic violence is particularly salient in Latin America, where lifetime prevalence of spousal abuse exceeds 30 percent in several countries (Kishor & Johnson 2004), in Bolivia lifetime prevalence of abuse exceeds 50 percent. Bolivia does have policies in place to address domestic violence, including the National Plan for the Prevention and Eradication of Violence Against Women, as well as Departmental Gender Units and Municipal Offices for Women. Under the National Plan are two services: Basic Legal Services and Family Protection Brigades. There were thirty-seven Basic Legal Services units and seven brigades as of July 1997 (UNDP 1997). An updated National Plan was disseminated in 2004.

Data & Methods

For the 2003 Bolivia DHS, a representative probability sample of 19,942 households was selected using a 2-stage sample design. The first stage selected primary sampling units (PSUs) from Bolivia's Censal Enumeration Areas; the second stage involved the systematic sampling of a household listing from each of the 1,000 selected PSUs. Ninety-nine percent of eligible households responded to the BDHS, and 96 percent of 18,487 eligible women age 15-49 had a completed interview. The study sample consists only of women who report ever having been married or having lived together with a man as if married (n=12,044 unweighted cases).

Dependent variable

The dependent variable in the analysis is dichotomous and reflects whether the respondent answered in the affirmative to the screening question for psychosis in the mental health questionnaire module that was employed in the BDHS. Among the questions asked in the module, respondents were asked, "Do you hear voices talking that no other persons can hear?" Unlike other psychosis screening instruments, there are no further probes of the respondent's experience of auditory hallucinations. Those who responded in the negative were coded with a 0, while those responding in the affirmative were coded with a 1.

The psychosis screening question used here is similar to questions used in the Psychosis Screening Questionnaire (Bebbington & Nayani 1995), which, while having a high sensitivity and specificity, has been criticized as having a poor positive predictive value (Kleinman 1987). For example, auditory verbal hallucinations (hearing voices that no

one else can hear) are a cardinal feature of psychosis. However, these hallucinations are not exclusive to the classically psychotic patient, whose behavior is located at the extreme end of a continuum ranging from normality to abnormality (Eysenck 1992); rather, they exist on a continuity of behaviors blending into a "spectrum of illness" (Claridge 1994, van Os et al. 2000). Thus, studies of non-selected populations have found that between 10 and 37 percent of people report having experienced auditory hallucinations (Davies et al. 2001), not all of whom will be clinically diagnosed with psychosis. Nevertheless, respondents with false positive screen results meet the diagnostic criteria for other psychiatric disorders, and have greater functional impairment and higher rates of use of mental health services than respondents with true negative results (Leon et al. 1997, Eaton et al. 1991, Olfson et al. 1996).

Independent variable of interest

Our independent variable of interest reflects whether the respondent has ever experienced intimate partner violence. In the 2003 BDHS, a domestic violence module was implemented that assessed lifetime experience of domestic violence among all women who have ever been in a marital or cohabitating union. This approach involves implementing a modified version of the Conflict Tactics Scale (Straus 1990) to obtain information on spousal violence. By asking separately about specific acts of violence, the violence measure is not affected by different understandings between women of what constitutes violence. A woman has to say whether she has, for example, ever been "slapped," not whether she has ever experienced "violence" or even "beatings" or "physical mistreatment." All women would probably agree on what constitutes a slap, but what constitutes a violent act or what is understood as violence may vary among women and across cultures.

The following questions were asked in Bolivia:
Please tell me if the following situations occur in your relationship with your husband/partner frequently, only sometimes, or never:
a) Has he pushed you or shaken you frequently, sometimes, or never?
b) Has he punched you with his fist or kicked you frequently, sometimes, or never?
c) Has he punched you with a hard object frequently, sometimes, or never?
d) Has he tried to strangle you or burn you frequently, sometimes, or never?
e) Has he physically forced you to have sexual intercourse with him frequently, sometimes, or never?

For the violence variable examined in this analysis, if the respondent affirms that any one of the specified acts of physical/sexual violence has taken place, she is considered to have experienced violence and is coded with a 1; otherwise she gets a code of 0. This instrument has been used in many DHS surveys (c.f. Kishor & Johnson 2004), and the DHS approach to domestic violence data collection adheres to the WHO Ethical Guidelines (WHO 2001) in an effort to maximize the validity of the collected data while ensuring the privacy and safety of both the respondents and the interviewers.

Additional independent variables

The Demographic and Health Surveys program (1984-present) evolved out of the World Fertility Surveys program (1972-1984); this is reflected by its emphasis on population data collection. The DHS program has collected progressively larger amounts of health data over time, but in most countries, the health data collected are largely related to the physical health of children and the reproductive health of women. Thus, although the 2003 BDHS included some mental health screening questions, the primary focus of the survey was not on mental health. The selected covariates fall roughly into three conceptual categories: demographic and residential characteristics, economic and social characteristics, and experience of adverse life events. Variables representative of each conceptual category are included in the analysis and discussed here in brief.

- *Demographic and residential characteristics*

Demographic and residential characteristics include current age (expressed as a grouped variable), number of children ever born, and urban or rural residence. Age and number of children ever born serve as control variables, while residence is included as a potential risk factor, given that several studies have found an association between urbanicity and psychosis (e.g., Krabbendam & van Os 2005).

- *Economic and social characteristics*

Economic and social characteristics incorporated here are education, household wealth, type of earnings from work, current marital status, and whether the respondent's family or friends think that they drink too much alcohol. Some researchers (Astbury & Cabral 2000: 47) indicate that poverty and disempowerment may contribute to poor mental health; therefore, educational attainment (none, primary, secondary, and higher) and an indicator of household wealth status (in quintiles) are included as covariates. Details on the methodology used to construct the asset-based household wealth index used here are provided in Rutstein and Johnson (2004). The categorical variables reflecting the type of earnings from work (not employed, working but unpaid, paid in cash, or paid in kind) and current marital status (married in first union, cohabitating in first union, married in second union or more, cohabitating in second union or more, divorced, separated, or widowed) are included as indicators of the respondent's educational and social functioning. A considerable body of research (e.g., Cantwell et al. 1999; Larsen et al. 2006) finds that alcohol and other substance abuse is a comorbidity of psychotic illness. Therefore, a categorical variable reflecting whether the respondent reports that her family or friends think she drinks too much alcohol is included here.

- *Adverse life events*

The literature demonstrates an association between the experience of adverse life events and psychotic illness (Spauwen et al. 2006; Wiles et al. 2006); thus the previously-described variable on experience of domestic violence is included in the model. Also included is a variable reflecting whether the respondent reports having been harshly physically punished as a child; to the extent that endorsing this experience reflects physical childhood abuse, it is expected that it will increase the risk of experiencing symptoms of psychosis (Janssen et al. 2004; Read et al. 2005). Research indicates that witnessing domestic violence between one's parents as a child is associated with

increased risk for schizophrenia spectrum disorders (Rosenberg et al. 2007); therefore, a variable is included that reflects whether the respondent knew that her father beat her mother. The experience of rape has also been associated with psychiatric morbidity (Thompson et al. 2003); a variable on the respondent's experience of forced intercourse by someone other than her husband is therefore included in the analysis. Shevlin et al. (2007) have found a cumulative relationship between trauma and psychosis; therefore, a variable that reflects the additive experience of domestic violence as well as experience of rape is included in the analysis. The categories of this variable are graduated in frequency and severity, as follows: never experienced violence or forced sex, experienced forced sex but not domestic violence, experienced violence sometimes but not forced sex, experienced violence frequently but not forced sex, experienced violence sometimes and also experienced forced sex, and experienced violence frequently and also experienced forced sex.

Univariate and bivariate methods are used to describe the sample and the relationships between the key variables of interest (psychotic symptoms, domestic violence) and the respondents' demographic and residential, and social and economic characteristics, as well as other adverse life events. Logistic regression is used to discern the risk factors for self-reported psychotic symptoms in Bolivia.

Results

Overall prevalence of psychotic symptoms and domestic violence.

Table 1 shows that 18 percent of Bolivian women report that they hear voices that others do not hear; this proportion does not differ from that found in the unselected sample (data not shown). Over half of ever-in-union women report having ever experienced spousal violence, and 10 percent of women reported experiencing frequent violence.

Bivariate results

Hearing voices that no one else hears is somewhat more prevalent among the youngest women, and somewhat less prevalent among those in the oldest age group (Table 1; p=0.010). While the relationship between the number of children ever born is significant, it is inconsistent in direction. Rural residents are statistically significantly more likely to report hearing voices that others cannot hear, but the practical significance of the relationship is not great. Reporting of symptoms has a significant negative and monotonic relationship with education, while there is no difference according to wealth save for those in the wealthiest quintile (p=0.000). Reporting of symptoms of psychosis does not vary significantly by earnings from work. With regard to marital status, those in a formal union are least likely to report that they hear voices, and those who are widowed are most likely (p=0.000). Those who report that friends or family say that they drink too much alcohol are far more likely to report hearing voices than either those who don't drink or whose friends or family don't tell them they drink too much (p=0.000). All of the adverse life events are significant at p=0.000 and in the expected direction: the experience of trauma increases the likelihood that the respondent reports hearing voices; the more trauma, the more likely the respondent is to report the symptom. While witnessing one's father hit one's mother and being punished harshly as a child increased

the likelihood of hearing voices to a fairly small degree, those who reported experiencing both domestic violence and forced sex were about twice as likely to report hearing voices as those who experienced neither domestic violence nor forced sex.

Multivariate results.
Two models are presented in Table 2: the first model includes separate variables on domestic violence and forced sex, while the second model includes the combined violence and forced sex variable. The first model in Table 2 shows that women who have experienced domestic violence sometimes are 33 percent more likely than those who have never experienced violence to report that they hear voices; those who have experienced domestic violence frequently are 85 percent more likely to report that they hear voices (p=0.000). Women who report that they have been forced to have sex are 39 percent more likely than women who do not report forced sex to hear voices (p=0.000). Results that support the hypothesis that traumatic events are partially causally related to poor mental health include the finding that women who report that their mother was beaten by their father are 19 percent more likely to report hearing voices (p=0.000), and the finding that women who were severely physically punished as children were 14 percent more likely to hear voices (p=0.028).

Other findings of interest include the following: women who say that their family or friends think they drink too much are 65 percent more likely to report hearing voices than those who were not told that they drink too much (p=0.000). There is no association between marital status or type of earnings and reporting of psychotic symptoms. Women with higher than secondary levels of education are 41 percent less likely to report hearing voices than women with no education. Compared to women in the poorest quintile, only the women in the wealthiest quintile are significantly less likely (23 percent) to report hearing voices. There is no difference in experience of hearing voices between those who live in urban vs. rural areas. As in the bivariate, it is the youngest who are most likely to report hearing voices and the oldest who are least likely.

The second model demonstrates that as the frequency of experiencing trauma increases, so too does the risk of exhibiting psychotic symptoms: compared to women who have experienced neither domestic violence nor forced sex, those who have sometimes experienced domestic violence but not forced sex have an increase in risk of exhibiting symptoms of psychosis of 32 percent; the risk for those who have experienced frequent domestic violence but no forced sex increases by 86 percent; those who have sometimes experienced domestic violence and also have been forced into sex have double the risk of exhibiting symptoms of psychosis; and those who have experienced both frequent domestic violence as well as forced sex are nearly two and one-half times as likely to report symptoms of psychosis.

Discussion & Conclusions
Generally, these findings support the literature that argues for the importance of recognizing not only the association between traumatizing life events and psychiatric disease (Read & Ross 2003), but also that trauma has a direct positive relationship to

symptoms of psychosis (Shevlin et al. 2007). These results specifically establish an association between the experience of domestic violence and the hearing of voices that no one else hears – a hallmark of psychosis.

Recognizing that in using this cross-sectional dataset one can only identify association and not causation, nevertheless, the positive association between childhood-specific adverse experiences and symptoms of psychosis is suggestive of a partially-causal association between adverse life events in general and symptoms of psychosis.

The results also support the literature that argues that only a small part of the total continuum of psychosis is represented by clinically verified and defined cases. In this analysis, psychotic symptoms in the general Bolivian population were associated with risk factors that mirror the risk factors for psychotic symptoms of clinical psychosis, thus supporting the continuum hypothesis (Johns et al. 2004). The prevalence of auditory hallucinations found in Bolivia is well within the range found in general population surveys in other settings (10-37 percent; Davies et al. 2001).

While it is expected that culture will influence the experience and expression of mental health problems (Martinez-Hernaez 2006), the results of the analysis demonstrate that recognized risk factors for psychosis that have been established in epidemiological studies of European populations are also risk factors for symptoms of psychosis in a Bolivian context, save for the lack of association with urbanicity.

Most importantly, these results demonstrate that in Bolivia, where well over half of the population is living in poverty, more than half of ever-married women live with the non-negligible emotional, physical, and psychological consequences of spousal violence and other forms of gender-based violence. It must be recognized that within a gendered social context that allows and perpetuates behaviors such as domestic violence, the damage incurred is not restricted to discrete episodes of violence and injury, or even to the most proximate victim of the violence – given what we know about the intergenerational nature of domestic violence (Kishor & Johnson 2004), the consequences of violent behavior may continue to unfold for generations after the first violent act has been committed.

Given the prevalence of spousal abuse in Bolivia, the temptation may be to accept the violence as normative. It is the responsibility of health care providers and policymakers, among others, to resist that temptation and work to ensure that women who suffer with a double burden of spousal abuse and mental illness are provided with the legal, social, and medical services that they need.

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Table 1. Percent of ever-married women age 15-49 who report that they hear voices speaking that no one else can hear, with p-values for chi-square test, according to selected demographic and residential, and economic and social characteristics, and experience of adverse life events, 2003 Bolivia DHS.

Independent variables	Percent distribution	Hears voices	N
Demographic and residential characteristics			
Age		*p=0.010*	
15-19	4.0	22.8	479
20-24	15.2	18.9	1,818
25-29	18.0	17.2	2,161
30-34	19.0	16.4	2,272
35-39	16.9	18.0	2,026
40-44	15.0	18.1	1,799
45-49	11.9	15.8	1,426
Number of children ever born		*p=0.000*	
None	4.8	21.4	571
1-3 children	53.3	16.4	6,389
4-6 children	27.7	17.3	3,318
7-9 children	10.8	22.6	1,293
10+ children	3.5	18.3	415
Residence		*p=0.005*	
Urban	66.3	16.9	7,944
Rural	33.7	19.0	4,040
Economic and social characteristics			
Respondent's educational attainment		*p=0.000*	
None	8.5	20.5	1,025
Primary	54.5	19.1	6,532
Secondary	26.2	17.2	3,138
Higher	10.8	9.0	1,289
Wealth		*p=0.000*	
Poorest	17.1	18.9	2,049
Poorer	18.6	18.8	2,233
Middle	21.4	19.1	2,563
Wealthier	22.7	19.2	2,727
Wealthiest	20.1	12.1	2,411
Earnings from work		p=0.202	
Not working	27.4	16.5	3,287
Working, not paid	13.0	18.0	1,553
Paid cash, in whole or part	58.5	18.1	7,008
Paid in kind	1.1	15.0	133
Current marital status		*p=0.000*	
Married, first union	58.3	15.9	6,990
Married, second+ union	2.4	16.7	288
Cohabitating, first union	22.3	20.2	2,677
Cohabitating, second+ union	5.0	20.6	597
Divorced	2.7	19.8	328
Separated	7.3	19.8	880
Widowed	1.9	23.7	224
Family/friends say drinks too much		*p=0.000*	
No, doesn't drink too much	59.0	17.8	7,069
Yes, drinks too much	5.3	27.1	635
Doesn't drink alcohol	35.7	16.0	4,275
Experience of adverse life events			
Mother was beaten by father		*p=0.000*	
No	51.3	15.4	6,154
Yes	48.7	19.9	5,829
Was punished harshly as a child		*p=0.000*	
No	28.0	15.5	3,359
Yes	72.0	18.5	8,624
Ever experienced intimate partner violence (IPV)		*p=0.000*	
Never	46.7	14.4	5,591
Yes, sometimes	43.5	19.5	5,210
Yes, frequently	9.9	24.8	1,184
Ever experienced forced sex (non-spousal)		*p=0.000*	
No	96.0	17.3	11,505
Yes	4.0	24.0	479
Ever experienced gender-based violence		*p=0.000*	
Never experienced	45.3	14.3	5,427
Yes, forced sex, no IPV	1.4	14.7	163
Yes, sometimes IPV, no forced sex	41.6	19.2	4,989
Yes, freq IPV, no forced sex	9.1	24.1	1,090
Yes, sometimes IPV & forced sex	1.8	26.7	221
Yes, freq IPV & forced sex	0.8	33.7	95
Total	100	17.6	11,981

Table 2. Logistic regression results: Likelihood that respondent experiences hearing voices that no one else can hear, among ever-married women age 15-49, according to selected demographic and residential, and economic and social characteristics, and experience of adverse life events, 2003 Bolivia Demographic and Health Survey.

	Model 1		Model 2	
Independent variables	Exp(B)	Sig.	Exp(B)	Sig.
Demographic and residential characteristics				
Age (15-19 ®)				
20-24	0.874	0.278	0.874	0.277
25-29	0.788	0.063	0.788	0.063
30-34	0.709	0.010	0.709	0.010
35-39	0.698	0.009	0.698	0.009
40-44	0.724	0.025	0.723	0.024
45-49	0.649	0.004	0.648	0.004
Number of children ever born (None ®)				
1-3 children	0.802	0.056	0.803	0.057
4-6 children	0.829	0.146	0.831	0.152
7-9 children	1.062	0.679	1.064	0.668
10+ children	1.012	0.946	1.016	0.927
Residence (Urban ®)	1.108	0.135	1.107	0.135
Economic and social characteristics				
Respondent's education (None ®)				
Primary	0.923	0.361	0.924	0.368
Secondary	0.919	0.411	0.920	0.417
Higher	0.590	0.000	0.591	0.000
Wealth (Poorest ®)				
Poorer	0.968	0.685	0.968	0.684
Middle	1.018	0.847	1.017	0.850
Richer	1.063	0.540	1.064	0.534
Richest	0.774	0.033	0.775	0.033
			0.591	0.000
Earnings from work (Not working ®)				
Working, not paid	1.037	0.662	1.038	0.655
Paid cash, in whole or part	1.082	0.166	1.082	0.166
Paid in kind	0.757	0.268	0.756	0.265
Current marital status (married, first union ®)				
Married, second+ union	0.819	0.201	0.819	0.202
Cohabitating, first union	0.978	0.890	0.978	0.892
Cohabitating, second+ union	1.143	0.459	1.144	0.455
Divorced	0.873	0.524	0.874	0.526
Separated	1.023	0.899	1.023	0.899
Widowed	1.084	0.715	1.084	0.712
Family/friends say drinks too much (No ®)				
Yes, drinks too much	1.653	0.000	1.651	0.000
Doesn't drink alcohol	0.943	0.256	0.943	0.258
Experience of adverse life events				
Mother was beaten by father (No ®)	1.192	0.000	1.193	0.000
Was punished harshly as a child (No ®)	1.135	0.028	1.135	0.028
Ever experienced domestic violence (No ®)				
Yes, sometimes	1.330	0.000	-	-
Yes, frequently	1.854	0.000	-	-
Ever experienced forced sex (No ®)	1.385	0.003	-	-
Ever experienced gender-based violence (No ®)				
Yes, forced sex, no IPV	-	-	1.227	0.334
Yes, sometimes dv, no forced sex	-	-	1.317	0.000
Yes, freq dv, no forced sex	-	-	1.859	0.000
Yes, sometimes dv & forced sex	-	-	2.009	0.000
Yes, freq dv & forced sex	-	-	2.390	0.000