Motherhood and HIV risk among female sex workers in Andhra Pradesh, India: The need to consider women's life contexts.

By: E. Reed, J. G. Silverman, B. Stein, J. T. Erausquin, M. Biradavolu, A. Rosenberg, and K. M. Blankenship

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Abstract:

This study examines whether the challenges of motherhood among female sex workers (FSW) are linked with vulnerability to sexual risk factors for HIV. FSW at least 18 years of age (n = 850) were recruited through respondent driven sampling for a survey on HIV risk in the Rajahmundry area of Andhra Pradesh, India. Logistic regression models adjusted for demographic characteristics were used to assess the relation between reported caretaking challenges and sexual risk indicators for HIV. In adjusted logistic regression models, FSW who reported three or more children in their household or current child health concerns were significantly less likely to report consistent condom use (adjusted odds ratios (AORs) range: 0.5–0.6) and more likely to take more money for sex without a condom (both AORs: 2.5). Women who reported current child health concerns were also more likely to report an STI symptom in the past 6 months (AOR = 1.6; 95 % confidence interval: 1.1–2.3). Findings suggest that challenging responsibilities related to caretaking of children are associated with heightened vulnerability to HIV risk among FSW. Such findings add to the cumulating evidence urging for the implementation of HIV prevention interventions that consider the multiple challenges across various domains of women's lives.

Keywords: female sex workers | children's health | sexual risk | HIV | motherhood | public health

Article:

Introduction

About 2.3 million people are estimated to be living with HIV in India [1, 2]. The southern state of Andhra Pradesh is among those with the highest rates of infection [3]; here, the epidemic

appears to be largely affecting female sex workers (FSW), and subsequently, various HIV prevention programs for this population are currently being implemented.

In India and elsewhere, women face multiple unique challenges related to their low social status and resulting limited opportunities for women's financial independence [4, 5]. Women working as sex workers often report initiating sex work due to a lack of alternative ways to improve dire economic conditions (e.g. husbands' debts or other familial debts) [4–6]. A primary reason linked to women's initiation of sex work is the need to financially support children [6]. Furthermore, women who are working as sex workers often report being the primary financial provider in the household, abandonment by husbands or having left their husbands as a result of neglect and abuse, and need for financial gains to support their children [5]. In India, among women with little access to education and well-paid employment, sex work has been reported to afford women opportunities to secure some financial stability to provide for themselves and their children, and allow them to have greater flexibility compared to other available employment opportunities [5].

An increasing body of literature has investigated how economic and social challenges may increase vulnerability to HIV among FSW [4, 5, 7, 8]. Research has suggested that dire economic conditions are one driving force behind FSW engaging in unprotected sex trades [5, 9, 10]. For example, in one India-based study, women with debts reported less consistent condom use, including taking more money for sex trades with no condom used, likely as a result of decreased negotiating power with clients in the context of demands for debt repayment [5]. Stable housing has also been linked to FSWs increased vulnerability to HIV, similarly by increasing the urgency of women's work and resulting in greater reports of unprotected sex trades [5]. While the need to financially support children has been well-documented as a major reason for initiating sex work among women, few studies have investigated whether such challenges of motherhood also increase women's vulnerability to HIV among FSW.

Women who have financial responsibilities for their families, may be more likely to engage in riskier behaviors with clients in order to achieve greater financial benefits from sex trades (e.g. they may receive more money or obtain more clients if they agree to have sex without a condom). Furthermore, women report not only initiating sex work to provide financially for their children, but also continuing with such work because it allows for flexibility in their schedule and to be more present for their children [6]. Notably, alternative employment for women in this region usually involves working 12 h shifts in agricultural fields; thus, sex work provides flexibility and the ability to work fewer hours for greater financial benefit to better provide and care for household dependents. Women with more challenging responsibilities related to childcare may have greater restrictions on the amount of time available in a typical day to engage in sex work (or any other type of work that may be complementing the family's income). As a result, they may need greater financial gain from each sex trade with a client, lessening power in sex trade negotiations, and in turn, increasing vulnerability to HIV. Regardless of time, an increase in financial demands to support or care for children may likely increase the urgency of

women's work, and decrease women's negotiating power to ensure condom use with clients. Therefore, studies are needed to investigate whether responsibilities of motherhood, a well-recognized challenge within the lives of FSW, may be associated with women's vulnerability to HIV.

Thus, the current paper examines whether challenges of mothering are associated with increased HIV-related sexual risk behaviors with clients among FSW in Andhra Pradesh, India. Specifically, this study examines three challenges related to motherhood: (1) reporting three or greater children supported per household, (2) reporting children less than 5 years of age in the household, and (3) reporting current health concerns among their children that would require additional financial support or increased caretaking responsibilities. These challenges will be examined in relation to HIV-related sexual risk, including: consistent condom use with clients, accepting more money for non-condom use with clients, and reported symptoms of sexually transmitted infections (STI). Findings have implications for practice-based efforts regarding whether supporting FSW as mothers may be among the necessary strategies to alleviate women's risk for HIV.

Methods

Procedure and Sample

Data for this analysis were collected as part of Project Parivartan, which analyzes the implementation and impact of a community mobilization intervention targeted to reduce HIV risk among FSW in Rajahmundry, within the East Godavari District of Andhra Pradesh, India. Quantitative data are from the third round of a cross-sectional survey of FSW collected in 2009–2010. Participants were at least 18 years of age, female, reported having sex in exchange for money in the year prior to the survey, and were capable of providing informed consent. Participants were recruited via respondent driven sampling (RDS). Specifically, five initial participants, or "seeds" were recruited from the target population, and asked to distribute up to three coupons to members in their social networks who met study inclusion criteria. Subsequent participants, who could only screen into the study if they had a coupon, were similarly provided with three coupons to recruit social network members who met the inclusion criteria. Given the high number of waves (i.e. each seed recruited women who recruited more women and this continued for multiple waves), it is likely that each round represented adequate coverage of the population of FSW in this region [11, 12]. We describe this in more detail in our previous work [4, 5, 13]. Surveys were developed in English by study staff, translated into Telugu by local experts in the language and study population, and back-translated into English in order to confirm correct translation. A total of 850 FSW gave informed consent and completed the survey.

Study staff and trained female Telugu-speaking research assistants obtained informed consent and administered the surveys in a Project Parivartan field office. Surveys were read aloud and responses recorded by study staff. Survey completion time for participants averaged between 90 and 120 min. At the conclusion of both, participants were compensated for their time and costs associated with transportation in an amount determined to be appropriate with local norms. Participants were also provided with the option of being referred or accompanied to a local service provider for FSW (local NGO providing general support services specifically for FSW as well as STI testing and treatment) if they appeared in distress. Survey participants earned an additional incentive payment for each coupon that resulted in the successful recruitment of new study participants. This research was approved by the Duke University Health Systems Institutional Review Board, the Yale University Human Investigations Committee, the Institutional Review Board at American University, and the VHS-YRG Care Medical Centre Institutional Review Board in Chennai, India.

Measures

Demographic Variables

Age was measured continuously and grouped into five categories (18–24, 25–29, 30–34, 35–39, 40 and older). Education was measured as whether or not women reported having any formal education. Age at entry as a sex worker was measured in categories (<18, 18–30, >30 years). Marital status (currently married, divorced, separated/deserted, have a temporary husband), financial support (solely support self or report support from others), and debt (whether participants reported current debt/loans) were also assessed. FSW were asked to report the "type" of sex work they practiced (venue) (brothel, street, lodge or hotel, agricultural fields, home, highway, or multiple types). Living/Household situation was measured by asking women who else lived in their household (e.g. live alone, with husband, with parents, with relatives).

Challenges of Mothering

Participants were asked whether they have children, their age (less than 5, between 5 and 18, older than 18), and how many of their children reside in their household with them. A variable was created to represent women's need to support three or more children (18 years and under) in their household versus two children or fewer; this categorization was based on the distribution of the number of children (18 and under) reported among the sample (ranging from 0 to 6 children), as well as our hypothesis that three or more children within a household may afford significant challenges for women, especially given that most do not have financial support of family or

husbands. Women were also asked a set of questions regarding the health of their children, and whether their children currently experience difficulty with weight loss, malnutrition, and diarrhea.

Sources of HIV Risk

Consistent condom use was measured by asking participants how often they used condoms with regular and occasional clients in the past 30 days; participants who reported “always” using condoms for each type of client were categorized as consistent condom users. Accepting more money for sex without a condom was measured by asking participants whether this happened in the past 30 days (yes/no). Participants were also grouped as experiencing STI symptoms in the 6 months prior to the survey if they reported experiencing any of the following symptoms: lower abdominal pain not related to diarrhea or menses, foul smelling vaginal discharge, burning while urinating, genital ulcers/sores, swelling in groin area, or itching.

Data Analyses

Sample characteristics were assessed to identify factors that differed between women reporting and not reporting heightened challenges of motherhood (three or more children in household, children less than 5 years of age, child health difficulties including weight loss, malnutrition, or diarrhea). Separate logistic regression models were used to analyze these parenting challenges in relation to each of the three outcomes of interest: consistent condom use with clients, accepting more money for sex with no condom with clients, and reported STI symptoms. Sample characteristics associated with any of the dependent variables or any parental challenges variables in bivariate analyses at $p < 0.05$ were included in all adjusted models. Debt was not included as a covariate; while our goal is not to test mediation, we expect that economic vulnerability may serve as a mediator in the relation between child caretaking demands and HIV risk behaviors, and therefore, adjusting for debt may negate any significant associations. For logistic regression findings, odds ratios are presented with associated 95 % confidence intervals (CI), and significance of individual variables was evaluated using Wald Chi-square tests. All analyses were conducted using SAS version 9.1 (SAS Institute Inc, Cary, North Carolina).

Results

Sample Characteristics

The median age of women in the sample was 30 years (±8.4 standard deviation (SD). Most women (60 %) did not report any education and the majority (66 %) initiated sex work between the ages of 18 and 30. Almost one-quarter of the sample reported working at home (22 %), and just less than half reported working in multiple venues (43 %). Smaller proportions reported working on the highway (12 %) and in agricultural settings (12 %) (Table 1). A small proportion of women reported being currently married (23 %) and 48 % reported having another male relationship partner ("temporary husband"). Just over a third of women (35 %) reported living alone; the remaining reported living with parents (27 %), husbands (21 %), relatives (17 %) and other male partners (12 %) (Table 1).

Table 1

Sample characteristics (n = 850)

Sample characteristic	**Total sample % (*n*)**
Age	
18–24 years	16.8 (143)
25–29 years	22.5 (191)
30–34 years	15.1 (128)
35–39 years	20.5 (174)
40 and older	25.2 (214)
Education	
No formal education	59.7 (507)
1 or more years	40.3 (343)
Age when began working as a sex worker	
<18	20.2 (172)

Sample characteristic	**Total sample % (*n*)**
18–30 years	65.8 (559)
More than 30 years	14.0 (14)
Venue of work[a]	
Home	22.1 (190)
Street	4.8 (41)
Brothel	3.8 (32)
Highway	11.7 (99)
Agriculture	11.6 (98)
Lodge/Hotel	2.4 (20)
Multiple types	43.4 (368)
Children	
At least one child, any age	89.5 (761)
Under age 5	23.1 (196)
Between 5 and 18	85.2 (724)
Relationship status	
Have temporary husband[b]	47.9 (443)
Separated/Deserted	27.2 (231)
Widowed	23.7 (201)

Sample characteristic	**Total sample % (*n*)**
Currently married	23.1 (196)
Divorced	10.5 (89)
Report to be sole provider for family	
Yes	65.7 (558)
No	34.4 (292)
Report they are in debt	
Yes	81.9 (696)
No	18.1 (154)
If Live with others	
Alone	35.5 (302)
Husband	21.1 (180)
Temporary husband[b]	11.7 (99)
Parents	26.6 (226)
Relative	17.3 (147)
Other	5.1 (44)

[a]Temporary husband is like a boyfriend or someone who serves similar to the role of a husband with no formal or legal tie

[b]Responses may not add up to 100 %; respondents could check more than one response

Characteristics of Motherhood and Sexual Risk for HIV Among Participants

The majority of women (90 %) reported having children; 85 % reported having children younger than 18 years of age. The median number of children was two; about one-fifth of the sample (20 %) reported three or more children. Most women with children in their household reported one or two children staying with them (86 %), and 14 % reported having three or more staying with them. The majority of women reported entering sex work as a result of a need to provide for themselves as well as their children and families (85 %). Most women (66 %) reported being the sole provider for their households; this did not vary significantly by whether women reported three or more children in the household, whether women had young children, or whether women reported children with health concerns. Women often reported other adults in the household (e.g. male partners/spouses, parents, other relatives); however, this did not vary by whether women reported young children (<5 years) or having three or more children in the household. Women who reported children with health concerns were more likely to live in a household with others, compared to living alone ($\chi 2 = 4.2$, $p = 0.04$). Women who had children with health concerns were also more likely to report having a greater number of children (t value = −4.5, $p = 0.0001$).

Regarding women's sexual risk profiles, the majority of women (72 %) reported consistent condom use in the past 30 days, with 14 % indicating they took more money from clients for unprotected sex in this same time period. Almost half of the sample reported an STI symptom in the 6 months previous to the survey (48 %).

Motherhood and Risk Factors for HIV: Findings from Crude and Adjusted Logistic Regression Models

Findings from logistic regression models (adjusted for relevant demographic variables: education, venue worked, living alone, and relationship status), indicated that FSW who reported three or more children in their household were less likely to report consistent condom use (AOR: 0.6; 95 % CI: 0.4–0.9) and more likely to agree to take more money for sex without a condom (AOR: 2.5; 95 % CI: 1.4–4.2). FSW who reported children with malnourishment, diarrhea, or weight loss were also less likely to report consistent condom use (AOR: 0.5; 95 % CI: 0.4–0.7), more likely to agree to take more money for sex without a condom (AOR: 2.5; 95 %CI: 1.6–3.9), and more likely to report a recent STI symptom (AOR: 1.6; 95 %CI: 1.1–2.3). FSW who reported children under the age of 5 years were not more likely to report any of these HIV indicators; however, they were less likely to report STI symptoms in the previous 6 months (AOR: 0.7; 95 % CI: 0.5–0.9) (Table 2).

Table 2

The relation between caretaking challenges of motherhood and indicators for HIV risk ($n = 850$): crude and adjusted findings

Caretaking challenges (independent variables)	Total sample % (*n*)	Consistent condom use with clients, past 30 days		More money for sex with no condom, past 30 days		STI symptom, past 6 months	
		Crude OR (95 % CI)	Adjusted OR[a](95 % CI)	Crude OR (95 % CI)	Adjusted OR[a](95 % CI)	Crude OR (95 % CI)	Adjusted OR[a](95 % CI)
Report having children under 5 years of age							
Yes	23.1 (196)	0.9 (0.7–1.3)	0.9 (0.7–1.4)	1.3 (0.9–2.0)	1.3 (0.8–1.9)	0.7 (0.5–0.9)*	0.7 (0.5–0.9)*
No	76.9 (654)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
Report three or more children in household							
Yes	14.1 (120)	0.5 (0.3–0.8)**	0.6 (0.4–0.9)*	2.7 (1.6–4.5)***	2.5 (1.4-4.2)***	0.7 (0.5-1.2)	0.8 (0.5-1.2)
No	85.9 (730)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)
Report child malnourishment, diarrhea, or weight loss							
Yes	20.0 (170)	0.6 (0.4–0.8)**	0.5 (0.4–0.7)**	2.2 (1.4–3.4)**	2.5 (1.6–3.9)**	1.6 (1.1–2.2)**	1.6 (1.1–2.3)**
No	80.0 (680)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)	1.0 (referent)

[a]Adjusted for demographics significantly associated with independent or dependent variables from bivariate analyses ($p \leq 0.05$): education, venue, relationship status, and whether women lived alone. Debt was not included as a covariate as we expect that economic vulnerability may be mediating these relations

* $p < 0.05$, Wald; ** $p < 0.01$, Wald; *** $p \leq 0.0001$, Wald

Notably, these associations were not influenced by whether or not women reported being the sole provider for themselves and their children; however, the majority of women in this sample (66 %) reported being the sole providers for their families. These associations (Table 2) also persisted when the analyses were limited to include only women who reported having children (the majority of the sample reported having children: 90 %). Furthermore, exploratory analyses indicated that there was no significant relation between these caretaking challenges and reported number of sex trades, number of clients, or number of days worked in the past week (all p values >0.1).

Discussion

It has been well-documented that women working as sex workers often initiate sex work to better support themselves and their families. Our findings regarding the challenges FSW face related to motherhood are congruent with existing literature, documenting the high proportions of women who are mothers, the associated caretaking challenges, as well as women's need to support children financially as a primary factor in terms of their initiation of sex work [6, 7, 14, 15]. Current findings build on this work, suggesting that the challenges of motherhood may not only be linked to the initiation of sex work among women, but also, to greater vulnerability for HIV among women working as sex workers.

Findings highlight some of the specific types of challenges associated with mothering (demands of multiple children living with them, demands of ill children) that appear associated with increased HIV risk engagements with clients. Future study is needed to better understand the various mechanisms explaining these significant relations. It may be that women with such high demands as mothers not only have a greater financial burden to support children, but also have less time to dedicate to sex work, thus, increasing the urgency of their engagements with clients, and likely, leading to riskier sex trades. The number of clients and sex trades reported were not significantly different between women with and without greater caretaking demands; thus, women with greater demands (in terms of time and financial need) may feel heightened pressures to maximize financial gains from each sex trade engagement, resulting in increased reports of unprotected sex trades, rather than an increase in number of sex trades reported. This corresponds well to our previous work, indicating that financial need increases women's urgency in their work with clients, resulting in riskier sex trades [4, 5]. Regardless of whether women have time constraints due to caretaking demands, given an urgent financial need to provide for their family, they may agree to riskier sex trades with clients if they are uncertain about securing a sufficient number of clients in a particular day or time period. These findings, while preliminary, suggest that financial demands for childcare may be most salient in explaining women's increased HIV risk behaviors linked to challenging demands of motherhood.

Notably, the associations between variables indicating women's caretaking demands and HIV risk indicators remained significant, regardless of whether women reported other adults living in the same household (who could potentially help provide care to children). Future research is needed to better investigate whether women have help in caring for their children (help from family or household members, or if children are in school), and if such caretaking aid has any effect on women's reported HIV risk behaviors with clients. In this context of India, many children are not in school, as they do not have access to education if their family cannot afford to pay for them to attend (in our study, 23 % reported to be in school), and thus, women may not be able to rely on schools to watch children during daytime hours. Generally, more work is needed to better understand how women balance caring for children and working to support the family. Likely these factors may also vary by the type of sex work women conduct (e.g. whether women are able to conduct sex work at home or need to travel to obtain clients).

Our findings indicate that women's reports of children with health concerns is associated with women reporting more children, suggesting that if less resources are available for each member of the family due to larger family size, children may be more likely to suffer from health concerns, such as malnutrition. Also, while most women report to support themselves (66 %), reporting others helping financially was not an influential factor in terms of the link between caretaking demands and women's HIV risk behaviors. Our previous work has highlighted that FSW with male partners report greater debt compared to those without such partners; women usually initiate sex work as a result of family and/or male partners not providing adequately for them and their children [5]. Thus, the few women who report some financial help may not be receiving adequate financial assistance to alleviate the effect of financial caretaking burdens on HIV risk indicators. Altogether, these preliminary findings further suggest that increased financial strain may be the most important mechanism explaining the relation between women's caretaking challenges and HIV risk indicators.

While our study confirms a link between women's roles as mothers and HIV risk indicators, in contrast, we found that having young children (less than 5 years of age) was not a significant factor in increasing HIV risk indicators. One previous study conducted in the Democratic Republic of the Congo, found that women who reported having at least one child less than 6 years of age were more likely to report accepting more money for unprotected sex trades [7]. While the conflict in findings may be related to factors specific to these diverse contexts, more work is needed to help reconcile these different findings across studies, and better understand the specific demands associated with childcare that are most influential in determining women's HIV risk behaviors.

While reports of STI symptoms were not significantly greater among women with three or more children in the household, more study may be needed to confirm this finding, particularly given that HIV risk behaviors were significantly greater among these groups of women. Future studies may be needed to assess shorter timeframes for STI symptoms, given the high prevalence of STI symptoms reported over a 6 month period in the current study (48 %, Table 2). Further, our

assessment of self-reported STI symptoms would be improved in future studies with the use of biological markers detecting STI; although STI symptoms used in this study are likely correlated with the existence of underlying STI, the use of biological markers would avoid the problems of self-reported data as well as other inaccuracies (e.g. some of these symptoms may be indicative of other health issues that are not STIs).

The findings of this study must be considered with recognition of several limitations. The cross-sectional design does not establish the temporality of these associations, and did not allow prospective follow-up of FSW, a challenge common to studies with hard to reach populations. It is reasonable to suggest that women with greater demands in motherhood may have an increased sense of urgency in their work with clients, and thus, have higher rates of unprotected sex trades; it may also be somewhat plausible that women who report a greater number of unprotected sex trades/STI are more likely to have more pregnancies and children. However, our findings indicate that women who reported children under five were not more likely to report unprotected sex trades and were less likely to report STI symptoms; this finding provides some evidence against this alternative hypothesis. Future longitudinal studies will be needed to confirm the temporality of study findings. Furthermore, the survey did not ask women to report whether or not they were HIV positive. While some children may also have HIV (and thus reporting greater weight loss and diarrhea), we do not expect this to account significantly for the relation between children's illness and mother's HIV risk behaviors; prevalence among FSW in this region is estimated to be about 7 %, and likely much lower among women's children [3]. Additionally, the items used for analyses rely on self-reported responses. Stigma can also often result in underreporting of sensitive issues or socially undesirable behaviors, such as the sexual risk variables measured in the current study [16–18] However, such underreporting would decrease power to detect an association between parenting and sexual risk behaviors. The current study found multiple strong links among these factors. Regarding study recruitment, while RDS cannot guarantee a sample truly representative of the underlying population, previous studies have found RDS to be the most effective method for sampling "hard to reach" populations, including FSW [19–22]. Further, the current study findings are most applicable to populations of sex workers working in Rajahmundry, Andhra Pradesh and may not be generalizable to other populations of sex workers from this state or other Indian states.

These limitations notwithstanding, our work strengthens cumulating evidence urging the need to consider women's life contexts when developing HIV prevention and intervention programs for FSW. Findings of the current study, while preliminary, suggest that supporting women as parents may be an effective strategy to decrease HIV risk among FSW working in Andhra Pradesh, India. Such findings also build on the increasing number of studies highlighting the need to implement structural-level interventions to address the social and environmental conditions that are driving HIV risk. This is especially true among populations where such risk has been rooted in and exacerbated by historic and ongoing gender or other group-level inequities resulting in social and economic marginalization and disenfranchisement [4, 5, 7, 8, 23–27]. In India and

elsewhere, among populations of women working as sex workers, who are at high risk for HIV, individual-level interventions to increase safer sex trade engagements will not be effective without addressing the multitude of challenges within the various contexts of women's lives.

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