

## Sexual Risk Behaviors of Sex Workers for HIV / AIDS and STIs in the City of Bamako, Mali

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### Abstract

Background: HIV / AIDS affects all social strata and including female sex workers who are a particularly vulnerable group at risk of HIV infection.

### Objective

To assess the risky sexual behavior of

female sex workers in Bamako, Mali.

### Methods

This is a quantitative cross-sectional analytical study conducted among 288 female sex workers in the city of Bamako, Mali. This study used a questionnaire to collect information from January to April 2021.

### Results

Out of 288 sex workers, 41% came from neighboring countries (Burkina Faso, Cote d'Ivoire, Mauritania). More than half of the participants had started working as sex workers before the age of 20. More than half of sex workers do not always use a condom. About 32% of female sex workers had previously had anal sex, 20% had experienced group sex, and less than a quarter smoked or drank alcohol before sex. A significant relationship was found between the behavior or practice of sex workers with the following variables: ethnicity ( $P = 0.04$ ); marital status ( $P = 0.01$ ); monthly income ( $P = 0.001$ ), age at first sexual intercourse ( $P = 0.03$ ); the presence of STDs in the past ( $P = 0.02$ ), knowledge of HIV status

( $P = 0.04$ ) and nationality ( $P = 0.03$ ).

## Conclusions

This study highlights negative risk behaviors of sex workers such as not using condoms consistently, anal sex, alcohol, and smoking. It is therefore important to develop education actions to improve the knowledge, attitude, and practice of sex workers related to HIV/ AIDS in Mali.

## Background

HIV remains a major public health problem around the world, claiming the lives of nearly 33 million people to date [19]. More than two-thirds of people living with HIV are in the WHO [21] African Region (25.7 million). HIV / AIDS affects all social strata, including sex workers. While HIV is prevalent in the general population of this region, there is an increasing number of new infections in key groups such as sex workers [22]. Sex workers are a key population in the HIV epidemic in sub-Saharan Africa because they have high HIV prevalence, have unprotected sex and have multiple partners. Globally, sex workers account for 9% of the total number of new HIV infections [18]. Although there is some regional variation, the estimated prevalence of HIV in the sex worker population is 10 to 20 times higher than in the general population [18].

In Mali, the prevalence of HIV is 1.2% in the general population [19]. This prevalence is much higher among key populations. Sex workers are among the groups most at risk of contracting HIV. About 18,000 sex workers have been registered throughout Mali with an HIV / AIDS prevalence of 8.7% [19]. An earlier study conducted in Mali on the prevalence and factors associated with HIV and sexually transmitted infections among 353 sex workers in Bamako reported that the HIV prevalence was 20.4%, while 35.1% of sex workers had at least one sexual transmitted infection. This study highlighted the high prevalence of HIV and curable STIs among sex workers in Bamako (Toukara et al., 2020). There is therefore a need to improve the effectiveness of

interventions for sex workers in Mali to reduce the burden of HIV and STIs among them and prevent the spread of HIV to the general population.

Stopping the spread of HIV / AIDS was one of the Millennium Development Goals (MDGs). All the countries including Mali have tried to achieve this objective. Despite some progress towards MDG 6, the HIV / AIDS epidemic continues to have a devastating impact on health. The prevalence of sex workers remains worrying compared to that of the general population. This study would like to contribute to the achievement of the objective of sustainable development 3 "Promote health and well-being for all and at all ages" through the following target "3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases"

## Materials and Methods

### *Study Design and Participants*

This is an analytical cross-sectional quantitative study carried out in Bamako, capital city of Mali. The study variables included the HIV / AIDS practices of sex workers as a dependent variable. In addition, socio-demographic information, knowledge, and attitudes were used as independent variables. The participants of this study were female sex workers. And according to the 2019 UNAIDS [17]. report, around 18,000 sex workers have been registered in Mali with approximately 2,160 sex workers in Bamako, Mali. The sample size estimate was calculate dusing Raosoft software and was based on a 95% confidence level, 5% margin error, and 50% response distribution. The required sample is 327 participants.

### *Study Instruments and Data Collection*

This study used a questionnaire adapted from the results of previous studies [11,15] to determine the risky sexual behaviors of sex workers in Bamako, Mali. The questionnaire has four parts. Part A is related to the subject's socio- demographic information, including age, ethnicity, religion, marital status, type of residence,

education level, monthly income, and origin. Part B examines sex workers' knowledge of HIV/AIDS using a 10-item questionnaire. The questions cover knowledge about modes of infection, myths, detection and progression of the disease and prevention of HIV/AIDS. For knowledge, each question was scored using a 2-point scale (0 = wrong answer or "don't know", 1 = correct answer). The total score for knowledge about HIV/AIDS varied from 0 to 10. A higher score means better knowledge and a score below 5 was defined as low knowledge. Part C explores sex workers' attitudes towards AIDS using a five-item questionnaire with a 4-point Likert scale (0 = strongly disagree, 1 = disagree, 2 = agree and 3 = strongly agree). To determine the participants' attitude towards HIV/AIDS, negative sentences were recorded, and scores assigned accordingly (0 = most negative attitude, 3 = most positive attitude). The total HIV/AIDS attitude score ranged from 0 to 15. A higher score means a more positive attitude and a score below 8 was defined as a negative attitude. Part 4 refers to the sexual behavior or practices of sex workers related to HIV/AIDS transmission. The practice was assessed in Part D, using a 10-item questionnaire. Each question was scored using a 2-point scale (1 = favorable HIV/AIDS practice, 0 = undesirable HIV/AIDS practice). A higher score meant better practice related to HIV/AIDS knowledge and a score below 5 was defined as poor practice.

The content validity index (CVI) was conducted to assess the validity of the questionnaire. The validity of the questionnaire will be approved by three experts to assess the clarity, simplicity, and relevance of each item. The average CVI among three experts was 0.94. And then a pilot study with 30 sex workers in Mali will be conducted to determine the reliability of this questionnaire. The purpose of the pilot study was to examine the technique of administering the questionnaire and the adequacy of the questions. The results of this pilot study were analyzed by SPSS version 21 to determine Cronbach's alpha. Cronbach's alpha reliability coefficient normally lies

between 0 and 1. However, there is no lower bound to the coefficient. George and Mallery (2003) provide the following rules of thumb: "> 0.9 - Excellent,> 0.8 - Good,> 0.7 - Acceptable,> 0.6 - Susceptible,> 0.5 - Poor and <0.5 - Unacceptable". The mean Cronbach's alpha was 0.81 and was considered good and relevant for this study. Data collection was done using a questionnaire from January to April 2021.

### Ethical Considerations

This study received approval from the National Institute for Public Health Research ethics committee of Mali. Also, a written consent form was obtained from each participant before data collection. Only female sex workers who agreed and consent to participate were included in this study. High confidentiality was observed during filling questionnaire.

### Data Analysis

Data analysis was performed using SPSS 21 version software (SPSS Inc., Chicago, IL). Data analysis included descriptive statistics to estimate the mean and deviation type, percentage (%), and frequency. The chi-square test determined the distribution between the variables. The level of significance considered will be set at  $P < 0.05$  for all analyzes.

### Results

#### *Distribution of Sociodemographic Characteristics by the Sexual Behavior*

A total of 288 sex workers in the city of Bamako participated in this study. About 40% were married, 39% were illiterate and 41% of the sex workers came from neighboring countries (Burkina Faso, Cote d'Ivoire, Nigeria, Cameroon, and Mauritania). More than half of the sex workers earned at least 100,000 CFA francs per month (Table 1). A significant relationship was found between sexual behavior of female sex workers with the following variables: ethnicity ( $P=0.04$ ); marital status ( $P=0.01$ ); monthly income ( $P=0.001$ ), age of first sexual intercourse ( $P=0.03$ ); presence of STDs in the past ( $P=0.02$ ),

Table 1. Distribution of sociodemographic characteristics by the sexual behavior among sex workers

Items	Bad practice N (%)	Good practice N (%)	P value
Age (years)			0,49
18-25	25 (48,1)	100 (48,2)	
26-35	17 (32,7)	85 (36,0)	
36-45	10 (19,2)	51 (21,6)	
Ethnic group			0,04
Bambara	15 (28,8)	65 (27,5)	
Malinkés/soninkés	9 (17,3)	58 (24,6)	
Other	28 (53,8)	113 (47,9)	
Marital status			0,01
Married	16 (30,8)	99 (41,9)	
Single	36 (69,2)	137 (58,1)	
Education			0,22
Non-literate	20 (38,5)	91(38,6)	
Literate/Educated	32 (61,5)	145 (61,4)	
Type of residence			0,60
Apartment	23 (44,2)	88 (37,2)	
Family home	22 (42,3)	117 (49,6)	
Other	7 (13,5)	31 (13,1)	
Monthly income (FCFA)			0,001
≤ 100,000	38 (73,1)	114 (48,3)	
>100,000	14 (26,9)	122 (51,7)	
Age of first sexual intercourse			0,03
Before 18 years	22 (42,3)	89 (37,7)	
After 18 years	30 (57,7)	147 (62,3)	
Age of commencement of employment as a sex work			0,97
Before 20 years	30 (57,7)	138 (58,5)	
After 20 years	22 (42,3)	98 (41,5)	
Experience as a sex worker			0,35
Less than 2 years	8 (15,4)	50 (21,2)	
2 to 5 years	44 (84,6)	186 (78,8)	
Presence of STDs in the past			0,02
Yes	30 (57,7)	109 (46,2)	
No	22 (42,3)	137 (53,8)	
Knowledge of HIV status			0,04
Yes	19 (36,5)	65 (27,5)	
No	33 (63,5)	171 (72,5)	
Nationality			0,03
Malian	27 (51,9)	143 (60,6)	
Foreign	25 (48,1)	93 (39,4)	

knowledge of HIV status ( $P=0.04$ ) and nationality ( $P=0.03$ ).

#### *Sex Workers Knowledge of HIV/AIDS and Sexual Transmitted Infection*

All sex workers had heard of HIV/AIDS and know that unprotected sex can transmit HIV. About 60% of sex workers think they cannot be infected because of their profession. The knowledge of sex workers is summarized in Table 2.

#### *Attitudes of Sex Workers towards HIV/AIDS and STIs*

In terms of sex workers' attitudes, more than half of sex workers showed a negative attitude towards HIV-positive people by reporting that they would not like to share food or toilets with HIV-positive people. See Table 3

#### *Practices/Behaviors of Sex Workers Regarding HIV/AIDS and STIs*

All sex workers often use condoms during sex. Unfortunately, condom use is not systematic among all clients and more than half of sex workers do not always use condoms. About 32% of sex workers had already practiced anal sex, 20% had experienced group sex and less than a quarter smoked or drank alcohol before sex (Table 4)

## **Discussion**

This study highlighted the sexual behaviors of female sex workers in Mali. Most female sex workers were single, became sexually active before the age of 18, entered the sex trade after age 20, and had at least or more than two years of experience. These figures were similar to a previous study done by Tadesse et al. (2020) in which they found that most of female sex workers were single and the median age at which women entered the sex trade was 26 years with an average of 4 years of sex work experience.

Overall knowledge about HIV/AIDS transmission and prevention was generally good and similar to previous studies [3,5] in which female sex workers showed

good knowledge. Despite acceptable overall knowledge among female sex workers, some misconceptions about HIV/AIDS transmission persist. Only 24% believe that having sex with an apparently healthy partner can transmit HIV. Less than 40% still believe that HIV can be transmitted by a mosquito bite, and this was much better than the previous study in Guangzhou, China [23], where 69% of participants responded that HIV can be transmitted by mosquito bite. Female sex workers having misconceptions could be explained by their illiterate level of education.

Negative attitudes were reported by female sex workers. More than half of female sex workers expressed negative attitudes toward sharing food and toilets with an HIV-positive person, respectively, and this negative attitude was similar to the [4]. study (2008) in which a large percentage of the female sex workers expressed negative attitudes toward their HIV- positive colleagues, stating that they would never work in the same places as them. [20]

Negative risk behaviors have been shown by female sex workers. Although condom availability among female sex workers has increased in recent years, nearly half of female sex workers had unprotected sex with their clients. This is almost similar with a study conducted in Burkina Faso among 609 female sex workers where 45.6% reported high-risk behaviors that were primarily driven by inconsistent condom use with regular partners [16].

Anal sex was practiced by one-third of female sex workers which is a risk factor for HIV to STIs. Female sex workers practicing anal sex were more likely to have symptoms related to a sexually transmitted infection than those practicing only vaginal sex [7]. Another study in China found that 66% of female sex workers reported having non-client sexual partners (most were identified as boyfriends or husbands) and 33% of female sex workers reported having experiences with commercial sex without condom use [1]. Drinking alcohol and smoking cigarettes before having sex with their clients was a common

Table 2. Sex workers knowledge of HIV/AIDS and sexual transmitted infection

Items	Yes	No
	N(%)	N(%)
Have you ever heard of HIV/AIDS?	288 (100,0)	0 (0,0)
Can HIV be transmitted through unprotected sex?	288 (100,0)	0 (0,0)
Can HIV be transmitted from mother to child?	219 (76,0)	69 (24,0)
Can HIV be transmitted through a mosquito bite?	109 (37,8)	179 (62,2)
Do you think a seemingly healthy person could be infected with HIV?	219 (76,0)	69 (24,0)
Do you think you may be infected with HIV because of your profession?	117 (40,6)	171 (59,4)
Do you think that having sex with a seemingly healthy partner can transmit HIV?	28 (9,7)	260 (90,3)
Do you think condom use with an HIV partner can prevent the transmission of HIV and STIs?	233 (80,9)	55 (19,1)
Do you think anal sex is associated with a higher risk of HIV transmission?	108 (37,5)	180 (62,5)
Do you think the presence of STIs can increase the risk of HIV infection?	115 (39,9)	173 (60,1)

Table 3. Attitudes of sex workers towards HIV/AIDS and STIs

Items	Disagree	All right
	N (%)	N(%)
Sharing food with an HIV-positive person	178 (61,8)	110 (38,2)
Sharing the toilet with an HIV-positive person	170 (59,0)	118(41,0)
Always use a condom with your sexual partner	51 (17,7)	237 (82,3)
Having protected sex with an HIV-positive client	0 (0,0)	288 (100,0)
The female condom can be used with the client	129 (44,8)	159 (55,2)

Table 4. Practices/Behaviors of sex workers regarding HIV/AIDS and STIs

Items	1=Yes	2=No
	N (%)	N (%)
Do you use a condom during sex?	288 (100,0)	0 (0,0)
Do you often have unprotected sex with your clients?	137 (47,6)	151 (52,4)
Do you have a regular sexual partner?	239 (83,0)	49 (17,0)
Did you use a condom with a regular partner the week before?	229 (79,5)	59 (20,5)
Have you ever practiced anal sex with your client?	92 (31,9)	196 (68,1)
Have you ever had group sex with your clients?	56 (19,4)	232 (80,6)
Have you used the condom consistently over the last 2 episodes?	273 (94,8)	15 (5,2)
Have you practiced douching in every episode of sex?	213 (74,0)	75 (26,0)
Do you take alcohol before sex?	33 (11,5)	255 (88,5)
Do you smoke before sex?	54 (18,8)	234 (81,2)

practice among less than 20% of female sex workers and this finding was similar to the study by [9] in India and [13] in Ethiopia. A study in Nigeria found that among female sex workers, 67.8% were drinkers and up to 20.7% were current smokers, while 19% were dual users. [6]. A significant proportion of unprotected sex could be due to alcohol and cigarette use among the female sex workers in this study. Alcohol has independent effects on decision-making about sex and skills in negotiating condoms and their correct use [2]. The links between substance abuse and sex work can be difficult to disentangle, however, as in some cases the former can account for women's entry into the sex industry itself [12]. Our results like previous studies [10,14] reported that knowledgeable female sex workers reflected a positive attitude and had good practices. These findings reflect the importance of HIV/AIDS and STI information, education, and communication for social behavior change.

This study has some limitations. First, sex work is illegal in Mali and, therefore, it was difficult to obtain a large sample of sex workers. In addition, our study was based on self-reported information, which could be biased by the participants' ability to remember.

This study had several strengths. Demographic factors and knowledge-attitude & practice variables were used to determine sexual risk behaviors instead of looking for the relationship between HIV knowledge-attitude & practice variables [8]. In addition, this study focuses on female sex workers as a target group in the HIV/AIDS response in Mali.

## Conclusion

This research provided an understanding of the perceptions of female sex workers in Mali regarding HIV/AIDS. All sex workers in this study had heard of AIDS, but their knowledge varied. Some misconceptions about HIV/AIDS transmission persist in the minds of female sex workers and this may be due to their level of education. Therefore, HIV/AIDS interventions should focus on public education. The results of the study highlight negative risk

behaviors of female sex workers such as not using condoms consistently, anal sex, alcohol consumption and smoking. The results of the study can also be used by HIV/AIDS organizations and the Ministry of Health to formulate actions to help female sex workers affected by HIV/AIDS. In addition, the results of this study highlighted the importance of education or other interventions targeting HIV/AIDS to improve the knowledge, attitude, and practice of female sex workers in Mali

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## Authors' Contributions

All authors participated in the conceptualization and the design of this manuscript. All authors have read and approved the final version for submission.

## Competing Interests

The authors declare that they have no competing interest in the preparation of this document.

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