Published in final edited form as:

AIDS Care. 2017 May ; 29(5): 593–597. doi:10.1080/09540121.2016.1238442.

Prevalence and psychosocial correlates of suicidal ideation among pregnant women living with HIV in Mpumalanga Province, South Africa

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Abstract

Pregnant women living with HIV (WLHIV) in South Africa (SA) report higher rates of suicidal ideation than those who are HIV uninfected, and antenatal suicidal ideation has been previously associated with adverse maternal and neonatal outcomes. Few studies have attempted to identify correlates and psychosocial predictors of suicidal ideation in this population. In this study, we sought to estimate the prevalence of and identify risk factors for suicidal ideation among pregnant WLHIV in rural SA ($N = 673$). Thirty-nine percent of women endorsed suicidal ideation (95% CI: 35.2% to 42.3%) and in multivariable logistic regression analysis, suicidal ideation was associated with intimate partner violence and stigma, which interacted to multiplicatively increase the odds of suicidal thoughts. Given the high rates of reported suicidal ideation identified in this sample, and the potential harm to mothers and neonates, suicide risk assessment and management protocols for pregnant WLHIV should be considered for inclusion in the standard of care in rural SA.

Keywords

Suicidal ideation; HIV; pregnancy; South Africa; intimate partner violence; stigma

South Africa (SA) has the eighth highest rate of suicide in the world, with suicide being the third cause of unnatural death in the country (University of Cape Town, 2016). In SA, 17% of individuals report suicidal ideation (SI) following diagnosis with HIV, and 24% six weeks later (Govender & Schlebusch, 2012). SI rates among pregnant women living with HIV (WLHIV) are 6% higher compared to HIV-uninfected pregnant women (Rochat, Bland, Tomlinson, & Stein, 2013). Infants born to women experiencing SI may evidence emotional unresponsiveness later in life (Lindahl, Pearson, & Colpe, 2005; Paris, Bolton, & Weinberg,

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Disclosure statement

No potential conflict of interest was reported by the authors.

2009). These findings highlight the need to identify risk factors for SI among pregnant WLHIV in SA.

In SA, risk factors for SI among people living with HIV include younger age (Schlebusch & Govender, 2012), alcohol and drug use (Schlebusch, 2012), depression, and stigma (Schlebusch & Vawda, 2010). In Zambia, SI is associated with testing positive for HIV during pregnancy (Kwalombota, 2002). Furthermore, although motherhood may be protective *against* SI among HIV-uninfected women (Müller et al., 2005; Woods, Zimmerman, Carlin, Hill, & Kaslow, 2013), motherhood is a risk factor *for* SI among WLHIV (Cooperman & Simoni, 2005). In addition, sub-Saharan African WLHIV report high rates of intimate partner violence (IPV; Campbell et al., 2008), which may increase WLHIV's vulnerability for suicidality through habituation and exposure to fear/painful stimuli (Joiner, 2005).

Joiner's (2005) interpersonal–psychological theory of suicide (IPTS) posits that the absence of meaningful relationships (thwarted belongingness) and the perception of being a burden on close others (perceived burdensomeness) contribute to the emergence of SI. Therefore, lack of partner involvement in pregnancy, IPV, and stigma were hypothesized to contribute to SI. This manuscript sought to estimate the prevalence of and identify risk factors for SI among pregnant WLHIV to inform the development/improvement of clinical care intervention programs and providing programmatic recommendations to assess, manage, and treat SI (Catalan et al., 2011), the provision of which is particularly limited in low- and middle-income countries (Bruffaerts et al., 2011).

Method

Participants and procedures

Participants were 673 pregnant WLHIV in SA recruited as part of a larger study, Protect Your Family – details of the study have been previously published (Jones et al., 2014). Pregnant women at least 18 years of age on anti-retroviral therapy were recruited from Mpumalanga, SA from April 2014 to April 2015. Women provided informed consent, completed study measures using an Audio Computer-Assisted Self-Interview (completion time = 51 ± 27 minutes), and were compensated 50 South African Rand (~US\$6). All participants disclosing IPV, depression, or SI were assessed and counseled by trained study personnel; 15 women accepted the offer for further assessment and/or hospitalization, or outpatient counseling/treatment, as needed.

Measures

Prior to recruitment, measures were translated into Zulu and Sesotho, and adapted to the local setting as needed. Demographic characteristics were assessed. The Edinburgh Postnatal Depression Scale (EPDS-10; Cox, Holden, & Sagovsky, 1987) assessed depression in the past seven days ($\alpha = 0.75$). One of the EPDS-10 items (“The thought of harming myself has occurred to me”) assessed SI; the item has been found to have good sensitivity (77%) and excellent specificity (92%) for SI in SA (Rochat, Tomlinson, Newell, & Stein, 2013). Responses of “Yes, quite often”, “Sometimes”, and “Hardly ever” were coded as SI, as done

previously in research with pregnant women (Zhong et al., 2014). The AIDS-Related Stigma Scale (Kalichman et al., 2005) measured stigma ($\alpha = 0.74$), and the Disclosure Scale (Visser, Neufeld, De Villiers, Makin, & Forsyth, 2008) was used to assess disclosure of HIV serostatus. The Conflict Tactics Scale (Straus, 1979) measured IPV, but was adapted to assess frequency in the past week rather than lifetime occurrence, as IPV during pregnancy was the focus (α coefficients for the reasoning, psychological, and physical IPV subscales were 0.70, 0.83, and 0.91, respectively). The Male Involvement Index (Byamugisha, Tumwine, Semiyaga, & Tylleskar, 2010; Peltzer, Sikwane, & Majaja, 2011) measured men's involvement during pregnancy ($\alpha = 0.84$).

Statistical analyses

Univariate analyses were used to describe demographic characteristics, and bivariate analyses (t or Mann–Whitney tests, and chi-square or Fisher's exact tests) were used to compare suicidal and non-suicidal participants. For parsimony, variables found to be associated with SI at $p < .10$ in bivariate analyses were included in subsequent logistic regression analyses with SI as the outcome and depression as a covariate. Variables were omitted using backward elimination at the 0.05 level. Lastly, a second higher order effects model was built by testing a two-way interaction. SPSS v21 was used for all analyses, and $p < .05$ was used to determine statistical significance.

Results

Of 709 pregnant WLHIV invited to participate, 8 declined participation, and 28 had unusable data, resulting in a sample of 673 participants. Participants were on average 28.39 ± 5.73 years old and 17.82 ± 5.67 weeks pregnant. Nearly half had completed at least 10–11 years of education, the majority were unemployed, and one-third reported a monthly income of less than 949 ZAR (~US\$76). Further demographic details are presented in Table 1.

Slightly more than one-third (38.8% [95% CI 35.2, 42.3]) of women endorsed SI: 11.7% reported “hardly ever”, 20.8% “sometimes”, and 6.2% “yes, quite often”. Comparisons between suicidal and non-suicidal women are presented in Table 2.

After using backward elimination to exclude variables from the multivariable logistic regression model at $p < .05$, physical IPV, stigma, and depression remained (see Table 3). In the reduced logistic regression model, a significant interaction between physical IPV and stigma was obtained (see Table 4).

Discussion

This study sought to estimate the prevalence of and identify risk factors for SI among pregnant WLHIV in rural SA, with the aim of informing the development of interventions targeting WLHIV. Based on past research and theory, it was hypothesized that partner involvement and perceptions of interpersonal relationships, IPV, and stigma, would be associated with SI. As theorized, stigma and IPV contributed to SI when controlling for the influence of depression. Stigma moderated the relationship between violence and suicidal

ideation, such that the odds of physical violence being associated with SI were greater with increased stigma.

Joiner's (2005) IPTS posits that SI emerges when an individual experiences thwarted belongingness and perceived burdensomeness. Applying the IPTS, negative associations with violence may be exacerbated by the pervasive impact of HIV stigma on healthcare and social networks (Gilbert & Walker, 2010), intensifying women's feelings of not belonging and the perception of the self as a burden on others. IPTS further proposes that SI and the capability to engage in self-harm must simultaneously be present for suicide; the capacity for suicide arises from habituation to pain and/or fear (Joiner, 2005; Van Orden et al., 2010). In this study, physical violence was associated with increased odds of suicidal ideation, which when combined with stigma, may put WLHIV at greater risk for death by suicide.

Contrary to previous research (Cooperman & Simoni, 2005; Ovuga, Boardman, & Wassermann, 2005; Stallones, Leff, Canetto, Garrett, & Mendelson, 2007), employment status was not associated with SI, which may be due to widespread unemployment, limited employment opportunities in the rural setting, and women's reduced capacity for work during pregnancy. SI was not associated with age, in contrast to previous research (Schlebusch & Govender, 2012), which may be due to the sample's limited age range. In contrast with previous research in Zambia, SI was not associated with time of HIV diagnosis (Kwalombota, 2002), which may have resulted from the higher prevalence of HIV in SA (18.9% versus 12.4%; UNAIDS, 2014) leading to increased expectation of an HIV diagnosis in this sample. Interestingly, unlike previous research in the UK (Sherr et al., 2008) which associated nondisclosure of HIV status with SI, the current study did not support this finding.

Certain limitations should be considered in interpreting study results. The use of a single item to assess SI may restrict the findings, though this item has been found to have good sensitivity and excellent specificity for identifying SI in SA (Rochat, Tomlinson, et al., 2013). Furthermore, the cross-sectional analysis utilized limited temporal associations with SI. Future research should examine the impact of pre- and postnatal depression on SI, measure other suicide-related behaviors (O'Carroll et al., 1996) and explore the effects of SI and prolonged depression on infant development (Paris et al., 2009). Lastly, given the small effect sizes for IPV and stigma, clinical significance may be limited.

This study identified high rates of suicidal ideation among pregnant women with HIV. Depression had the largest association with SI, and given the high rates of depression (48.7%) among pregnant WLHIV in SA (Peltzer, Rodriguez, & Jones, 2016), programs targeting mental health among pregnant WLHIV appear warranted, highlighting the need for inclusion of SI risk assessment and management protocols in standard care for pregnant WLHIV. Prevention of depression and reduction of suicidal ideation among pre- and postpartum women living with HIV represent an important opportunity to optimize both maternal and neonatal health outcomes in sub-Saharan Africa.

Acknowledgments

Funding

This study is funded by a grant from the National Institute of Child Health and Human Development, United States National Institutes of Health [grant number R01HD078187], and with the support of the Miami Center for AIDS Research at the University of Miami Miller School of Medicine [grant number P30AI073961].

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Table 1Characteristics of suicidal vs non-suicidal participants ($N = 673$).

Characteristic	All n (%) Mean(SD)	Groups		$t/\chi^2, p$
		Non-suicidal ($n = 412$) n (%) Mean(SD)	Suicidal ($n = 261$)	
Age	28.39(5.73)	28.66(5.59)	27.97(5.93)	1.77, .077 ^a
Educational attainment				
0–10 years	147(21.8%)	80(19.4%)	67(25.7%)	4.16, .125
10–11 years	334(49.6%)	207(50.2%)	127(48.7%)	
12 years or more	192(28.5%)	125(30.3%)	67(25.7%)	
Employment status				
Unemployed	527(78.3%)	318(77.2%)	209(80.1%)	1.09, .579
Employed	116(17.2%)	76(18.4%)	40(15.3%)	
Volunteering or Student	30(4.5%)	18(4.4%)	12(4.6%)	
Monthly household income (South African Rand)				
<310 (~\$25)	299(44.4%)	182(44.2%)	117(44.8%)	0.04, .978
310–949 (~\$76)	160(23.8%)	99(24.0%)	61(23.4%)	
950 or more	214(31.8%)	131(31.8%)	83(31.8%)	
Relationship status				
Not married, living separate	398(59.1%)	242(58.7%)	156(59.8%)	0.26, .880
Not married, living together	150(22.3%)	91(22.1%)	59(22.6%)	
Married	125(18.6%)	79(19.2%)	46(17.6%)	
HIV serostatus of spouse/partner				
Negative/Do not know	506(75.2%)	304(73.8%)	202(77.4%)	1.12, .291
Positive	167(24.8%)	108(26.2%)	59(22.6%)	
Partner currently on ART				
No/Unknown	577(85.7%)	346(84.0%)	231(88.5%)	2.68, .102
Yes	96(14.2%)	66(16.0%)	30(11.5%)	
Number of children				
None	139(20.7%)	87(21.1%)	52(19.9%)	0.14, .709
One or more	534(79.3%)	325(78.9%)	209(80.1%)	
HIV serostatus of children				
Do not know	506(94.8%)	307(94.5%)	199(95.2%)	0.15, .703
Positive	28(5.2%)	18(5.5%)	10(4.8%)	
Children currently on ART				
No	2(7.1%)	2(11.1%)	0(0.0%)	FET, .524
Yes	26(92.9%)	16(88.9%)	10(100.0%)	
Disclosure of serostatus (to anyone)				
No	188(27.9%)	105(25.5%)	83(31.8%)	3.17, .078
Yes	485(72.1%)	307(74.5%)	178(68.2%)	
Disclosure of HIV status (to partner)				
No	280(41.6%)	158(38.3%)	122(46.7%)	4.63, .031
Yes	393(58.4%)	254(61.7%)	129(53.3%)	

Characteristic	All <i>n</i> (%) Mean(SD)	Groups		<i>t/X², p</i>
		Non-suicidal (<i>n</i> = 412) <i>n</i> (%) Mean(SD)	Suicidal (<i>n</i> = 261)	
Months since HIV diagnosis	23.15(36.80)	22.57(32.84)	24.07(32.84)	1.62, .106 ^a
Months since ART initiation	13.00(23.87)	12.83(22.79)	13.27(25.53)	1.47, .142 ^a
Weeks pregnant	17.82(5.67)	18.21(5.59)	17.21(5.74)	2.23, .026
Diagnosed during this pregnancy				
No	308(45.8%)	194(47.1%)	114(43.7%)	0.75, .387
Yes	365(54.2%)	218(52.9%)	147(56.3%)	
Pregnancy unplanned				
No	317(47.1%)	199(48.3%)	118(45.2%)	0.61, .434
Yes	356(52.9%)	213(51.7%)	143(54.8%)	
3 alcoholic beverages in a day (past month)				
No	581(86.3%)	362(87.9%)	219(83.9%)	2.12, .145
Yes	92(13.7%)	50(12.1%)	42(16.1%)	

Note: ART = Antiretroviral Therapy. FET = Fisher's Exact test. The values in bold represents $p < .05$.

^aMann-Whitney *Z* test was used to compare groups.

Table 2

Psychosocial variables among suicidal vs non-suicidal participants ($N = 673$).

Measure	All $n(\%)$ Mean (SD)	Non-suicidal ($n = 412$) Mean (SD) $n(\%)$	Suicidal ($n = 261$) Mean (SD) $n(\%)$	$t/\chi^2, p$
Male involvement	7.10(3.07)	7.23(3.06)	6.89(3.10)	1.47, .143 ^a
CTS reasoning	4.04(4.35)	4.17(4.36)	3.82(4.34)	1.35, .176 ^a
Psychological IPV	3.20(5.31)	2.54(4.81)	4.25(5.86)	5.33, <.001 ^a
Physical IPV	1.12(3.66)	0.66(2.72)	1.85(4.69)	5.46, <.001 ^a
Stigma	0.77(1.36)	0.59(1.19)	1.06(1.55)	5.09, <.001 ^a
EPDS-9	11.31(5.43)	9.39(5.23)	14.34(4.25)	11.63, <.001 ^a

Note: IPV = Intimate Partner Violence. EPDS-9 = Edinburgh Postnatal Depression Scale, excluding suicidal ideation item. The values in bold represents $p < .05$.

CTS = Conflict Tactics Scale.

^a Mann–Whitney Z test was used to compare groups.

Table 3

Reduced model summary of logistic regression predicting suicidal ideation ($N = 673$).^a

Predictor	<i>B</i>	<i>p</i>	O.R.	<u>95% C.I. for O.R.</u>	
				Lower	Upper
Physical IPV	0.063	.022	1.065	1.009	1.124
Stigma	0.208	.002	1.232	1.080	1.404
EPDS-9	0.202	<.001	1.224	1.177	1.274
Constant	-3.110	<.001	0.045		

Note: IPV = Intimate Partner Violence. EPDS-9 = Edinburgh Postnatal Depression Scale, excluding suicidal ideation item.

^aHosmer and Lemeshow $\chi^2 = 13.265$, $p = .103$; Nagelkerke pseudo- $R^2 = 0.296$.

Table 4

Summary of logistic regression predicting suicidal ideation with interaction term of physical IPV and stigma ($N = 673$).^a

Predictor	<i>B</i>	<i>p</i>	O.R.	95% C.I. for O.R.	
				Lower	Upper
Physical IPV	0.020	.524	1.020	0.959	1.086
Stigma	0.120	.132	1.127	0.965	1.317
EPDS-9	0.205	<.001	1.227	1.180	1.277
Physical IPV $\times$ Stigma	0.051	.044	1.053	1.001	1.107

Note: IPV = Intimate Partner Violence. EPDS-9 = Edinburgh Postnatal Depression Scale, excluding suicidal ideation item.

^aHosmer and Lemeshow $\chi^2 = 13.390$, $p = .099$; Nagelkerke pseudo- $R^2 = 0.304$.