



Published in final edited form as:

Int J Ment Health Addict. 2018 February ; 16(1): 150–163. doi:10.1007/s11469-017-9829-9.

Prevalence and correlates of probable depression and post-traumatic stress disorder among female sex workers in Lilongwe, Malawi

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Abstract

Globally, female sex workers (FSW) experience a high prevalence of mental health disorders, but in sub-Saharan Africa these are rarely identified. If left untreated, mental health disorders may place FSW and their partners at risk for HIV/sexually transmitted infections (STIs). We assessed the prevalence and correlates of probable depression, post-traumatic stress disorder (PTSD), and suicidal ideation (SI) in a cohort of 200 FSW in Lilongwe, Malawi. FSW completed the Patient Health Questionnaire-9 and the PTSD Check List–Civilian Version. The prevalence of depression was 8%, as was the prevalence of PTSD. Nearly half (49%) of FSW were experiencing mild depression. FSW were more likely to have probable depression if they completed primary school or initiated sex work before 18 years. They were more likely to have probable PTSD if they had 20 clients per week or initiated sex work before 18 years. Interventions are needed to diagnose mental health disorders among FSW at great risk for HIV/STIs.

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Conflict of Interest: All authors declare that they have no conflict of interest.

Informed Consent: All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2000. Informed consent was obtained from all patients for being included in the study.

Keywords

depression; mental health; PTSD; sex work; sub-Saharan Africa

Introduction

Worldwide, female sex workers (FSW) are a marginalized and stigmatized population, which often contributes to adverse effects on mental health (Rossler et al., 2010; Sardana, Marcus, & Verdelli, 2016). The prevalence of mental health disorders such as depression (Alegria et al., 1994; Chudakov, Ilan, Belmaker, & Cwikel, 2002; Gu et al., 2014; Hong, Li, Fang, & Zhao, 2007; Hong, Zhang, Li, Liu, & Zhou, 2013; Jung, Song, Chong, Seo, & Chae, 2008; S. K. Patel, Saggurti, Pachauri, & Prabhakar, 2015; Rossler et al., 2010; Sagtani et al., 2013; Ulibarri et al., 2013, Hengartner et al., 2015), post-traumatic stress disorder (PTSD) (Chudakov et al., 2002; Farley, Cotton, & J., 2003; Jung et al., 2008), and suicidal ideation (SI) or attempts are high among FSW (Gu et al., 2014; Hong et al., 2007; Hong et al., 2013; Ling, Wong, Holroyd, & Gray, 2007; Rossler et al., 2010; Shahmanesh et al., 2009). In Asia, where FSW mental health has been well studied, the prevalence of depression was 39% in India and the prevalence of PTSD was 58% in Thailand (Farley et al., 2003; V. Patel & Kleinman, 2003). Among FSW in China, the prevalence of suicidal ideation was 44% (Gu et al., 2014). The limited research on FSW in sub-Saharan Africa (SSA) has demonstrated the prevalence of PTSD to be 71% and 75% in Zambia and South Africa, respectively (Farley et al., 2003). Although understudied, mental health disorders among FSW in sub-Saharan Africa (SSA) may be more prevalent due to the low status of women and the illegality of sex work in the region (Farley et al., 2003; Sherwood et al., 2015). FSW in SSA face greater poverty and higher rates of HIV than FSW in other regions (Baleta, 2015). They also experience more violence, have less access to health facilities, and face greater threat of criminalization (Baleta, 2015).

FSW face a unique set of occupational exposures that often place them at risk for mental health disorders. Many women enter sex work due to poverty (McClarty et al., 2014; Saggurti, Sabarwal, Verma, Halli, & Jain, 2011), which contributes to depression including factors such as hopelessness and insecurity (V. Patel & Kleinman, 2003). Once engaged in sex work, FSW are vulnerable to violence, which is associated with depression and suicidal ideation (Sagtani et al., 2013; Sherwood et al., 2015). FSW are also vulnerable to self-stigma, which occurs when members of a devalued group internalize the beliefs targeted towards them (Corrigan & Watson, 2002). Self-stigma in FSW is associated with depression and suicidal ideation (Gu et al., 2014; Hong et al., 2010). Women who have worked in sex work longer are more likely to have depression and PTSD, possibly due to the cumulative impact of these factors (Gu et al., 2014; Jung et al., 2008).

The relationship between sexual risk and mental health disorders among FSW is a public health concern regarding both these women and their sexual partners. FSW are at high risk of acquiring HIV and other sexually transmitted infections (STIs) and FSW living with HIV are more likely to have depression (Baral et al., 2012; S. K. Patel et al., 2015). Among FSW, mental health disorders are associated with an increase in sexual risk behaviors, which can

contribute to HIV transmission. These include inconsistent condom use, anal sex, and sex under the influence of alcohol (Alegria et al., 1994; Hong et al., 2007; S. K. Patel et al., 2015; Sagtani et al., 2013).

Women who enter sex work early, defined as before 18 years of age, could be at particularly high risk for mental health disorders (Silverman, 2011). FSW who enter as adolescents have lower levels of education (Parcesepe et al., 2016), which is associated with depression and PTSD (Ulibarri et al., 2013). They are also more likely to experience violence and to be HIV positive (George & Sabarwal, 2013; Silverman et al., 2015). Nevertheless, further research is needed on the impact of early initiation on mental health. Older initiators have been found to be more likely to report symptoms of depression (Goldenberg et al., 2012), but higher rates of depression and suicidal ideation have been found among younger sex workers (Su et al., 2014).

Women with a high prevalence of mental health disorders would benefit from targeted HIV/STIs and sexual risk interventions. To aid in identifying these specific subgroups, we attempted to understand the factors impacting the development of mental health disorders in FSW. This study is one of the first to identify the prevalence and correlates of mental health outcomes among FSW in Malawi. We assessed the prevalence of probable depression, probable PTSD, and suicidal ideation among FSW in Lilongwe. We also explore correlates of these mental health outcomes with relevant sex work characteristics. Specifically, we hypothesized that duration of sex work, HIV status, and age of initiating sex work would be correlated with mental health outcomes.

Methods

Study design and population

We conducted a cross-sectional evaluation of FSW in Lilongwe, the central region of the Republic of Malawi. While Malawian law does not explicitly criminalize sex work, the “keeping of brothels” and “living on the earnings of prostitution or influencing others to engage in prostitution” is illegal (Family Planning Association of Malawi, 2011). In this study, women self-identified as FSW based on the Family Planning Association of Malawi’s (FPAM) definition of someone “who had received money in exchange for sex either regularly or occasionally up to 12 months” prior to the survey (Family Planning Association of Malawi, 2011). A situation analysis conducted by FPAM in 2011 found that there were an estimated 3,500 FSW in Lilongwe, most of whom were 20–24 years old and worked in bars, bottles stores, or guesthouses (Family Planning Association of Malawi, 2011). We used venue-based sampling to recruit 200 FSW from 23 venues between July and September 2014 (Lancaster et al., 2016). Our outreach team included HIV testing counselors, interviewers, a study nurse, and a peer FSW to facilitate approaching women at the venues. The women were asked their willingness to participate in a study for women at risk for HIV. Eligibility criteria included being at least 18 years of age and able to speak English or Chichewa, the predominant local language.

Data collection

All consenting FSW completed a behavioral survey to evaluate demographics, engagement in HIV testing and treatment, other sex work factors, and mental health outcomes. The survey was reviewed by the outreach team and piloted to ensure comprehension of scales. Trained field workers administered the survey. The survey was translated and back-translated from English to Chichewa and available in both languages. FSW received serial HIV-antibody rapid tests, Determine HIV-1/2 and Uni-Gold rapid HIV antibody, in accordance with Malawian National HIV Testing and Counseling guidelines before completing the survey.

Mental Health Assessments

We used the Patient Health Questionnaire (PHQ-9), a 9-question survey, to determine the existence of a probable clinical diagnosis of depression using a cutoff score of 10. This is the threshold for recommending an intervention to treat depression with antidepressants and/or psychotherapy. Responses are on a scale of 0 (not at all) to 3 (nearly every day) for how often one has been bothered by each core symptom of depression over the past 2 weeks. The PHQ-9 has been validated in several resource-limited settings (Cholera et al., 2014; Monahan et al., 2009; Pence et al., 2012).

Responses are summed and scores range from 0 to 27. Scores are also grouped by severity into categories of minimal (score 0–4), mild (score 5–9), moderate (score 10–14), moderately severe (score 15–19), and severe (score 20–27) depression. Those who answered in any way other than “not at all” to the question, “Over the past 2 weeks, how often have you been bothered by: thoughts that you would be better off dead or of hurting yourself in some way?” completed a suicide risk assessment form. Those who answered “not at all” to the question, “In the last two weeks, have you had any thoughts of hurting yourself in some way?” on this suicide assessment form were considered to have passive suicidal thoughts while those who answered in any other way were considered to have active suicidal thoughts.

We used the Post-Traumatic Stress Disorder Check List – Civilian Version (PCL-C) to determine the presence of probable PTSD using a symptom-cluster based method. The PCL-C is a 17-question survey with responses on a scale from 1 (not at all) to 5 (extremely) for how much someone has been bothered in the last month by each symptom of PTSD as defined by the Diagnostic and Statistical Manual (DSM). Responses of 3–5 indicate the presence of that symptom. Several cutoff scores have been suggested, such as 38 or 44, but to gain a conservative estimate of PTSD prevalence we used a symptom cluster-based method based on the DSM-IV criteria for diagnosis (American Psychiatric Association, 2013; Bliese et al., 2008; Harrington & Newman, 2007; Ruggiero, Del Ben, Scotti, & Rabalais, 2003).

Participants were classified with probable PTSD if they met criterion B (at least 1 re-experiencing symptom of the 5), criterion C (at least 3 avoidance/numbing symptoms of the 7) and criterion D (at least 2 hyperarousal symptoms of the 5) (American Psychiatric Association, 2013). Although not previously used in Malawi, the PCL-C has been used in

studies of FSW across 10 countries, including Zambia and South Africa, and was therefore chosen for use in this exploratory analysis (Chudakov et al., 2002; Farley et al., 2003).

Since a clinical assessment to establish a formal depression or PTSD diagnosis was not included in this study, the terms “probable depression” and “probable PTSD” will be used when referring to prevalence. Those with either passive or active suicidal thoughts were considered to have suicidal ideation.

Statistical analysis

We describe sociodemographic characteristics and relevant sex work factors with frequencies and proportions. We examined the prevalence of probable depression, probable PTSD, and suicidal ideation. We assessed the correlation between PHQ-9 and PCL-C scores using linear regression.

Categorization of the mental health outcomes (Alegria et al., 1994; Chudakov et al., 2002; Gu et al., 2014; S. K. Patel, Ganju, Prabhakar, & Adhikary, 2016; S. K. Patel et al., 2015; Sagtani et al., 2013; Su et al., 2014) and covariates (Goldenberg et al., 2014; Goldenberg et al., 2012; Gu et al., 2014; Loza et al., 2010; S. K. Patel et al., 2016; S. K. Patel et al., 2015; Silverman, 2011) were based on the literature to enhance the interpretability of the results. Correlates included age (18–24, 25) (Alegria et al., 1994; Farley et al., 2003; Gu et al., 2014; S. K. Patel et al., 2015; Ulibarri et al., 2013), completion of primary school (yes, no) (Alegria et al., 1994; Gu et al., 2014; Ling et al., 2007; S. K. Patel et al., 2015; Ulibarri et al., 2013), and housing (living in a bar or bottle shop vs. other housing, including private house, hotel, or guesthouse). Other correlates included HIV serostatus (Alegria et al., 1994; S. K. Patel et al., 2015), number of pregnancies (0–2, 3) (Chudakov et al., 2002), number of clients in the last week (<20, 20) (Ulibarri et al., 2013), duration of sex work (<2, 2 years) (Farley et al., 2003; Gu et al., 2014), age of initiating sex work (<18, 18) (Farley et al., 2003; Ulibarri et al., 2013), and ever having a client insist on not using a condom during vaginal sex (yes, no).

To explore correlates associated with probable depression and probable PTSD, we used Poisson regression with robust variance estimates to calculate prevalence ratios (PR) with 95% confidence intervals (CI). Given the low prevalence of SI, correlates were not explored.

To create final multivariable models, we included variables from the bivariable analyses with $p < 0.2$. Variables with $p < 0.05$ were considered independently associated with probable depression or probable PTSD. Variables with $p < 0.1$ were considered a statistical trend. All analyses were conducted using Stata 12.0 (StataCorp, College Station, TX, USA).

Ethical approval

The research protocol, survey, and consent forms were reviewed and approved by the Non-Biomedical Institutional Review Board at the University of [redacted] and the Malawi Ministry of Health and Population National Health Sciences Research Committee. All participants provided written informed consent and all study related activities were conducted in a safe and private location.

Results

Using venue-based sampling at 23 establishments, 200 FSW were recruited and consented to participate. The median age was 24 (IQR: 22–28) and 138 (69%) were confirmed HIV positive (Table I). Most (85%) were separated, divorced or widowed and two-thirds never attended school or only attended primary school. One-quarter of FSW self-reported inconsistent condom use with clients in the last 7 days. The median number of clients in the last week was 21 (IQR: 10–35) and the median duration of sex work was 3 years (IQR: 1–6).

Prevalence of probable depression, probable PTSD and suicidal ideation

The mean PHQ-9 score was 4.7 (standard deviation (SD) = 3.4) and the median score was 5 (interquartile range [IQR] 2–7) (Figure I). The prevalence of probable depression (PHQ-9 score ≥ 10) was 8% (Table II); 7% had moderate depressive symptoms and 1% had moderate-severe symptoms. In addition, 43% of FSW had mild depression (PHQ-9 score 5–9), although not severe enough to indicate a probable clinical diagnosis. Among women living with HIV, the prevalence was 9%. The internal consistency of the PHQ-9, as measured by Cronbach's alpha, was 0.761.

The mean PCL-C score was 29.30 (SD=11.3) and the median was 26 (IQR 22–34). The prevalence of probable PTSD, as defined by the symptom cluster-based method, was 8%. When using cutoffs of PCL-C scores ≥ 38 and ≥ 44 , the prevalence was 16% and 10%, respectively. Cronbach's alpha was 0.923.

Six women (3%) had SI, two with active and four with passive suicidal thoughts. The prevalence of having any of the three (probable depression, probable PTSD, or SI) was 14%. Nine women (4%) had both probable depression and probable PTSD. PHQ-9 and PCL-C scores were moderately correlated ($r=0.57$, $p<0.01$).

Correlates of probable depression

In bivariable analyses, FSW who completed primary school were somewhat more likely to have probable depression (prevalence ratio [PR] = 1.9 (95% CI 0.97, 6.4); Table III); this trend remained in the multivariable model (aPR 2.4, 95% CI 0.9, 6.1). Women initiating sex work before 18 years old were 2.4 (95% CI 0.9, 6.1) times as likely to have probable depression. However, none of these results were significant at the $p<0.05$ level.

Correlates of probable PTSD

In bivariable analyses, FSW with ≥ 20 clients per week were 2.4 (95% CI 1.0, 11.8) times as likely to have probable PTSD (Table IV). The effect increased slightly in the multivariable model (aPR 3.3, 95% CI 1.0, 11.2). Women initiating sex work before 18 years of age were 2.3 (95% CI 0.9, 5.9) times as likely to have probable PTSD. These trends were not significant, however, at the $p<0.05$ level.

Discussion

To our knowledge, this study was the first to examine mental health among FSW in Malawi. The prevalence of probable depression in this cohort (8%) was lower than expected, yet

nearly half were experiencing mild depression. While mild depression has not been explicitly studied in FSW, evidence from other populations suggests that, if left undiagnosed, those with mild depression experience a substantial negative impact on their quality of life and are at higher risk for developing moderate depression (Cuijpers & Smit, 2004; Rodriguez, Nuevo, Chatterji, & Ayuso-Mateos, 2012). Depression prevalence among FSW has been over 80% in Mexico and Nepal, though different scales were used (Sagtani et al., 2013; Ulibarri et al., 2013). Despite people living with HIV having high rates of depression (Baral et al., 2012), the probable depression prevalence was only 9% among women living with HIV in this study. Furthermore, previously, the prevalence of depression in the general population in Zomba, Malawi was 30%, though other depression scales (Structured Clinical Interview for DSM-IV Axis 1 disorders and Self Reporting Questionnaire) were used (Udedi, 2014). A limitation of this study is that the PHQ-9 has not been specifically validated in Malawi, although it has been validated in other sub-Saharan African countries (Cholera et al., 2014; Monahan et al., 2009; Pence et al., 2012). The internal reliability of the PHQ-9, as measured by Cronbach's alpha, was 0.761, below the acceptable 0.80 level. Thus, the validation and examination of other depression scales are needed to further understand the pathways and clinical characteristics of depression in the context of Malawian culture.

The prevalence of probable PTSD (8%) was also lower than expected. PTSD prevalence among FSW has been 71% and 75% in Zambia and South Africa, respectively (Farley et al., 2003). To our knowledge, PTSD has not been studied previously in Malawi, thus we are unable to compare our prevalence estimate to other estimates. Although used in Zambia and South Africa, the PCL-C has not been validated in Malawi. This limitation highlights the need for further validation to examine PTSD in this setting. Given that the prevalence of both PTSD and depression in this population were much lower than those of similar FSW populations, these results may be underestimates of the true prevalence. Future research should explore the effectiveness of mental health measures and the acceptability of discussing mental health symptoms in the context of Malawian culture.

Nearly all the women with SI did not have probable depression or PTSD, a pattern also observed in patients receiving HIV care in Lilongwe (Malava et al., 2017). While depression does not always co-occur with SI, we would expect a greater overlap given that people with active SI generally have a likely depressive disorder (Cavanagh, Carson, Sharpe, & Lawrie, 2003). Great cross-cultural variation has been found in the proportion of suicide cases without a mental health disorder, but the lack of studies from Africa highlights the need for research into suicidal ideation in this region (Milner, Svetlicic, & De Leo, 2013). Of the six FSW with SI, four had mild depression, which further suggests that the prevalence of depression may be an underestimate. Nonetheless, given the low prevalence of SI in this cohort, we could not thoroughly explore correlates of SI or its relationship to depression or PTSD symptoms. Studies with larger samples and scales that examine suicidal ideation in more depth could allow for further exploration into the relationship between SI and depression among FSW specifically in the context of sub-Saharan Africa.

Women initiating sex work before age 18 were somewhat more likely to have both probable depression and probable PTSD. Women who enter sex work early have higher rates of risk

factors associated with depression, including low education levels, higher violence levels, and HIV positive status (George & Sabarwal, 2013; Parcesepe et al., 2016; Silverman et al., 2015). Women who had completed primary school were more likely to have probable depression, which is in contrast to previous studies showing an association between depression and lower education levels (Ulibarri et al., 2013). Due to the cross-sectional nature of this study, we cannot draw causal interpretations or determine the temporal order of initiating sex work, attaining education, and developing depression or PTSD. Our study also did not include FSW under the age of 18 and thus the results describe adult women, 16.5% of whom entered sex work under the age of 18. Furthermore, the limited precision of our prevalence estimates highlights the need for future studies with a larger sample of FSW. Longitudinal studies that include women who initiate sex work before age 18 could reveal key factors involved in the development of mental health disorders.

FSW with more clients in the past week were somewhat more likely to have probable PTSD. We recruited women who self-identified as someone who exchanged sex for money “regularly or occasionally” in the last 12 months per the Family Planning Association of Malawi’s definition (Family Planning Association of Malawi, 2011). Given the range of FSW recruited, our results suggest that future research is needed to examine the relationship between PTSD and levels of engagement in sex work. Specifically, women who engage in sex work full-time or occasionally may experience varying prevalence or severity of mental health disorders based on factors such as their reliance on sex work for income or experience of violence from partners (Harcourt & Donovan, 2005). Furthermore, given that only venue-based FSW were included in this study, future studies are needed to examine mental health among non-venue versus venue-based FSW. The prevalence of mental health disorders may be higher among non-venue or street-based FSW based on their greater risk for violence (Barnard, 1993; Harcourt, van Beek, Heslop, McMahon, & Donovan, 2001; Lurie et al., 1995).

Given the evidence that FSW with mental health disorders are more likely to engage in sexual risk behaviors (Alegria et al., 1994; Hong et al., 2007; S. K. Patel et al., 2015; Sagtani et al., 2013), interventions are needed to identify FSW at highest risk for mental health disorders and engage them in treatment. Most behavioral and structural interventions for FSW have focused on preventing the transmission of HIV and other sexually transmitted infections, with many shown to be effective (Shahmanesh et al., 2009). A micro-enterprise service for FSW in Kenya was effective in decreasing HIV risk behaviors and reliance on sex work (Odek et al., 2009). While these interventions could have secondary effects on the mental health of FSW in the context of the occupational exposures of sex work, interventions specifically targeting mental health are needed. Our findings build on those from a previous study in India that identified routine violence, exposure to drugs, and economic instability as correlates of mental health disorders to target in future interventions (Sardana et al., 2016).

Mental health among FSW is poorly described and understood and our findings highlight the need for further research in Malawi and other developing countries, particularly those in sub-Saharan Africa. Nearly one in six FSW met the criteria for at least one of these mental health disorders, highlighting a serious public health concern for this vulnerable population.

Furthermore, half the women were experiencing at least mild depression. Results from this exploratory study will guide future, prospective, appropriately powered studies of mental health outcomes among FSW. This research could help to target specific groups of FSW who would most benefit from interventions. Interventions aimed at diagnosing and treating mental health disorders among FSW would not only help alleviate symptoms among these women but may also decrease HIV/STI transmission based on reductions in sexual risk behaviors.

Acknowledgments

We are grateful to the outreach team for their effort, knowledge, and dedication to this work. We also gratefully acknowledge the study participants who shared their thoughts and experiences with the research team.

Funding:

This work was supported by the NIH Research Training Grant (R25 TW009340) funded by the Fogarty International Center, the NIH Office of the Director Office of AIDS Research, ORWH, NCI, and NHLBI, the NIAID T32 training grant (T32 AI0700), and the [redacted] Center for AIDS Research, an NIH funded program (P30 AI50410).

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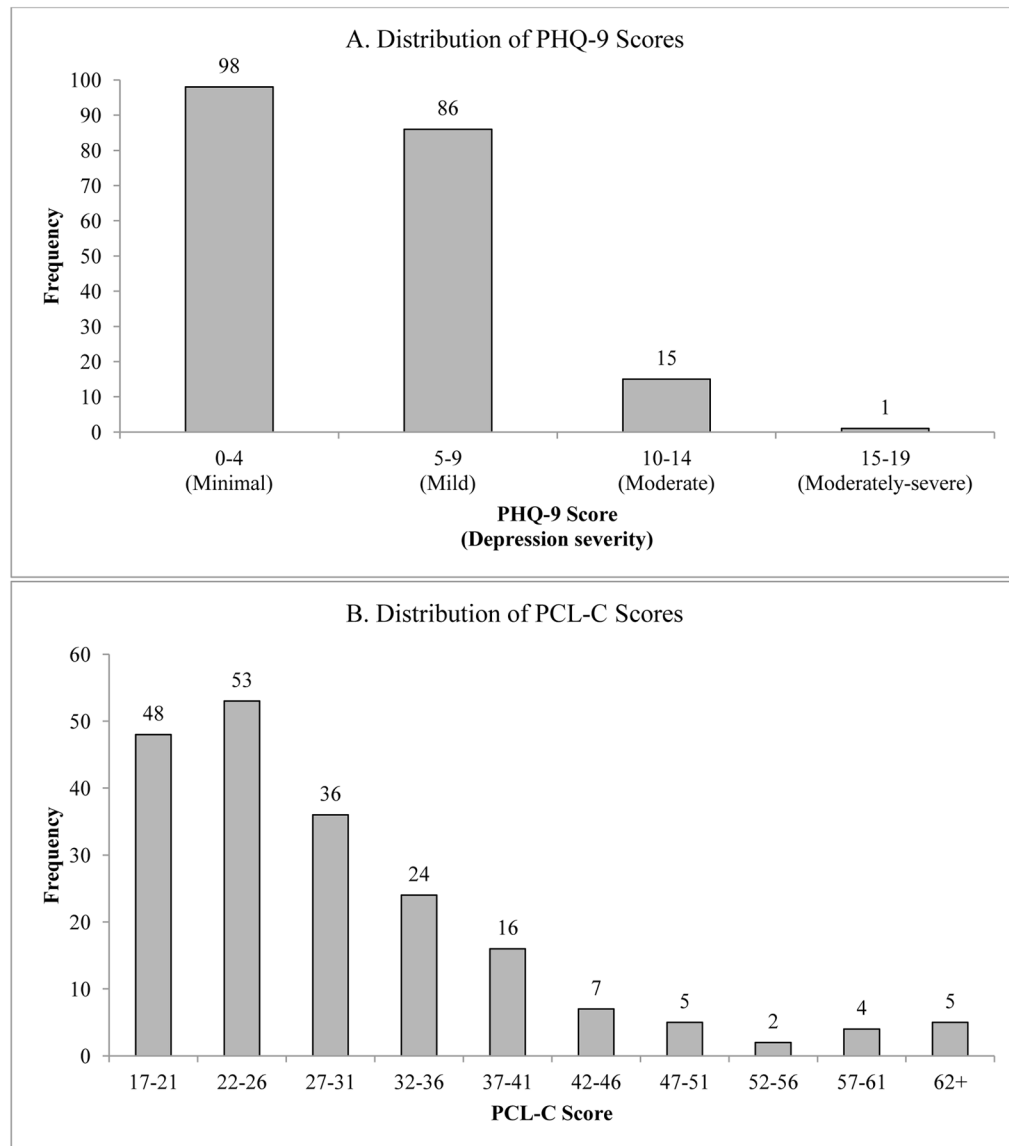


Figure I. Histograms of PHQ-9 (Panel A) and PCL-C (Panel B) scores among FSW (N=200)

Table I

Sociodemographics and sex work characteristics of female sex workers in Lilongwe, Malawi, July–September 2014

	Total study population N=200	
	n	(%)
HIV Serostatus		
Positive	138	(69)
Negative	62	(31)
Age (years)		
18–24	101	(51)
25–29	54	(27)
30	45	(22)
Nationality		
Malawian	195	(98)
Other	5	(2)
Education		
Never attended school	15	(7)
Some primary	117	(59)
Completed primary	20	(10)
Some secondary	44	(22)
Completed secondary	4	(2)
Marital status *		
Never married	28	(14)
Married (legal or traditional) or co-habiting	9	(4)
Separated, divorced, or widowed	162	(81)
Housing		
Private house	27	(13)
Bar or bottle shop	115	(58)
Guesthouse or hotel	58	(29)
Number of pregnancies		
0	15	(7)
1	56	(28)
2	129	(65)
Duration of sex work (years) *		
<1.0	25	(12)
1.0–1.9	39	(20)
2.0–2.9	34	(17)
3.0	100	(50)
Number of clients in past week *		
<10	43	(21)
10–19	45	(23)

	Total study population N=200	
	n	(%)
20–29	52	(26)
30	58	(29)
Condom use in past week**		
Inconsistent	49	(24)
Consistent	151	(76)
Ever had client demand not using a condom		
Yes	124	(62)
No	76	(38)

* Missing data due to not knowing or refused to answer: marital status: n=1; duration of sex work: n=2; number of clients in the past week: n=2

** Inconsistent includes FSW who responded “never”, “rarely”, “sometimes”, or “most times”; Consistent includes FSW who responded “always”

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Table II

Prevalence of mental health disorders among FSW

	Total study population N=200	
	n	(%)
Probable depression (PHQ-9 score ≥ 10)	16	(8)
Minimal (score <5)	98	(49)
Mild (score 5–9)	86	(43)
Moderate (score 10–14)	15	(7)
Moderately severe (score 15–19)	1	(1)
Probable PTSD (symptom cluster-based method)	16	(8)
Score ≥ 44	20	(10)
Score ≥ 38	32	(16)
Suicidal ideation	6	(3)
Probable depression and probable PTSD	9	(4)
Probable depression, probable PTSD and suicidal ideation	1	(1)
Any mental health disorder *	28	(14)

* PHQ-9 score ≥ 10 , symptom cluster-based PCL-C designation and/or suicidal ideation

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Table III

Correlates of probable depression (PHQ-9 10)

	N	Percentage with probable depression	Unadjusted		Adjusted*		
			PR (95% CI)	p	PR (95% CI)	p	
HIV Serostatus							
Negative	62	5%					
Positive	138	9%	1.9 (0.6–6.6)	0.26			
Age (years)							
18–24	101	8%					
25	99	8%	1.0 (0.4–2.6)	0.97			
Completed primary school							
No	132	5%					
Yes	Yes 68	13%	1.9 (0.9–6.4)	0.06	2.4 (0.9–6.1)	0.07	
Housing							
Bar or bottle shop	115	9%					
Other	85	7%	0.7 (0.3–1.9)	0.53			
Number of pregnancies							
0–2	126	7%					
3	74	9%	1.3 (0.5–3.4)	0.56			
Number of clients in past week							
<20	88	5%					
20	112	11%	2.4 (0.8–7.2)	0.12	2.3 (0.8–7.0)	0.13	
Duration of sex work (years)							
<2	64	9%					
2	136	6%	0.7 (0.2–2.1)	0.52			
Age initiating sex work							
18	167	6%					
<18	33	15%	2.3 (0.8–6.1)	0.11	2.4 (0.9–6.1)	0.07	
Ever had client insist not using a condom							
No	76	8%					
Yes	124	8%	1.0 (0.4–2.7)	0.97			

* Variables were included if $p < 0.2$ in the bivariable analyses

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Table IV

Correlates of probable PTSD (PCL-C criteria)

	N	Percentage with probable PTSD	Unadjusted			Adjusted*		
			PR	(95% CI)	p	PR	(95% CI)	p
HIV Serostatus								
Negative	62	10%						
Positive	138	7%	0.7	(0.3–2.0)	0.56			
Age (years)								
18–24	101	9%						
25	99	7%	0.8	(0.3–2.1)	0.63			
Completed primary school								
No	132	7%						
Yes	68	10%	1.5	(0.6–3.9)	0.39			
Housing								
Bar or bottle shop	115	12%						
Other	85	5%	0.4	(0.2–1.2)	0.10	0.5	(0.2–1.3)	0.17
Number of pregnancies								
0–2	126	7%						
3	74	9%	1.3	(0.5–3.4)	0.56			
Number of clients in past week								
<20	88	3%						
20	112	12%	3.5	(1.0–11.8)	0.05	3.3	(1.0–11.2)	0.06
Duration of sex work (years)								
<2	64	10%						
2	136	5%	0.5	(0.1–1.6)	0.24			
Age initiating sex work								
18	167	6%						
<18	33	15%	2.3	(0.8–6.1)	0.11	2.3	(0.9–5.9)	0.08
Ever had client insist not using a condom								
No	76	9%						
Yes	124	7%	0.8	(0.3–2.0)	0.62			

* Variables were included if $p < 0.2$ in the bivariable analyses

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