Correlates of perceived HIV-related stigma among HIV-positive pregnant women in rural Mpumalanga province, South Africa

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Correlates of perceived HIV-related stigma among HIV-positive pregnant women in rural Mpumalanga province, South Africa

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The study investigated correlates of perceived HIV-related stigma among 673 HIV-positive women from rural Mpumalanga province, South Africa (mean age 28 years old, SD = 5.73 years). The women completed measures of HIV-related stigma experience and related personal factors. Following multivariable logistic regression, results showed that lack of male involvement during the ante-natal visits was significantly associated with all four perceived HIV-related stigma factors. Lower income, intimate partner violence (IPV), lower education, and experienced HIV-related stigma were associated with a combination of the four components of perceived HIV-related stigma. From these findings, we conclude that higher levels of education, income, and partner involvement are protective factors against perceived HIV-related stigma, at multiple layers. Improving on adult education and income generating activities can help in reducing HIV-related stigma. Male partner involvement in their partner's pregnancy, the initiation of support groups for both women and men, as well as community-based IPV prevention interventions may help to reduce perceived HIV-related stigma among women living with HIV.

Keywords: HIV, negative self-image, pregnant, stigma, women

Introduction

Stigma has been defined as the possession of a devalued trait, behaviour, or identity that results in the reduced status of individuals that possesses that trait, behaviour, or identity (Bos et al., 2013; Brown et al., 2003; Hasan et al., 2012; Tsai et al., 2013). Women living with HIV are particularly vulnerable (Bell et al., 2007; Campbell et al., 2006; Lekas et al., 2006; Matseke et al., 2016; Mwaura, 2008; Rankin et al., 2005; Yuh et al., 2014; Sangaramoorthy et al., 2017); especially those from low resource countries (Avert, 2018; Bos et al., 2008; Magadi, 2011; Mwaura, 2008; Tsai et al., 2015). Women's vulnerability to stigma is multifactorial and at its core compounded by their gendered positionality in society and the "volitional acquirability" of HIV (Carr and Gramling 2004; Earnshaw et al. 2013, 2015; Sangaramoorthy et al., 2017). The disruptiveness of HIV-related stigma on women's interpersonal relationships potentiates their vulnerability (Crandall & Moriarty, 1995).

Stigma operates at three levels: enacted, anticipated, and internalised. Enacted stigma refers to individuals' experience of current or past stereotyping, prejudiced, and stigmatising behaviours such as discrimination or exclusion due to their possession of the devalued trait (Bos et al., 2013; Earnshaw et al., 2013; Mbonye et al., 2013). Anticipated stigma is the expectation of future experiences of prejudice, stigmatising behaviours, and stereotyping due to one's possession of the devalued attribute (Earnshaw et al., 2013). Internalised stigma is defined as individuals' acceptance of the social construction of their attributes, behaviour, or identity as undesirable and the ensuing reduction in status as legitimate (Earnshaw et al., 2013; Rao et al., 2012). Inherent to internalised stigma is the development of self-deprecating constructions of

oneself through the embodiment of shame, guilt, blame, and hopelessness (Brown et al., 2003; Earnshaw et al., 2013; Rao et al., 2012). Internalised HIV-related stigma is HIV-positive individuals' acceptance and subsequent identification of their selves with the negative or devalued construction of what it means to be an HIV-positive person (Kingori et al., 2012; Rao et al., 2012).

Women living with HIV are vulnerable to enacted, anticipated, and internalised stigma (Campbell et al., 2006; Makin et al., 2010; Sangaramoorthy et al., 2017). Women in sub-Saharan Africa account for the majority of the HIV/AIDS burden in the region. As such, they are confronted with perceived HIV-related stigma at much higher rates than men (Magadi, 2011; Mwaura, 2008). The available literature on stigma among HIV-positive individuals demonstrates higher rates of stigma among HIV-positive individuals when compared to the larger community and variability in the gendered prevalence of such stigma (Kako et al., 2013; Kalichman et al., 2005; Simbayi et al., 2007). Simbayi and colleagues (2007) demonstrated that men experienced higher rates of reported stigma compared to women. However, although depression was positively correlated with stigma, women experienced higher rates of depression than men (Simbayi et al., 2007). In contrast, Mugoya and colleagues (2014) found that when compared to their male counterparts, HIV-positive women were more likely to endorse higher rates of stigma and to experience more severe levels of stigma.

One mode through which HIV-positive women are more vulnerable to stigma and the internalisation of stigma, is through the idea of intersectionality (Carr & Gramling 2004; Earnshaw et al., 2013). Some of the literature postulates and demonstrates that an HIV diagnosis compounds the societal inequities and associated

stigma already tied to their raced, classed, and gendered identities (Kako & Dubrosky, 2013; Lekas et al., 2006; Mwaura, 2008; Sandelowski et al., 2004; Sangaramoorthy et al., 2017). Campbell and colleagues (2006) note three main driving forces of maintaining stigma among women: (i) fear of being infected with HIV in the setting of high rates of infections, (ii) poverty, and (iii) stigmatisation of sexuality, particularly women's sexuality. Consequently, women's particular vulnerability to HIV-related stigma is mediated by the discourse around notions of who gets infected with HIV and the idea that women's acquirement of HIV is a result of behaviours of "immoral" womanhood such as promiscuity and/or intravenous drug use (Lekas et al., 2006; Sangaramoorthy et al., 2017). Additionally, at the intersection of womanhood and poverty, HIV-positive women's vulnerability to experiencing stigma is shaped by societal disapproval of mothering in context of poverty and/or risk of transmitting HIV to a child (Sandelowski et al., 2004). According to Sangaramoorthy and colleagues (2017), HIV-positive women revealed a sense of shame around having their decisions for motherhood in the context of disclosed HIV being framed as immoral.

HIV-related stigma among HIV-positive women has been shown to be tied to lower rates of disclosure and lower engagement in HIV-related care (Crandall & Moriarty, 1995; Makin et al., 2010; Medley et al., 2004; Ramlagan et al., 2018; Sangaramoorthy et al., 2017). Although numerous studies have demonstrated the modes in which HIV-positive women are vulnerable to experiencing stigma and the association with negative health outcomes, there remains a gap in our knowledge of how stigma is experienced by HIV-positive pregnant women and factors that predict the level and type of stigma they experience (Sangaramoorthy et al., 2017; Sandelowski et al., 2009). This knowledge gap is particularly apparent for those who are pregnant and living in resource-limited communities (Sangaramoorthy et al., 2017; Sandelowski et al., 2009).

Significance of the study

Characterising stigma operating at the perceived level is of particular importance not only for the ways HIV-related stigma impacts on the health of People Living with HIV (PLHIV), but also because, as demonstrated within a South African context, the general adult population harbours less negative views about HIV when compared to the perceived stigma experienced by PLHIV (Kalichman et al., 2005; Simbayi et al., 2007). HIV-related stigma has been linked to greater determent from seeking HIV-related treatment, avoidance of prevention of mother to child transmission (PMTCT) programs, and decreased rates of disclosure (Kingori et al., 2012; Rahangdale et al., 2010; Tsai et al., 2013).

Goal of the study

This study aimed to examine HIV-related correlates of perceived HIV-related stigma among HIV-positive pregnant women in rural Mpumalanga province, South Africa. It sought to address the following questions:

- What are the personal characteristics and HIV factors that predict experience of perceived HIV-related stigma?
- What are the roles of intimate partner violence (IPV) and male involvement in the experience of perceived HIV-related stigma?
- How are levels of depressive symptoms related to perceived HIV-related stigma?

Method

Study design and population

This study is part of the larger Protect Your Family (PYF) randomised controlled trial conducted among HIV-positive, less than six months pregnant, black African women, attending 12 community health centres (CHCs) in Nkangala and Gert Sibande districts in Mpumalanga province, South Africa (Jones et al., 2014). The cross-sectional data we report on were gathered between April 2014 and March 2015.

Participants and setting

A total of 673 HIV-positive pregnant women were participants (mean age = 28 years, SD = 5.73 years). Sample demographics are presented in Table 1. The majority (71.5%) did not complete grade 12 (matric) schooling. A high third of the participants reported that their monthly household income was less than R310 which was the South African government child grant amount during the study time period. Of all respondents, 20% stated that they experienced mild to severe physical violence from their intimate partners, 41% experienced AIDS related stigma, and 42% experienced no male partner involvement during this pregnancy (see Table 1). Interestingly, half of the HIV-positive pregnant women experienced low depression and just over half were diagnosed as HIV-positive during this pregnancy.

Measures

Participants completed the following measures: Perceived HIV Stigma Scale (PHSS: Berger et al., 2001; Lindberg et al., 2014); HIV Treatment Management Measures (Diagnosis); antiretroviral (ARV) adherence using the Visual Analogue Scale (VAS; Giordano et al., 2004); IPV using the Conflict Tactics Scale (CTS: Straus, 1979); the AIDS-Related Stigma Scale (ARSS: Kalichman et al., 2005); and depression using the Edinburgh Postnatal Depression Scale 10 (EPDS-10: Cox et al., 1987). Furthermore, they self-reported their demographics including age at last birthday, educational attainment, relationship status, employment status, income per month in South African Rand (ZAR), number of children, if this pregnancy was unplanned, and alcohol usage of more than two drinks on at least one occasion in the previous four weeks.

The Perceived HIV Stigma Scale

The PHSS is a 40-items measure of stigma as perceived by people with HIV (Berger et al., 2001; Lindberg et al., 2014). Items were answered on a 4-point Likert-scale ranging from strongly disagree, to strongly agree. Example statements of the scale include: "Having HIV makes me feel unclean"; "I regret having told some people that I have HIV"; and "Having HIV in my body is disgusting to

Table 1. Sample demographics

Variable	n(%)
All	673(100)
Age (mean = 28.39, SD = 5.73)	
Educational attainment	
Grade 12 or more	192(28.5)
Grade 11 and less	481(71.5)
Relationship status	
Not living together	419(62.3)
Living together	254(37.7)
Employment status	
Not employed	527(78.3)
Employed, volunteer or student	146(21.7)
Income (ZAR)per month	
< R310	221(32.8)
R311 or more	452(67.2)
Number of children	
None	139(20.7)
One or more	534(79.3)
Unplanned pregnancy	
No	317(47.1)
Yes	356(52.9)
Alcohol use of more than 2 drinks on at least on one occasion in the past 4 weeks	
No	581(86.3)
Yes	92(13.7)
Diagnosed with HIV in this pregnancy	
No, before	308(45.8)
Yes	365(54.2)
Has HIV-positive children	
No or do not know	506(75.2)
Yes	28(4.2)
VAS adherence	
Non adherent	210(31.2)
100% adherent	463(68.8)
HIV-positive partner	
No or do not know	506(75.2)
Yes	167(24.8)
Intimate partner violence	
No mild or No severe physical violence	541(80.4)
Mild or severe physical violence	132(19.6)
AIDS related stigma	
No	400(59.4)
Yes	273(40.6)
Depression	
No/Low	345(51.3)
High	328(48.7)
Male involvement	
No	281(41.8)
Yes	392(58.2)

me.” In the present study, Cronbach’s Alpha reliability for scores from the PHSS was $\alpha = 0.96$.

HIV treatment management

HIV treatment management related questions included whether the HIV diagnosis was made during their current pregnancy; whether the participant has any HIV-positive children; and partners’ HIV status. Furthermore,

male involvement (in other words, whether their male partner knew what occurred during in the antenatal clinic visit) was also captured. This was assessed using one question: “Does your male partner know what happens in the antenatal clinic?” Response to the question was dichotomous, i.e. Yes/No.

ARV adherence measure with the VAS

ARV adherence was assessed using the seven day recall VAS (Giordano et al., 2004) where participants were recorded as “adherent” (coded 1) if they took all their medication on all seven days, and as “0” if they missed any of their medication during the past seven days (Ramlagan et al., 2018).

IPV measured with the CTS

IPV was assessed utilising the 18-item CTS (CTS-18; Straus, 1979). A higher score on the scale is indicative of increased IPV. For the present study, Cronbach’s Alpha reliability for scores from the CST-18 was $\alpha = 0.84$.

AIDS-Related Stigma Scale

The ARSS is a 9-item measure of internal representations of AIDS-related stigma (Kalichman et al., 2005). Scores on the scale range from 0 to 8, where higher scores indicate greater levels of stigma. In the present study, Cronbach’s Alpha reliability for scores from the ARSS was $\alpha = 0.73$.

Depression measured with the EPDS-10

Depression was assessed utilising the EPDS-10, a 10-item measure of depression (Cox et al., 1987). Scores ranged from 0 to 30, where the higher the score, the more the likelihood of depression. The validated cut-off score of 12 for South African populations was utilised (Lawrie, 1998). In the present study, Cronbach’s Alpha reliability for scores from the EPDS-10 was $\alpha = 0.66$.

Procedure

Ethical approval was granted by the University of Miami Miller School of Medicine Institutional Review Board (IRB ID: 20130238 (CR00006122)) as well as the South African Human Sciences Research Council Research Ethics Committee with Protocol No REC 4/21/08/13. As the study was being conducted in Mpumalanga Province, study approval was also obtained from the Mpumalanga Provincial Government, Department of Health.

Participants were only included if they were 18 years or older, were HIV-positive, were less than six months pregnant, not part of the PYF study at another study site, having a partner (not necessarily the father of the foetus), and willing to participate in this study. Once consented, participants completed the interview on Audio Computer-Assisted Self-Interview (ACASI) technology (NIMH Multisite HIV/STD Prevention Trial for African American Couples Group, 2008).

Interviews were conducted either in English, seSotho, or isiZulu. The written questionnaire was first translated into seSotho and isiZulu and then independently back-translated. The approved translations were then audio recorded by two female project researchers who could converse in the languages. The audio and written

questionnaires were synced and uploaded onto laptops, at which time the study field staff tested them for accuracy. For completing the baseline interview, participants were given R50.00 (South African Rands) or US\$4.72.

Data analysis

Software SPSS, version 24.0 (IBM Corp, 2016) was used for data analyses. Univariate and multivariable logistic regression were used to investigate associations between the four factors of perceived HIV-related stigma and socioeconomic, HIV-related, and behavioural variables. Associations were considered significant at $p < 0.05$. All statistically significant variables in the univariate analyses were included in the multivariable logistic regression. Multi-collinearity was tested.

Results

Table 2 and Table 3 present the correlations and reliability indices for the perceived HIV-related stigma measures. As indicated in table 3, in the present study, Cronbach's Alpha reliability scores for each of the four subscales ranged between $\alpha = 0.79$ and $\alpha = 0.94$; providing evidence for the internal consistency of the resulting subscales.

Table 4 presents the findings from the univariate and multivariable logistic regression predicting HIV-related stigma from personal factors and HIV variables. These predictions suggest that those with lower education and income, who experience IPV, and those with no male involvement in their current pregnancy, were more likely to experience personalised stigma.

As indicated in Table 4, both univariate and multivariable logistic regression found that those with a lower income and those with no male involvement in their current pregnancy were more likely to experience concerns with public attitude and have disclosure concerns. A negative self-image was predicted by those who experienced more HIV-related stigma and those with no male involvement in their current pregnancy.

Discussion

This study sought to predict correlates of perceived HIV-related stigma among HIV-positive pregnant women in a South African rural community.

Having no male partner involvement in the pregnancy was significantly associated with experiencing all four of the HIV-related stigma factors. This significant finding leads us to deduce that positive male involvement seems critical in assisting pregnant women to potentially reduce what Scheff (1966) defines as their self-defacing beliefs and perceptions of themselves. Male involvement in PMTCT has been recognised as a priority area in the elimination of mother-to-child transmission of HIV where their positive involvement in the pregnancy can have an influence in the extended social environment of the family, can increase health seeking behaviour, can increase adherence to ARV medication as well as clinic appointments, and assist to mitigate stigma (WHO, 2012). It is imperative to caution that, in this study, male involvement was measured by utilising only one question. Using one question as a measure of involvement in pregnancy is limiting and as such, the result, although significant must be interpreted with caution as additional in-depth research in the area of male involvement in reducing stigma among HIV-positive women is needed.

Women with a low income were more likely to experience three of the four HIV-related stigma factors. This finding is similar to the finding of Tsai and colleagues (2015), who noted that PLHIV from poorer households were at more than twice the risk of experiencing HIV-related stigma. Additionally, poverty is one of the three main driving forces of maintaining stigma (Campbell et al., 2006). Poverty increases vulnerability (Avert, 2018). Furthermore, Matseke and colleagues (2016) found that poverty combined with HIV-positive status leads to additional burden in the lives of pregnant women. This burden places HIV-positive, stigmatised women at risk of being less able to adopt HIV risk-reducing behaviours

Table 2. Correlation matrix and variance of the four dimensions of perceived HIV-related stigma

	1	2	3	4
1 Personalised stigma	1			
2 Concerns with public attitude	0.489**	1		
3 Disclosure concerns	0.676**	0.524**	1	
4 Negative self-image	0.699**	0.628**	0.682**	1
Eigenvalues	15.53	2.87	1.63	1.45
% variance	38.81	7.17	4.08	3.63
N	673	673	673	673

Note. **Correlation is significant at the 0.01 level (2-tailed)

Table 3. Descriptive of the four perceived HIV-related stigma factors (N=673)

Factor name	Items	M(SD)	Skewness*	Kurtosis**	Alpha
Personalised stigma	17	35.17(10.38)	0.209	0.005	0.944
Concerns with public attitude	7	15.98(4.56)	0.140	-0.077	0.794
Disclosure concerns	6	14.36(4.00)	-0.219	0.007	0.819
Negative self-image	10	21.14(6.54)	0.316	0.015	0.894

Note. *Std Error = 0.094; **Std Error = 0.188

Table 4. Association of demographic, socioeconomic, health, and behaviour characteristics to factors of perceived HIV-related stigma

Variable	Component 1 Personalised stigma		Component 2 Concerns with public attitude		Component 3 Disclosure concerns		Component 4 Negative self-image	
	Cr OR (95% CI)	Adj OR (95% CI)	Cr OR (95% CI)	Adj OR (95% CI)	Cr OR (95% CI)	Adj OR (95% CI)	Cr OR (95% CI)	Adj OR (95% CI)
Age (scale)	0.98(0.93–1.03) <i>p</i> = 0.444		1.00(0.94–1.06) <i>p</i> = 0.977		0.99(0.94–1.04) <i>p</i> = 0.690		1.00(0.95–1.05) <i>p</i> = 0.951	
Educational attainment								
Grade 12 or more	2.58(1.04–6.05) <i>*p</i> = 0.041	2.83(1.15–6.96) <i>*p</i> = 0.023	2.31(0.88–6.09) <i>p</i> = 0.089		1.14(0.58–2.25) <i>p</i> = 0.704		1.03(0.54–1.93) <i>p</i> = 0.931	
Grade 11 and less (ref)								
Relationship status								
Not living together	0.98(0.52–1.87) <i>p</i> = 0.961		0.63(0.31–1.27) <i>p</i> = 0.195		1.04 (0.56–1.93) <i>p</i> = 0.909		0.90(0.50–1.63) <i>p</i> = 0.732	
Living together (ref)								
Employment status								
Not employed	0.60(0.30–1.18) <i>p</i> = 0.136		1.26(0.51–3.11) <i>p</i> = 0.616		0.68(0.35–1.36) <i>p</i> = 0.265		1.12(0.55–2.29) <i>p</i> = 0.763	
Employed, student, volunteer (ref)								
Income (ZAR)per month								
< R310	0.51(0.27–0.96) <i>*p</i> = 0.038	0.51(0.27–0.98) <i>*p</i> = 0.045	0.44(0.22–0.89) <i>*p</i> = 0.022	0.43(0.21–0.87) <i>*p</i> = 0.020	0.56(0.31–1.02) <i>*p</i> = 0.058	0.54(0.29–1.00) <i>*p</i> = 0.050	0.60(0.33–1.07) <i>p</i> = 0.083	
R311 or more (ref)								
Number of children								
None	1.60(0.66–3.88) <i>p</i> = 0.296		1.94(0.67–5.61) <i>p</i> = 0.222		2.23(0.86–5.75) <i>p</i> = 0.097		1.99(0.83–4.77) <i>p</i> = 0.123	
One or more (ref)								
Unplanned pregnancy								
No	0.92(0.49–1.73) <i>p</i> = 0.803		1.37(0.68–2.76) <i>p</i> = 0.381		1.03(0.57–1.88) <i>p</i> = 0.919		1.13(0.64–2.02) <i>p</i> = 0.670	
Yes (ref)								
Alcohol use of 2 or more drinks on at least on one occasion in the past 4 weeks								
No	0.65(0.29–1.46) <i>p</i> = 0.298		1.62(0.48–5.41) <i>p</i> = 0.436		0.87(0.38–2.02) <i>p</i> = 0.752		0.97(0.42–2.23) <i>p</i> = 0.944	
Yes (ref)								
Diagnosed with HIV during this pregnancy								
No	1.63(0.87–3.06) <i>p</i> = 0.130		0.99(0.49–1.99) <i>p</i> = 0.971		1.20(0.66–2.18) <i>p</i> = 0.551		1.10(0.62–1.96) <i>p</i> = 0.742	
Yes (ref)								

Variable	Component 1 Personalised stigma		Component 2 Concerns with public attitude		Component 3 Disclosure concerns		Component 4 Negative self-image	
	Cr OR (95% CI)	Adj OR (95% CI)	Cr OR (95% CI)	Adj OR (95% CI)	Cr OR (95% CI)	Adj OR (95% CI)	Cr OR (95% CI)	Adj OR (95% CI)
Has HIV-positive children								
No	0.94(0.21–4.11) <i>p</i> = 0.931		0.73(0.17–3025) <i>p</i> = 0.682		0.68(0.20–2.34) <i>p</i> = 0.538		1.78(0.27–5.13) <i>p</i> = 0.829	
Yes (ref)								
VAS adherence								
Non adherent	0.50(0.23–1.10) <i>p</i> = 0.084		0.58(0.25–1.36) <i>p</i> = 0.209		0.86(0.44–1.67) <i>p</i> = 0.656		1.04(0.56–1.93) <i>p</i> = 0.899	
100% adherent (ref)								
HIV-positive partner								
No or Don't Know	1.06(0.51–2.21) <i>p</i> = 0.876		0.87(0.40–1.92) <i>p</i> = 0.738		1.20(0.58–2.48) <i>p</i> = 0.617		0.94(0.48–1.80) <i>p</i> = 0.840	
Yes (ref)								
Intimate partner violence								
No	10.74(1.46–78.82) <i>*p</i> = 0.020	7.92(1.06–59.09) <i>*p</i> = 0.043	8.24(1.16–60.83) <i>*p</i> = 0.039	7.48(1.01–55.56) <i>*p</i> = 0.049	2.69(0.95–7.65) <i>p</i> = 0.063		2.97(1.05–8.41) <i>*p</i> = 0.040	2.21(0.77–6.39) <i>p</i> = 0.142
Yes (ref)								
AIDS related stigma (Scale)								
No	1.63(1.04–2.56) <i>*p</i> = 0.032	1.48(0.97–2.26) <i>p</i> = 0.070	1.27(0.87–1.85) <i>p</i> = 0.215		1.28(0.93–1.78) <i>p</i> = 0.131		1.55(1.05–2.29) <i>*p</i> = 0.028	1.47(1.00–2.15) <i>*p</i> = 0.052
Yes (ref)								
Depression								
No/Low	1.16(0.62–2.18) <i>p</i> = 0.640		0.89(0.44–1.79) <i>p</i> = 0.743		0.86(0.47–1.57) <i>p</i> = 0.629		1.47(0.82–2.64) <i>p</i> = 0.201	
Yes (ref)								
Male involvement								
No	0.14(0.05–0.38) <i>***p</i> < 0.000	0.13(0.05–0.38) <i>***p</i> < 0.000	0.30(0.12–0.72) <i>**p</i> = 0.008	0.32(0.13–0.78) <i>**p</i> = 0.012	0.19(0.08–0.46) <i>***p</i> < 0.000	0.20(0.08–0.48) <i>***p</i> < 0.000	0.14(0.06–0.36) <i>***p</i> < 0.000	0.15(0.06–0.37) <i>***p</i> < 0.000
Yes (ref)								

Note. Cr OR = crude Odds Ratio; Adj OR = Adjusted Odds Ratio; **p* < 0.05; ***p* < 0.01; ****p* < 0.001

(Avert, 2018) and thus perpetuating the cycle of their devalued perceptions of themselves.

IPV was significantly associated with experiencing personalised stigma. This might be explained by the fact that experiencing IPV while HIV-positive and pregnant can lead to the development of self-deprecating constructions of oneself through the embodiment of shame, guilt, blame, and hopelessness (Brown et al., 2003; Earnshaw et al., 2013; Rao et al., 2012). It is this acceptance and subsequent identification with the devalued construction of themselves (Kingori et al., 2012; Rao et al., 2012) that probably leads to increased perceived HIV-related stigma. This could also be related to ARSS related stigma, which was experienced by an extremely high 41% of the study population, and was only associated in the multivariable logistic regression with the stigma of negative self-image.

Participants that did not complete school, were more likely to experience personalised stigma. This finding is similar to that of Sekoni, Obidike, and Balogun (2012) who found association between higher education and lower levels of personalised and disclosure stigma. As with IPV mentioned above, those with a lower education may also develop self-deprecating constructions of themselves (Brown et al., 2003; Earnshaw et al., 2013; Rao et al., 2012). This could be due to those with lower levels of education also experiencing poorer living and working conditions (Sekoni et al., 2012). Additionally, they may be less knowledgeable about adopting risk-reducing behaviours (Avert, 2018).

Conclusion

In conclusion, this study reveals the ways in which higher levels of education, income, and positive partner involvement (outside of the context of IPV) serve as protective factors against perceived HIV-related stigma, at multiple layers. Improving on adult education and income generating activities can help in reducing HIV-related stigma. Strategies need to be developed to encourage male partners to be positively involved in their partner's pregnancy and as such, more research is required to explore male involvement in PMTCT in the South African context. Immediate action is needed to tackle IPV and could be achieved through community-based IPV prevention interventions and support groups for both women and men.

Authors' note

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