

BMJ Open Prevalence and correlates of physical violence and rape among female sex workers in Ethiopia: a cross-sectional study with respondent-driven sampling from 11 major towns

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ABSTRACT

Objective This study examined the prevalence and correlates of physical violence and rape among female sex workers (FSWs) in Ethiopia.

Design A cross-sectional study using respondent-driven sampling technique.

Setting Eleven major towns in Ethiopia.

Participants 4900 FSWs.

Main outcome measures The prevalence of experiences of physical beating and rape.

Results Among FSWs, 17.5% reported physical beating within the last year and 15.2% reported rape since they started selling sex. FSWs aged 35+ years (AOR 0.59, 95% CI 0.38 to 0.92) were less exposed to physical beating than those aged 15–24 years. FSWs working on the street (AOR 1.92, 95% CI 1.53 to 2.39), in red-light houses (AOR 1.63, 95% CI 1.12 to 2.38) and in local drinking houses (AOR 1.35, 95% CI 1.02 to 1.78) experienced more physical beating than FSWs working in bars/hotels. FSWs who consumed alcohol four or more days in a week (AOR 1.92, 95% CI 1.21 to 3.04), and who chewed khat frequently experienced more physical violence. Rape was associated with having a low monthly income, drinking alcohol four or more days per week (AOR 2.33, 95% CI 1.47 to 3.7), experience of heavy episodic drinking in a month (AOR 1.71, 95% CI 1.24 to 2.38) and chewing khat 3–4 days per week (AOR 2.15, 95% CI 1.55 to 2.98). Condom breakage was more frequent among FSWs who reported both physical beating (AOR 1.51, 95% CI 1.25 to 1.84) and rape (AOR 1.26, 95% CI 1.03 to 1.55).

Conclusion FSWs in Ethiopia are vulnerable to physical and sexual violence, and the risk increases when they are younger, street-based and high consumers of alcohol or khat. Therefore, targeted efforts are needed for prevention and harm reduction.

INTRODUCTION

As per WHO definition, violence is the intentional use of physical force or power against another person or group, which has a high likelihood of resulting in injury, death, or sexual or psychological harm.¹ Violence against women is a global phenomenon, as

Strengths and limitations of this study

- The study involves multiple sites (11 large towns) across the country with a large sample size.
- The study used a respondent-driven sampling, a technique that is recommended for hard to reach populations.
- Sexual and physical violence are sensitive topics that are subject to underreporting because of social desirability bias.
- Recall bias could have occurred because participants were asked about physical violence in the last year and rape since they started selling sex.
- Due to a cross-sectional study design, the influence of alcohol use/khat chewing must be interpreted with caution, since the participants' current consumption status might not be an accurate indicator of the consumption status at the time of the violence.

more than one in three women worldwide is beaten, coerced into sex or abused in her lifetime.² Furthermore, violence is one of the main contributors to poor sexual and reproductive health among women, leading to unintended pregnancy, self-induced abortions, gynecological problems, sexual dysfunction and sexually transmitted infections (STIs), including HIV.^{3,4}

In most countries, female sex work is either illegal or has an uncertain legal status. For example, prostitution is not illegal but approaching sex workers in public is illegal; this makes authorities reluctant to offer protection or support, which in turn legitimises violence and discrimination against sex workers.⁵ In the case of Ethiopia, it is illegal to operate a brothel or procure sex workers as a commercial activity, but the sale of sex by women is neither prohibited nor legally recognised as a profession.⁶ Female sex workers (FSWs) frequently

face harassment and violence, not only because of their illegitimate status but also as a manifestation of gender inequality and discrimination directed towards women.^{7 8}

Violence against FSWs can be perpetrated by anyone, including police officers, intimate partners and clients. In Adama and Mekelle towns in Ethiopia, ~60% and 75% of FSWs, respectively, reported lifetime violence.^{9 10} In the same study in Adama, 8% of FSW reported forced sex since they started sex work.¹⁰ In another study conducted among homeless street females in Bahirdar town, 11.4% of them reported having been raped during the last 1 year period.¹¹ In Uganda, 40% of FSWs reported physical abuse, and 49% had been raped at least once in their lifetime.¹² In another study conducted in Hunan, China and Karnataka, India, 16% and 9% of FSWs, respectively, reported work-related violence.^{13 14}

Several risk factors have been found to have an association with physical and sexual violence against FSWs. Socioeconomic characteristics, risky sexual behaviours and substance abuse are the most mentioned factors worldwide.^{9 10 15 16} A randomised controlled trial study in Kenya and South Africa showed that alcohol consumption reduction by FSWs had a significant contribution to violence reduction.^{17 18} Moreover, establishments where alcohol and other drugs are consumed are associated with an increased likelihood of people becoming violent towards sex workers.^{8 19} However, other studies suggest that FSWs who work outdoors face more violence than those who work indoors.^{20 21}

Violence towards FSWs may also be associated with condom use and condom breakage. Studies conducted among FSWs have found several intentional and unintentional factors associated with condom breakage during sex work. These factors included being drunk or high on drugs, wearing unfitting condoms, incorrect condom use and having violent or rough sex.^{22 23} Moreover, violence towards FSWs may also be linked to disagreement over condom use, which increases the risk of acquiring HIV and other STIs.^{21 24–26} In Ethiopia, the weighted HIV prevalence among FSWs is estimated to be 23%,²⁷ while it is 1.2% in the general population,²⁸ which shows the magnitude of the potential risk exposure among FSWs. In addition, violence also prevents sex workers from seeking appropriate health services.^{26 29 30}

In general, 120 000–160 000 FSWs are estimated to live in Ethiopia, working in different venues, mainly in bars and hotels, Key-mebrat (red lighthouses), local drinking houses and on the street.²⁷ Currently, the number of FSWs is growing, with increasing numbers of young girls entering the sex trade.

This study explores the prevalence and correlates of physical violence and rape among FSWs in Ethiopia. Successful strategies for handling the trauma may vary by the type of violence experienced. Therefore, identification of risk factors that are specific to various types of violence has the potential to inform the development of evidence-based prevention programme. In addition,

generating such types of evidence based on national level data will help to promote effective prevention for FSWs.

METHODS

Study design

This study was part of a larger study concerning HIV prevalence and related risk factors among FSWs and long-distance drivers that was carried out in Ethiopia in 2014. A cross-sectional study design using respondent-driven sampling (RDS) technique was used for data collection. RDS is a complex sampling method based on a chain-referral design and recommended for hard-to-reach populations. At all data collection sites, initial FSW ‘seeds’ were selected to start the sampling process. Seeds were selected purposively to represent the type of sex worker, age category and geographic location. They were identified through formative assessments with key stakeholders working with FSWs and representatives of FSWs. The selected seeds were those who were well-connected with their community and reported large social networks.

A maximum of three recruits per seed was allowed and only one-time participation was ensured by using a fingerprint-scanning device. Recruitment pattern (who recruited whom) was tracked and network size was determined.

Study area, period and population

The study locations were the seven major regional towns and the four main transport corridor towns. The seven major regional towns were: Addis Ababa, Bahir Dar, Mekelle, Hawassa, Adama, Gambela and Dire Dawa. The four transport corridor towns were Semera-Logia (Addis Ababa-Djibouti route), Kombolcha (Addis Ababa-Mekelle route), Metema (Addis Ababa-Metema route) and Shashemene (Addis Ababa-Moyale route).

The source populations were all FSWs living in those selected 11 towns. For the purpose of the study, FSWs were defined as follows: ‘women who practice sexual activity with the pre-conditions of financial or in-kind benefits’. The inclusion criteria were receiving money or other benefits for sex with four or more people within the last 30 days, being 15 and above years old, properly recruited by a peer (presenting with the coupon), and giving consent both for the interview and blood drawing.

Sample size

The source study protocol calculated that a sample size of 400 FSWs was needed in each town using anticipated HIV prevalence of 25%, 6% precision, 95% CI and design effect of two. However, the number of FSWs who participated in each town was not exactly 400, and the total number of FSWs who participated in the study was 4900.

Data collection procedure

Six seed FSWs were selected to initiate coupon-based recruitment. Eligible FSWs who provided informed consent to participate were administered a face-to-face

interview in a private room by a nurse with a structured questionnaire in Amharic language. They then provided blood specimens for HIV, CD4 and viral load testing in a private room. When the process was completed, participants were provided with up to three coupons and instructed to recruit their FSW peers into the study. To compensate the time and costs of transport, a primary incentive of 100 ETB (US\$5.0) and additional 50 ETB (\$2.5) for each eligible peer she enrolled into the study was given. An electronic data base for tracking coupons and recruitment was established with participant ID, fingerprint code and a preprinted label that was scanned. The data collection tools and questionnaire were pretested in a pilot study; feedback from the pilot study was used to finalise the data collection tools and field logistic and operational procedures. The questionnaire included: sociodemographic characteristics, sexual risk exposure, sexual behaviours, condom use, history of STI symptoms, alcohol and drug use consumption, violence-related issues, knowledge of HIV transmission and HIV-testing history.

Variables

Violence was assessed with two dependent variables, which were physical beating during the last 1 year and rape since sex selling started. The following questions were asked: 'When exchanging sex for money during the last 1 year, have you ever been physically beaten by a sexual partner or client?' and 'Have you ever been raped or forced to have sex against your will since you start selling sex?'. Responses were dichotomised into a yes and no variable for analysis. For both of the questions, all who had reported beating and rape at least once were considered as having experienced violence (yes).

The different time periods used to assess experiences of physical beating and rape were based on the presumed frequency of the two different types of violence. Physical beating might occur more frequently, while rape presumably occurs less frequently. Therefore, to measure the general burden of the two experiences, we specifically selected the time period that might be appropriate for the recall of the particular experience.

The independent measures included current age, monthly income from selling sex, marital status, educational status, sex-selling venue, khat chewing, alcohol drinking, HIV status and condom breakage.

Current age was a continuous variable and for the purpose of analysis categorised as 10-year intervals: younger,^{15–24} middle age,^{25–34} and older one (35+), with the younger age group used as the reference category. Monthly income from selling sex was an open-ended question and for the analysis was categorised into 1000 birr (\$50) intervals considering the cost of living in the country. Educational status was categorised as no formal education, primary first cycle (grades 1–4), primary second cycle (grades 5–8) and secondary and above for analysis, in accordance with the country education system.

In addition, sex workers were categorised based on their sex-selling venue, where bar/hotel was used as the reference because it is the most common FSW working venue. In addition, this venue category has better security than the other venues, and there were greater numbers of FSWs in this category.

Alcohol consumption was measured by different indicators, including frequency of alcohol consumption, number of drinks per specific day and frequency of heavy episodic drinking (HED) (six or more standard drinks per day).

Frequency of khat chewing was assessed according to the number of days that they chewed in a week. Khat (*Catha edulis*) is a stimulant leaf, and after chewing khat, an individual may become talkative, alert, feel excitement, increased self-esteem and increased imagination.³¹ Khat chewing is also popular among FSWs, as it is a means to spend the daytime, to be active during the night for sex work and to socialise with each other.

Data analysis

Statistical analysis was performed using SPSS V.20. Descriptive statistics were used to provide summary measures (means, frequencies). ORs (crude and adjusted) and 95% CI were obtained using bivariate and multivariate logistic regression analysis. Those independent variables significantly associated with the outcome variable in the bivariate analysis were included in the multivariate analysis. In addition, correlation analysis was performed to examine potential multicollinearity; no correlation was found between the variables. Cases with missing data were excluded from the analyses. Significance was accepted at p value <0.05 .

During data collection, we did not specifically assess where FSWs experienced the violence (in the current town or in another town). Because FSWs are highly mobile from one town to another, it would be inaccurate to assume that their experiences of violence occurred in the town from which they were sampled. Therefore, during analysis, we did not conduct any statistical analysis that assessed the contribution of the sampling site (participant's town) to the experience of violence.

Ethical considerations

Permission for data use was obtained from the Ethiopian Public Health Institute (EPHI). The protocol was cleared at the Scientific and Ethical Research Office of EPHI, the Ethiopian Science and Technology Ministry Ethical Committee and CDC-Atlanta IRB. Individual written informed consent was obtained from each participant for the interview and blood sample collection while the study was conducted.

Patient and public involvement

During the design or implementation of the study, no patients were involved in the development of the research question and outcome measures. Nevertheless, due to the nature of the RDS methodology, an assessment was

conducted to identify seeds and hotspot areas for the actual data collection. This assessment was conducted in collaboration with organisations working with FSWs and an active member of FSWs in those organisations. The primary results will be disseminated by publication in peer-reviewed journals and presented at the national level for stakeholders working with FSWs.

RESULTS

Sociodemographic and other background characteristics

A total of 4900 FSWs participated in the study. Demographic, socioeconomic and other background characteristics of the participants are shown in [table 1](#). The majority of the participants were between 15 and 24 years old with a mean age of 24 years (SD=5.7); 44% of them were divorced, separated or widowed. A quarter of them reported being uneducated and 40% of them earned on average less than \$50 per month. Regarding sex selling starting age, the majority started selling sex between the ages of 18 and 24 years, although ~25% started before the age of 18. FSWs work in different eating, drinking and recreation establishments, as well as other venues; 33% recruited their clients in bars/hotels, followed by 26.5% on the street, and 20% in local drinking houses ([table 1](#)).

Behavioral and other related factors

[Table 2](#) shows the prevalence of behavioural and other factors. The majority (70%) of the respondents consumed alcohol, and of those, 15.8% had drunk so much on a typical day within the last 30 days that they did not remember what happened the next day. About half of the respondents chewed khat, and 23.8% of them chewed almost every day (5–7 days a week).

Regarding condom use, 25.5% of them reported condom breakage within the last 30 days prior to the study. HIV/AIDS status of the respondents was also assessed and a quarter of them (23%) were HIV positive. With regard to physical and sexual violence experience, 17.5% of them reported physical beating within the last 12 months and 15.2% reported having been raped since they started selling sex ([table 2](#)).

Bivariate regression analysis outcome

[Table 3](#) shows the bivariate logistic regression results; each independent variable was analysed separately against the two outcome variables. The variables that were significantly associated with physical violence were age, educational level, average monthly income from selling sex, current marital status, sex-selling venues, frequency of alcohol consumption, alcohol containing drinks on a typical day, frequency of HED, frequency of khat chewing in a week and condom breakage. Variables significantly associated with rape were educational level, average monthly income from selling sex, frequency of alcohol consumption, alcohol containing drinks on a typical day, frequency of HED, frequency of khat chewing in a week

Table 1 Distribution of sociodemographic and other background characteristics among 4900 female sex workers across 11 towns, Ethiopia

Variable	Frequency	Percentage
Age (years)		
15–24	2831	57.8
25–34	1700	34.7
35+	369	7.5
Total	4900	100.0
Missing	0	
Mean age of respondents=24.16 SD=5.7		
Educational status		
No education	1224	25.0
Primary first cycle (1–4)	764	16.0
Primary second cycle (5–8)	2062	42.0
Secondary and above	831	17.0
Total	4881	100.0
Missing	19	
Sex-selling venues		
Bar/hotel	1613	33.0
Local drinking houses	983	20.1
Spa/massage/beauty salon/own house	261	5.3
Red-light houses	429	8.8
Street	1295	26.5
Other	304	6.2
Total	4885	100.0
Missing	15	
Current marital status		
Never married	2698	55.2
Married/cohabited	37	0.8
Separated/divorced	1976	40.5
Widowed	173	3.5
Total	4884	100.0
Missing	16	
Sex selling starting age		
Less than 15	120	2.5
15–17	1088	22.3
18–24	2864	58.7
25–29	583	12.0
30 and above	220	4.5
Total	4875	100.0
Missing	25	
Monthly income from selling sex		
Less than 1000 (<\$50)	1932	39.6
1001–2000 (\$50–\$100)	1554	31.8
2001–3000 (\$100–\$150)	812	16.6
3001–4000 (\$150–\$200)	318	6.5
4001–5000 (\$200–\$250)	150	3.1
Above 5000 (>\$250)	117	2.4
Total	4883	100.0
Missing	17	

Table 2 Behavioural and other related factors among 4900 female sex workers across 11 towns, Ethiopia

Variable	Frequency	Percentage
Frequency alcohol consumption		
Never	1493	30.6
Once a month or less	222	4.5
2–4 days a month	492	10.1
2–3 days a week	1394	28.5
4 or more days a week	1283	26.3
Total	4884	100.0
Missing	16	
Alcohol containing drinks on a typical day		
1 or 2	806	23.8
3 or 4	1383	40.8
5 or 6	742	21.9
7 to 9	296	8.7
10 or more	164	4.8
Total	3391	100.0
Missing	0	
Frequency of heavy episodic drinking		
Never	1863	54.9
Less than monthly	236	7.0
Monthly	299	8.8
Weekly	630	18.6
Daily or almost daily	363	10.7
Total	3391	100.0
Missing	0	
Drunk so much and cannot remember what happened the next day		
Yes, in last 30 days	534	15.8
Yes, not in last 30 days	233	6.9
No	2609	77.2
Do not remember	4	0.1
Total	3380	100.0
Missing	11	
Frequency of khat chewing		
Never	2431	49.8
Less than once a week	577	11.8
1–2 days per week	429	8.8
3–4 days per week	284	5.8
5–7 days per week	1162	23.8
Total	4883	100.0
Missing	17	
Condom breakage in the last 30 days		
Yes	1243	25.5
No	3635	74.5
Total	4878	
Missing	22	
HIV status		
Negative	3708	76.0
Positive	1173	24.0
Total	4881	100.0
Missing	19	

Continued

Table 2 Continued

Variable	Frequency	Percentage
Ever been raped or forced to have sex since start selling sex		
No	4142	84.8
Yes	742	15.2
Total	4884	100.0
Missing	16	
Physically beaten in the last 12 months		
No	4026	82.5
Yes	855	17.5
Total	4881	100.0
Missing	19	

and condom breakage. HIV status was not significantly associated with either physical violence or rape.

Multivariate analysis of factors associated with physical violence (physically beaten)

Table 4 shows the results of the multivariate analysis used to identify factors associated with physical violence after simultaneously adjusting for all measures included in the analyses. FSWs aged 35 years or above (AOR 0.59, 95% CI 0.38 to 0.92) were significantly less likely to experience physical violence when compared with the younger age group (15–24 years). FSWs who had attended primary first cycle education (AOR 0.71, 95% CI 0.52 to 0.97) were also less likely to experience physical beating than those who reported no education. On the other hand, FSWs who worked on the street (AOR 1.92, 95% CI 1.53 to 2.39), in red-light houses (AOR 1.63, 95% CI 1.12 to 2.38) and in local drinking houses (AOR 1.35, 95% CI 1.02 to 1.78) had an increased odds of experiencing physical violence compared with FSWs who worked in bars/hotels. Moreover, substance use was significantly related to physical violence. FSWs who consumed alcohol four or more days in a week (AOR 1.92, 95% CI 1.21 to 3.04), those who did not remember what happened the next day due to heavy alcohol consumption both in the last 30 days (AOR 1.98, 95% CI 1.58 to 2.49) and before the last 30 days (AOR 1.85, 95% CI 1.35 to 2.53), and FSWs who chewed khat 3–4 days per week (AOR 1.58, 95% CI 1.13 to 2.21) and 5–7 days per week (AOR 1.43, 95% CI 1.13 to 1.80) had more likelihood of experiencing physical violence. Condom breakage experience within the last 30 days prior to the study was also significantly associated with physical violence (AOR 1.51, 95% CI 1.25 to 1.84).

Multivariate analysis of factors associated with sexual violence (rape)

Table 5 shows the results of the multivariate logistic regression analyses used to identify factors that were significantly associated with rape after simultaneously adjusting for all measures included in the analyses. FSWs with a monthly income of \$50 to \$200 were significantly less likely to experience rape compared with those with a monthly income of below \$50. Drinking alcohol four

Table 3 Bivariate logistic regression analyses of independent variables associated with physically beaten in the last 12 months and ever been raped since start selling sex, OR and 95% CI

Variables	Physical beating OR (95% CI)	Rape OR (95% CI)
Age (years)		
15–24*		
25–34	1.02 (0.87 to 1.19)	1.02 (0.86 to 1.21)
35+	0.52 (0.37 to 0.74)	0.88 (0.64 to 1.20)
Educational level		
No education*		
Primary first cycle (1–4)	1.01 (0.79 to 1.31)	1.45 (1.14 to 1.85)
Primary second cycle (5–8)	1.35 (1.11 to 1.63)	1.08 (0.88 to 1.32)
Secondary and above	1.49 (1.18 to 1.87)	1.09 (0.85 to 1.41)
Monthly income from selling sex		
Less than 1000 birr (<\$50)*		
1001–2000 birr (\$50–\$100)	1.44 (1.20 to 1.73)	0.69 (0.58 to 0.85)
2001–3000 birr (\$100–\$150)	1.67 (1.35 to 2.07)	0.51 (0.39 to 0.66)
3001–4000 birr (\$150–\$200)	1.61 (1.19 to 2.17)	0.65 (0.46 to 0.92)
4001–5000 birr (\$200–\$250)	2.12 (1.44 to 3.14)	1.01 (0.66 to 1.55)
Above 5000 birr (>\$250)	1.62 (1.01 to 2.58)	0.75 (0.44 to 1.27)
Current marital status		
Never married*		
Married/cohabited	1.05 (0.46 to 2.41)	0.69 (0.24 to 1.96)
Separated/divorced	0.93 (0.80 to 1.09)	1.03 (0.88 to 1.21)
Widowed	0.59 (0.37 to 0.95)	1.39 (0.95 to 2.06)
Sex-selling venues		
Bar/hotel*		
Local drinking houses	0.87 (0.69 to 1.09)	–
Spa/massage/beauty salon/own house	0.45 (0.28 to 0.71)	–
Red-light houses	0.95 (0.71 to 1.27)	–
Street	1.51 (1.26 to 1.82)	–
Other	1.37 (1.01 to 1.86)	–
Frequency alcohol consumption		
Never*		
2–4 days a month	1.82 (1.35 to 2.44)	1.74 (1.27 to 2.38)
2–3 days a week	2.07 (1.66 to 2.57)	1.87 (1.48 to 2.36)
4 or more days a week	3.54 (2.87 to 4.37)	3.43 (2.75 to 4.28)
Alcohol containing drinks on a typical day		
1 or 2*		
3 or 4	1.39 (1.09 to 1.76)	1.16 (0.92 to 1.46)
5 or 6	2.03 (1.58 to 2.62)	1.09 (0.84 to 1.43)
7 to 9	2.19 (1.59 to 3.03)	0.98 (0.68 to 1.41)
10 or more	2.76 (1.88 to 4.03)	1.78 (1.20 to 2.65)
Frequency of heavy episodic drinking		
Never*		
Less than monthly	1.43 (1.03 to 1.98)	1.39 (0.99 to 1.95)
Monthly	1.23 (0.90 to 1.66)	1.59 (1.18 to 2.13)

Continued

Table 3 Continued

Variables	Physical beating OR (95% CI)	Rape OR (95% CI)
Weekly	1.73 (1.39 to 2.14)	1.03 (0.80 to 1.31)
Daily or almost daily	1.97 (1.53 to 2.55)	1.69 (1.29 to 2.21)
Drunk so much and cannot remember what happened the next day		
No*		
Yes, in the last 30 days	2.90 (2.37 to 3.56)	1.66 (1.33 to 2.07)
Yes, before last 30 days	2.22 (1.65 to 2.99)	1.27 (0.91 to 1.78)
Frequency of khat chewing in a week		
Never*		
Less than once a week	1.24 (0.96 to 1.60)	0.89 (0.67 to 1.19)
1–2 days per week	1.67 (1.28 to 2.18)	2.89 (2.26 to 3.69)
3–4 days per week	2.49 (1.87 to 3.34)	2.92 (2.19 to 3.89)
5–7 days per week	2.48 (2.08 to 2.96)	1.47 (1.21 to 1.79)
Condom breakage		
No*		
Yes	1.99 (1.69,2.33)	1.62 (1.37 to 1.92)
HIV test result		
Negative*		
Positive	1.04 (0.88 to 1.24)	0.88 (0.73 to 1.07)

*Reference category.

or more days per week (AOR 2.33, 95% CI 1.47 to 3.7), experience of heavy drinking in the last 30 days and not remembering what happened the next day (AOR 1.34, 95% CI 1.05 to 1.72), experience of HED in a month (AOR 1.71, 95% CI 1.24 to 2.38), experience of HED almost daily (AOR 1.49, 95% CI 1.06 to 2.11) and chewing khat 1–2 days (AOR 2.13, 95% CI 1.61 to 2.83) and 3–4 days (AOR 2.15, 95% CI 1.55 to 2.98) per week were positively associated with rape. Moreover, condom breakage (AOR 1.26, 95% CI 1.03 to 1.55) was significantly more frequent among FSWs who reported rape.

DISCUSSION

According to this study, 17.5% of FSWs in Ethiopia had been physically beaten within the last 12 months and 15.2% had been raped since they started selling sex. Age, sex-selling venues and high consumption of alcohol and khat were significant predictors of physical violence (beating). On the other hand, the significant predictors of sexual violence (rape) were low income and high consumption of alcohol and khat.

The prevalence of both physical violence and sexual violence (rape) was lower than the prevalence found in studies conducted in Uganda, Ivory Coast and Kenya.^{9 12 30 32} However, when compared with the studies conducted in Adama (Ethiopia), China, India and Mexico, the current study reported a higher prevalence of both physical and

sexual violence.^{10 11 13 14 33} The difference in the definition of violence used might be one of the possible explanations for the difference between the current result and those found in other studies in Africa. Most of the studies assessed all forms of physical and sexual violence while the current study assessed solely physical beating and forced penetrative sex (rape). On the other hand, differences in results across settings might also be due to differences in background and contextual factors such as socioeconomic status and cultural aspects.

Several studies showed that younger FSWs are more exposed to physical and sexual violence^{13 34} in line with the current findings that younger FSWs (15–24 years) were at higher risk for physical violence when compared with their older counterparts (35+ years). Perpetrators find it easier to manipulate younger FSWs and this might play a role in their increased exposure to violence. That younger FSWs are especially vulnerable to violence has important implications due to the increasing number of younger FSWs who are entering the sex trade. Therefore, to minimise the vulnerability of younger FSWs, intervention programme need to create awareness about the factors that increase the likelihood of violence and to ensure that younger FSWs are particularly addressed in such programme.

Even though sex work is not a legally recognised profession in Ethiopia, most of the establishments where the sex

Table 4 Multivariate logistic regression analysis of factors associated with physical violence (physically beaten) in the last 12 months among female sex workers across 11 towns in Ethiopia, OR and 95% CI

Variables	OR (95% CI)
Age (years)	
15–24*	
25–34	1.04 (0.82 to 1.22)
35+	0.59 (0.38 to 0.92)
Educational level	
No education*	
Primary first cycle (1–4)	0.71 (0.52 to 0.97)
Primary second cycle (5–8)	0.98 (0.77 to 1.26)
Secondary and above	1.14 (0.85 to 1.53)
Monthly income from selling sex	
Less than 1000 birr (<\$50) *	
1001–2000 birr (\$50–\$100)	1.13 (0.90 to 1.41)
2001–3000 birr (\$100–\$150)	1.14 (0.87 to 1.48)
3001–4000 birr (\$150–\$200)	1.12 (0.77 to 1.61)
4001–5000 birr (\$200–\$250)	1.44 (0.93 to 2.24)
Above 5000 birr (>\$250)	1.12 (0.63 to 1.99)
Current marital status	
Never married*	
Married/cohabited	0.68 (0.24 to 1.89)
Separated/divorced	1.08 (0.88 to 1.29)
Widowed	0.87 (0.48 to 1.59)
Sex-selling venues	
Bar/hotel*	
Local drinking houses	1.35 (1.02 to 1.78)
Spa/massage/beauty salon/own house	1.04 (0.58 to 1.84)
Red-light houses	1.63 (1.12 to 2.38)
Street	1.92 (1.53 to 2.39)
Other	1.39 (0.98 to 1.99)
Frequency alcohol consumption	
Never*	
2–4 days a month	1.25 (0.77 to 2.04)
2–3 days a week	1.32 (0.84 to 2.06)
4 or more days a week	1.92 (1.21 to 3.04)
Alcohol containing drinks on a typical day	
1 or 2*	
3 or 4	1.08 (0.84 to 1.39)
5 or 6	1.15 (0.85 to 1.57)
7 to 9	1.09 (0.74 to 1.64)
10 or more	1.14 (0.72 to 1.81)
Frequency of heavy episodic drinking	

Continued

Table 4 Continued

Variables	OR (95% CI)
Never*	
Less than monthly	1.07 (0.75 to 1.52)
Monthly	0.84 (0.59 to 1.18)
Weekly	1.07 (0.82 to 1.39)
Daily or almost daily	0.99 (0.71 to 1.38)
Drunk so much and cannot remember what happened the next day	
No*	
Yes, in the last 30 days	1.98 (1.58 to 2.49)
Yes, before last 30 days	1.85 (1.35 to 2.53)
Frequency of khat chewing in a week	
Never*	
Less than once a week	1.04 (0.77 to 1.42)
1–2 days per week	1.30 (0.96 to 1.77)
3–4 days per week	1.58 (1.13 to 2.21)
5–7 days per week	1.43 (1.13 to 1.80)
Condom breakage	
No*	
Yes	1.51 (1.25 to 1.84)

*Reference category.

workers are based (hotels, bars/restaurants, nightclubs and so on) operate legally with working licenses. Nevertheless, some FSWs work on the street and in red-light houses where they manage their own working area. Consequently, the extent to which physical violence occurs may vary according to their working area. The present study revealed that FSWs who mainly work in bars and hotels face less physical beating when compared with FSWs who work on the street, in red-light houses and local drinking houses. This finding is in line with studies conducted in New York City and England.^{20 21} This might be due to the level of protection in their working areas and/or due to the type of clients who frequents those localities. This means that engaging bar/hotel managers in the prevention activities could be an additional strategy to decrease violence against FSWs.

On the other hand, FSWs who work on the street, in red-light houses and local drinking houses experienced more violence. Most of these venues are located in the slum areas of the cities, and such areas are often the focus of police efforts to control various unwanted activities. In this regard, FSWs are targets of harassment, physical violence and arrest by police. The actions of the police towards FSWs might also serve to legitimise violence against FSWs in the community (especially among FSWs residing in slum areas), thus increasing such acts of violence. Therefore, to minimise the harm in these

Table 5 Multivariate logistic regression analysis of factors associated with sexual violence (rape) since sex selling start among female sex workers across 11 towns in Ethiopia, OR and 95% CI

Variables	OR (95% CI)
Monthly income from selling sex	
Less than 1000 birr (<\$50) *	
1001–2000 birr (\$50–\$100)	0.62 (0.49 to 0.77)
2001–3000 birr (\$100–\$150)	0.42 (0.32 to 0.57)
3001–4000 birr (\$150–\$200)	0.45 (0.29 to 0.69)
4001–5000 birr (\$200–\$250)	0.84 (0.53 to 1.33)
Above 5000 birr (>\$250)	0.62 (0.34 to 1.15)
Current marital status	
Never married*	
Married/cohabited	0.57 (0.17 to 1.97)
Separated/divorced	1.01 (0.83 to 1.22)
Widowed	1.61 (0.98 to 2.63)
Educational level	
No Education*	
Primary first cycle (1–4)	1.06 (0.79 to 1.43)
Primary second cycle (5–8)	0.83 (0.65 to 1.07)
Secondary and above	0.92 (0.68 to 1.25)
Frequency of alcohol consumption	
Never*	
2–4 days a month	1.15 (0.69 to 1.89)
2–3 days a week	1.24 (0.78 to 1.96)
4 or more days a week	2.33 (1.47 to 3.73)
Drunk so much and cannot remember what happened the next day	
No*	
Yes, in the last 30 days	1.34 (1.05 to 1.72)
Yes, before last 30 days	1.07 (0.75 to 1.52)
Frequency of heavy episodic drinking	
Never*	
Less than monthly	1.61 (1.12 to 2.32)
Monthly	1.71 (1.24 to 2.38)
Weekly	1.04 (0.78 to 1.38)
Daily or almost daily	1.49 (1.06 to 2.11)
Frequency of khat chewing in a week	
Never*	
Less than once a week	0.83 (0.59 to 1.16)
1–2 days per week	2.13 (1.61 to 2.83)
3–4 days per week	2.15 (1.55 to 2.98)
5–7 days per week	1.06 (0.83 to 1.36)
Condom breakage	
No*	
Yes	1.26 (1.03 to 1.55)

*Reference category.

localities, involving the police force in violence prevention activities is crucial and should be one of the first step. In addition, a peer education programme led by the sex workers could be an additional strategy. Such a

programme could help FSWs to create an information sharing platform to discuss the incidences of violence, types of perpetrators and so on, which could raise awareness and help them to become more alert.

Furthermore, an association between alcohol use and higher frequency of physical violence and rape was reported. In particular, FSWs who consume alcohol >4 days per week and those with experience of HED were significantly more likely to experience violence. Several studies conducted in Ethiopia, Uganda and Kenya also reported similar findings.^{9 10 12 19} A large proportion of FSWs use alcohol prior to or during sex to help them to solicit clients and overcome their shyness.^{35 36} In particular, high level of alcohol consumption places FSWs at a disadvantage by intensifying their vulnerability.⁸ Research reviews also report that alcohol use impairs FSWs' ability to detect the risk of violence and increases their vulnerability to risk-prone situations.^{37 38} The consequences of HED are not just limited to the physical effects of intoxication but further expose them to violence and risky sexual behaviours.

Correspondingly, chewing khat more days in a week was significantly associated with experience of physical violence and rape. After chewing khat, some of the users consume alcohol-containing beverages to decrease the level of stimulation. Although there is no previous study on the relationship between khat chewing and experience of violence among FSWs, most FSWs chew khat before departing for work. In the bar, they drink alcohol to minimise the effect, which in turn exposes them to HED and violence. Further studies should assess the independent contribution of khat chewing to increasing violence occurrence.

The extent to which alcohol use and khat chewing are risk factors for the occurrence of experiences of violence must be interpreted with caution. Since physical beating was measured within the last 12 months and rape was measured since they started selling sex, the participants' current khat chewing or alcohol consumption status might not be an accurate indicator of their consumption patterns at the time of the violence. In addition, the current use of substances might be a means to cope with the trauma related to the experience of violence.

In addition, the resistance to condom use from clients and the violence experience may create a difficult situation for FSWs with regard to the proper use of condoms, which further exposes FSWs to HIV and other STIs. In this study, there was a significant relationship between condom breakage and history of physical beating and rape. Even though there was no significant association between HIV and violence, the proportion of HIV positive FSWs in the sample was high (23%). A study conducted in Benin reported a similar finding concerning the association between condom breakage and violence, but unlike our study there was a significant association between HIV and violence experience.²³ This finding indicates that solely providing condoms will not be effective to prevent HIV and other STIs transmission. Instead, working on

factors that contribute to improper use of condoms (such as violence) could be an additional strategy for HIV prevention programme.

In general, our study demonstrates that sex workers are particularly vulnerable to physical beating and rape. Nevertheless, the harm reduction programme among FSWs in Ethiopia is poor. Given the associations between violence and unprotected sex, the HIV control programme may not accomplish its goal of reducing the number of new infections without also addressing violence. Therefore, combining both programme could yield better results with regard to attaining epidemic control as well as reducing the harm associated with violence. In addition, this study shows that different factors (such as sex-selling venues, the age of FSWs, level of alcohol use and so on) were associated with violence among FSWs, signifying the need for different approaches to minimise the incidence of violence.³⁹ At the individual level, efforts to reduce violence could focus on developing educational materials and creating awareness for sex workers about their legal rights and about how to prevent, reduce and respond to violence.⁴⁰ In addition, involving the community in the prevention programme could play a vital role especially towards reducing stigma and discrimination towards FSWs, which in turn would create a suitable environment for FSWs to stand up for their rights. Furthermore, involving police and law enforcement authorities to reduce harassment could play a greater role in violence reduction.

Finally, there were some similarities but also differences concerning the predictors of rape and physical violence. For example, being in the younger age group was a significant predictor of physical beating but not rape, and having lower income was associated with rape but not with physical beating. Nevertheless, based on the current data, it is difficult to draw any conclusions about why one variable would matter for physical beating but not for rape. The reasons underlying the differences are currently unknown, and further research might be required to gain an understanding of the patterns observed.

Methodological considerations

There are a limited number of studies on violence among FSWs in Ethiopia and the existing studies are restricted to one city.^{9 10} One of the strengths of this study is that it involves multiple sites (11 large towns) across the country. The second strength is the sampling technique; the study used a RDS, which is a strategy recommended for hard-to-reach populations and which is believed to give a representative sample of the target population. The third strength is the assessment of FSWs' HIV status on site using the national testing algorithm. In addition, the pilot study conducted prior to the actual implementation added strength to the main study protocol.

This study also had limitations. First, sexual and physical violence are sensitive topics that are subject to underreporting because of social desirability bias. Second, recall bias could have occurred because participants were asked

about physical violence in the last year and rape since they started selling sex. We tried to minimise underreporting through intense interviewer training. In addition, since it was a cross-sectional study, participants were assessed only once; thus, it would be difficult to infer the temporal association between a risk factor and the outcome measures, that is, physical violence and rape.

Furthermore, the results regarding correlates of physical and sexual violence among FSWs in Ethiopia might have limited generalisability across settings. However, these results are likely to be relevant for other FSWs in other African countries that have a similar setting as Ethiopia, and may inform targeted prevention strategies for this key population.

CONCLUSION

In general, FSWs are vulnerable to physical and sexual violence, and the risk increases when they are younger, street-based and are high consumers of alcohol or khat. Therefore, to reduce physical and sexual violence, strategies to secure and improve their work environment should be a critical component of targeted interventions. Increasing awareness regarding the role of khat chewing and alcohol drinking towards vulnerability to violence should be an integral component of HIV prevention and violence reduction programme. In addition, targeted efforts should be made for the younger FSWs in order to reduce their vulnerability.

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