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Elevated depression symptoms and key associated factors in female sex workers and women living with HIV/AIDS in the Dominican Republic

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Abstract

Little is known about the mental health of female sex workers (FSW) and women living with HIV/AIDS (WLWHA) in the Dominican Republic, which impedes HIV prevention, testing and treatment. This project estimates the prevalence of depression and identifies key contributing factors to this outcome in FSW, WLWHA, and a comparison group. Participants were FSW (N=349), WLWHA (N=213), and a comparison group of HIV-negative women who were not sex workers (N=314) from the Dominican Republic. Participants completed questionnaires assessing demographic characteristics and depression. FSW and WLWHA completed additional questionnaires ascertaining HIV or sex work-related internalized stigma. Depression was prevalent among FSW (70.2%), WLWHA (81.1%) and the comparison group (52.2%). Adjusted logistic regressions showed that internalized stigma was associated with depression for FSW (OR=2.73; 95%CI=1.95–3.84) and WLWHA (OR=3.06; 95%CI=1.86–5.05). Permanent income was associated with this outcome for FSW (OR=0.08; 95%CI=0.01–0.80) and the comparison group (OR=0.04; 95%CI=0.00–0.45).

Introduction

Depression is a major global health problem, (1) and was identified as the fourth leading cause of overall disease burden, measured in disability adjusted life years (2). Worldwide, depression is more common in women than men, with an estimated male/female risk ratio of 2:1 (3). Depression is especially prevalent in female sex workers (FSW) and HIV-positive women. Studies of these groups across multiple sociocultural contexts show that the

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Declaration of Conflicting Interests

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prevalence of depression in FSW is at least 50% (4–8) and can be as high as 80% (9) and can range from 25.8% to 81.0% for HIV-positive women (10–13). Scholars note that depression is associated with risky sex behaviors, including inconsistent and improper condom use (14), engaging in condomless vaginal intercourse (15–17), trading sex for money (18), having sex while drunk or “high” (16, 18), and having multiple sex partners (19), which is especially important for FSW and HIV-positive women. Still, there is a dearth of scientific work about depression in these groups globally, and almost no work about these populations in the Caribbean. This is problematic, since the Caribbean region has the second highest regional prevalence of HIV/AIDS in the world (1.1%) (20). The Dominican Republic (DR) is home to generalized (0.8% – 1.5%) (21) and concentrated HIV epidemics for FSW (3.3% – 8.4%) (22). Improved understanding of depression in FSW and HIV-positive women is critical to designing more effective HIV prevention, testing and treatment programs both globally and regionally.

Sociocultural factors that may influence depression in FSW and HIV-positive women in the Dominican Republic

Social and cultural factors may influence depression for FSW and HIV-positive women in the DR. For instance, ethnographic work (23) shows that some FSW do not live in the same household as their children. FSW who do not live in the same household as their children may report worse depression, since this separation may trigger loneliness and implies divergence from traditional norms about motherhood (23), such as acting as the primary caretaker. These findings may or may not extend to HIV-positive women, since the percentage of HIV-positive women who do not live in the same household as their children is unknown. Haitian women in the DR are extremely marginalized, often living in highly impoverished areas that lack access to basic public services (24). Amplifying their vulnerability, a recent controversial amendment to the Dominican constitution has stripped generations of Haitian-Dominicans of their citizenship rights and drastically increased Haitian migrants' susceptibility to deportation (25). Because of their rapidly worsening social and economic circumstances, Haitian FSW and HIV-positive women may report worse depression than their Dominican peers. Lastly, internalized stigma, characterized by self-directed feelings of shame and blame, is positively associated with worse depression among HIV-positive individuals across multiple geographic and cultural settings (26). This could also be the case for HIV-positive women in the DR. Findings about the relationship between internalized stigma and depression could extend to FSW, since sex work is highly stigmatized across sociocultural contexts, including this one (27–29).

The current study builds on other research (4–8, 30). It assesses the prevalence of depression in FSW and HIV-positive women, considers the role of several covariates on depression in these two groups, and compares key predictors of depression to a comparison group of HIV-negative low-income women in the DR who are not sex workers.

Methods

Participants and procedures

This project is a secondary examination of a cross-sectional study about motherhood, the health of stigmatized women, and their children. Data come from purposive samples of FSW (N=349), HIV-positive women (N=213), and a comparison group of HIV-negative low-income women who were not sex workers (N=314) in San Felipe de Puerto Plata, DR. FSW participants fell into two groups: formally employed and independent sex workers. A diverse sample of FSW was obtained by recruiting formally employed sex workers from multiple rural and urban sex work sites including cabarets/casas de citas (N=173), carwashes (N=30), and escort resorts (N=42). Cabarets/casas de citas are bars and brothels that employ women to sell alcoholic drinks, dance with customers, and sell sexual services. Women who work at these venues may or may not live on the premises. Car washes in the DR also employ sex workers to sell drinks and sexual services to patrons, while escort resorts are adults-only resorts staffed by sex workers available for hire. Independent sex workers (N=93) were recruited from cabarets/casas de citas, carwashes, and bars. Independent sex workers are FSW who are not formally employed by any particular business and work on a freelance basis on the street, from their houses, or in local bars. Women in the independent sex work group reported no formal employment relationship with any sex work site, but were permitted to enter venues by managers of the sex work establishments. Prior to recruiting participants at any of the sex work establishments, the primary investigator or research assistant contacted site managers for approval.

The primary investigator and a local research assistant recruited HIV-positive women directly from the waiting rooms of one of two outpatient HIV/AIDS treatment programs. These programs were affiliates of one another. HIV/AIDS treatment programs in this study included: (1) El Centro de Promoción y Solidaridad Humana (CEPROSH; N=120), and (2) a CEPROSH-affiliated HIV clinic at a local public hospital (N=113). CEPROSH also provides basic health care and HIV prevention services to HIV-negative, low-income men and women. Thus, comparison group women were recruited from CEPROSH's HIV-negative care program (N=314). Low-income was implied by being a patient at CEPROSH.

To be eligible for this study, respondents had to be female, older than 17 years of age, not pregnant, and have at least one biological or adopted child younger than 16 years old. HIV-positive sex workers were excluded from all three groups. Recruitment took place from April-December 2014, when the sampling goals for FSW (N=325), HIV-positive women (N=200), and the comparison group (N=300) were reached. Since this project is a secondary analysis of data from a larger study about stigmatized mothers and the health of their children, sampling goals were based on power calculations to detect associations between covariates and primary outcome variables (e.g., child mental distress) of the main study.

Tablet-based questionnaires were verbally administered in Spanish by trained interviewers. Questionnaires ascertained information about participants' demographic characteristics, internalized stigma, and depression. All questionnaires were conducted in private rooms or in quiet, secluded areas of participants' places of work (FSW), CEPROSH, or the CEPROSH-affiliated outpatient clinic (HIV-positive women, comparison group) to ensure

privacy and confidentiality. All participants received RD\$150 (US\$3.30) for their time. The Colorado Multiple Institutional Review Board (COMIRB; 11-0508) and Consejo Nacional de Bioética en Salud (CONABIOS) granted approval for this study. Participation was voluntary and informed written consent was obtained from all participants.

Measures

The main outcome variable, depression, was measured by the 10-item Center for Epidemiological Studies Short Depression Scale (CES-D 10) (31). The CES-D 10 asked respondents to report the number of times they experienced depression symptoms in the last week using a 4-point scale (e.g., “I felt that everything I did was an effort”; rarely or none of the time, some or a little of the time, occasionally or a moderate amount of the time, all of the time). Cronbach’s alpha measures for FSW (0.87), HIV-positive women (0.86), and the comparison group (0.72) indicated that the scale was reliable for use in these populations. Mean scores were calculated for the CES-D 10, where a mean score of 10 (out of a possible 30 points) was the clinical cutoff (31). Participants with a CES-D 10 score < 10 were indicated as having “no depression”, while participants with a CES-D 10 score ≥ 10 were indicated as having a positive screen for “depression”.

Several depression-related covariates were included in our analysis, based on the literature. Internalized HIV-related stigma was measured using a Spanish version of the 6-item Internalized AIDS-Related Stigma Scale (IA-RSS; “I hide my HIV status from others”) (26). To measure internalized sex work related stigma, the IA-RSS was adapted for use with sex workers (e.g., “I hide that I am a sex worker from others”) during a pilot study that occurred from December 2011-January 2012. Additionally, to increase scale sensitivity, response choices were converted from dichotomous options (agree/disagree) to a 4-point scale (e.g., “no, rarely, sometimes, yes”) for the IA-RSS (Cronbach’s Alpha=0.76) and the Internalized Sex Work Related Stigma Scale (ISW-RSS; Cronbach’s Alpha=0.83). Internalized sex work and HIV-related stigmas were ascertained by calculating mean scores on these scales. Higher mean scores for each scale meant more internalized HIV or sex work-related stigma.

Permanent income, which measures household wealth, was assessed using the World Health Organization’s World Health Survey (WHS; “Does anyone in your household have a refrigerator”; yes/no). Permanent income is thought to be a better financial indicator than participant self-reports of income because it eliminates biases based on respondents’ different interpretations of income and expenditures (32). To calculate permanent income, principal components analysis was conducted on items in the WHS Permanent Income Indicators questionnaire. Items with rotated factor loadings (promax) <0.4 were excluded from final calculations of permanent income. Remaining items were weighted by their rotated (promax) factor loadings and retained for analysis. Mean scores for permanent income were then calculated using weighted questionnaire items, where higher scores meant more permanent income (32).

Finally, we ascertained demographic variables including age (years), education (last grade completed), nationality (Haitian/Dominican), partnership (“which of the following best describes your relationship type?”; partnered/unpartnered), number of living biological or adopted children, and whether children live with the respondent (yes/no).

Analyses

Statistical analyses were conducted in Stata 13.1. Descriptive analyses summarized participant characteristics. Means and medians were used for continuous variables (e.g., age) and percentage frequencies were used for categorical variables (e.g., partnered). Then, t-tests (continuous variables) and chi-squared tests (categorical variables) were used to determine if differences existed for each variable between (1) FSW and the comparison group and (2) HIV-positive women and the comparison group. Unadjusted odds ratios were computed between covariates and depression separately for FSW, HIV-positive women, and the comparison group. Then, separate adjusted logistic regressions that included all covariates simultaneously were run for each of the three study groups to determine if associations in the unadjusted models remained. Each separate regression model tested for associations between covariates and depression. Logistic regressions for the comparison group did not contain internalized stigma, since these participants were HIV-negative and not sex workers.

To assess if there were differences in the effect of specific covariates on depression in each of the two groups, the authors compared key predictors of depression in FSW and HIV-positive women to the control group. To do this with FSW, the FSW and comparison group datasets were combined and interaction terms were calculated between each covariate and FSW group membership. Internalized stigma was excluded from this model, since control group participants did not experience HIV or sex work-related stigma. Separate adjusted logistic regression models were computed for each interaction term and contained: all covariates except for internalized stigma, a new independent variable identifying FSW, and the interaction term. This same process was repeated for HIV-positive women. All adjusted model, including the model containing interactions, were controlled for age, education, nationality, number of living biological or adopted children, whether children live with the respondent, and partnership status to account for differences between groups.

All adjusted models were controlled for age, education, and partnership status to account for differences between groups. Since the largest percent of missing data for any variable was <3%, listwise deletion was used in the unadjusted and adjusted regressions.

Results

Participants

Table 1 shows descriptive data about demographic characteristics and depression symptoms of FSW, HIV-positive women, and the comparison group of low-income women who were HIV-negative and not sex workers. The prevalence of depression was 70.2% (FSW), 81.1% (HIV-positive women), and 52.2% (comparison group). There were significant differences in depression between FSW and the comparison group (e.g., years of education, permanent income score, nationality, partnership, children living with the respondent, and depression) as well as between HIV-positive women and the comparison group (e.g., age, years of education number of living biological or adopted children, permanent income, nationality, children living with the respondent, and depression).

Table 2 shows the results of unadjusted and adjusted logistic regressions for each group.

Internalized stigma was positively associated with depression in the unadjusted and adjusted logistic regressions. Specifically, a one-unit increase in internalized stigma was associated with almost three times greater odds of depression for FSW (AOR=2.73; 95% CI= 1.95–3.84) and HIV-positive women (AOR=3.06; 95%CI= 1.86–5.05) in the adjusted models. Additionally, adjusted logistic regressions showed that one-unit increases in permanent income score for FSW (OR=0.08; 95% CI= 0.01–0.80) and the comparison group (OR=0.04; 95% CI= 0.00–0.45), were associated with 92% and 96% lower odds of depression, respectively.

When adjusted logistic regressions containing interaction terms were run separately in the FSW/comparison group and HIV-positive women/comparison group, only the interaction term for age*HIV-positive women (AOR=0.92; 95% CI= 0.87–0.98) was significant in the HIV-positive women/comparison group. This indicates that the effect of age on depression was weaker among women living with HIV/AIDS than among comparison group women.

Discussion

This study was the first to estimate the prevalence of depression and identify key factors associated with this outcome in FSW and HIV-positive women in the Dominican Republic. The prevalence of depression was significantly higher for FSW (70.2%) and HIV-positive women (79.8%) than for the comparison group (52.2%). This is consistent with findings from other regions about HIV-positive women (e.g., 76.3% in Brazil) (33) and FSW (e.g., 86% in Mexico) (8), confirming the need to incorporate strategies to address mental health for these populations. This is especially important for FSW, since little has been done to address their mental health. It is noteworthy that depression was prevalent in the comparison group (52.2%). Other studies in the DR (34) have documented high mean rates of depression in the general population (23%–40%) and studies examining poverty and depression from other sociocultural settings show that low-income is associated with depression (35). Regardless, it is evident that clinicians should prioritize mental health care for all women in the DR, independent of HIV risk or status.

This analysis showed that internalized stigma was associated with depression in FSW and HIV-positive women. This is consistent with findings from other work, (36–40) reasserting the need to address internalized stigma as a part of mental health care in the clinic setting. Still, it remains unclear whether internalized stigma is a precedent (38, 39) or consequence (36, 37, 40) of depression, since evidence exists to support both. Structural interventions to address the social climate of HIV/AIDS are sorely needed. Such interventions could have the effect of reducing internalized HIV-related stigma (40) and subsequently may improve depression symptoms for HIV-positive women. Structural interventions to change the social climate around sex work could have similar implications for FSW.

Permanent income score was inversely associated with depression for FSW and the comparison group. Other studies in low and middle-income countries had similar findings (28), where low-income was associated with worse depression. A case-control study examining the effect of providing a private sector living wage to apparel factory workers on self-reported depression symptoms (34) showed that this inverse relationship is also true for

the DR. Taken together, these findings indicate that efforts to address poverty could have a positive effect on depression across diverse groups of women and should be incorporated into future mental health interventions. There was no relationship between permanent income score and depression for HIV-positive women. Since a power calculation was performed beforehand to ensure adequate sample sizing, the wide confidence interval (95% CI=0.07–22.04) indicates that permanent income data are too variable to provide an accurate estimate of this measure, which is a limitation. Dropping permanent income score from the adjusted regression did not change the results for the HIV-positive women group.

This study had other limitations. First, because of their involvement with CEPROSH, all HIV-positive women in this study had received at least one HIV/AIDS-related psychiatric counseling session. Counseling sessions may have resulted in fewer depression symptoms and internalized stigma for this group. Additionally, internalized stigma could not be measured for the comparison group, meaning that interaction terms containing this variable could not be calculated to determine effect modification in the entire model. Enacted stigma was not measured in any group, which may have increased or decreased internalized stigmas and/or depression.

Conclusions

This study sheds light on the prevalence of depression and key factors associated with this outcome among FSW, HIV-positive women and a comparison group of HIV-negative women who are not sex workers in the DR. The prevalence of depression is high across all three groups. This suggests that interventions to treat depression and its causes could benefit all women, regardless of HIV status or risk. Interventions focused on addressing internalized stigma for FSW and HIV-positive women could be particularly effective in reducing depression. Additionally, future depression-related interventions in the DR should address poverty, since this appears to play an important role in mental health.

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Demographic characteristics of female sex workers, women living with HIV/AIDS and a comparison group of low-income women who are HIV-negative and not sex workers in the Dominican Republic (2014)

Table 1

	FSW (N=349)		HIV-positive women (N=213)		Comparison group (N=314)	
	Mean ± SD	P ^a	Mean ± SD	P ^a	Mean ± SD	REF
Age	27.5 ± 6.7	0.22	32.4 ± 7.6	0.001	28.0 ± 7.2	
Years of education	8.4 ± 3.0	0.001	6.9 ± 6.9	0.001	9.5 ± 2.7	
Number of living biological or adopted children	2.2 ± 1.3	0.08	2.8 ± 1.4	0.001	2.1 ± 1.2	
Permanent income score	0.4 ± 0.1	0.001	0.3 ± 0.2	0.001	0.4 ± 0.1	
Internalized stigma	2.8 ± 0.8	N/A	3.1 ± 0.8	N/A	N/A	
	N (%)	P ^b	N (%)	P ^b	N (%)	
Nationality						
Dominican	254 (73.0%)	0.001	145 (68.4%)	0.001	278 (88.5%)	
Haitian	94 (27.0%)		67 (31.6%)		36 (11.5%)	
Partnered						
Yes	112 (32.4%)	0.001	133 (62.4%)	0.41	207 (65.9%)	
Children live with respondent						
Yes	176 (50.6%)	0.001	151 (70.9%)	0.001	273 (87.5%)	
Depression						
Yes	245 (70.2%)	0.001	170 (79.8%)	0.001	164 (52.2%)	

^aStatistical significance of t-tests of independent means of covariates between case (FSW or WLWHA) and the comparison group

^bStatistical significance of chi-squared tests of covariates between case (FSW or WLWHA) and the comparison group

Table 2

Unadjusted and primary adjusted logistic regressions between covariates and elevated depression symptoms for female sex workers, women living with HIV/AIDS, and comparison group participants

	FSW (N=342)		HIV-positive women (N=203)		Comparison group (N=311)	
	Unadjusted OR [95%CI]	Adjusted ^a OR [95%CI]	Unadjusted OR [95%CI]	Adjusted ^a OR [95%CI]	Unadjusted OR [95%CI]	Adjusted ^a OR [95%CI]
Age	1.02 [0.99, 1.06]	1.03 [0.98, 1.08]	0.99 [0.94, 1.03]	1.00 [0.94, 1.05]	1.07*** [1.04, 1.11]	1.06** [1.01, 1.10]
Years of education	0.95 [0.88, 1.03]	0.97 [0.88, 1.06]	0.98 [0.91, 1.06]	1.04 [0.92, 1.16]	0.87** [0.80, 0.95]	0.89* [0.80, 0.99]
Number of living biological or adopted children	1.07 [0.89, 1.29]	0.95 [0.75, 1.21]	1.01 [0.80, 1.27]	1.18 [0.83, 1.66]	1.41*** [1.15, 1.74]	1.04 [0.80, 1.34]
Permanent income score	0.39 [0.06, 2.54]	0.08* [0.01, 0.80]	0.54 [0.07, 4.32]	1.26 [0.07, 22.04]	0.03*** [0.00, 0.27]	0.04** [0.00, 0.45]
Internalized stigma	2.34*** [1.75, 3.15]	2.73*** [1.95, 3.84]	2.89*** [1.85, 4.51]	3.06*** [1.86, 5.05]	N/A ^b	N/A ^b
Nationality	1.49 [0.90, 2.46]	1.05 [0.56, 1.96]	0.51 [0.23, 1.13]	0.76 [0.24, 2.46]	1.62 [0.80, 3.27]	2.07 [0.88, 4.84]
Partnered	1.02 [0.62, 1.67]	1.10 [0.64, 1.90]	0.58 [0.28, 1.21]	0.45 [0.19, 1.04]	1.11 [0.70, 1.78]	1.07 [0.65, 1.77]
Children live with respondent	0.74 [0.47, 1.18]	0.83 [0.50, 1.37]	0.80 [0.38, 1.71]	1.11 [0.47, 2.60]	0.56 [0.28, 1.13]	0.87 [0.39, 1.97]

* p 0.05;

** p 0.01;

*** p 0.001

^a Adjusted odds ratios are adjusted for all variables shown in the table

^b Internalized stigma was not included in the model since HIV-related and sex work-related internalized stigma could not be measured in the comparison group.