

# HIV prevalence among the female sex workers in major cities in Myanmar and the risk behaviors associated with it

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**Background:** Myanmar is one of the countries hardest hit by the human immunodeficiency virus (HIV) epidemic in Asia.

**Aim:** The objective of the study was to determine HIV prevalence among the female sex workers in major cities in Myanmar and the risk behaviors associated with it.

**Methods:** This cross-sectional study was conducted among female sex workers in major cities in Myanmar. Interviews were conducted by trained research assistants, in private, using a questionnaire. The HIV status of the respondents was asked and confirmed by the blood test reports from the laboratories of the Myanmar National AIDS Programme sexually transmitted infections (STI)/acquired immunodeficiency syndrome (AIDS) Teams and nongovernmental organizations (NGOs).

**Results:** There were 200 respondents in this study. Out of the 136 participants who were tested for HIV, 25 (18.4%) were HIV-positive. Respondents of other ethnic groups than Myanmar and other religions than Buddhist were about six times (odds ratio [OR] 5.9) and five times (OR 4.6), respectively, at higher odds of being HIV-positive. Those who were earning an income of less than 200,000 kyats were almost three times (OR 2.9) at higher odds of being HIV-positive. The difference in the age group was found to be statistically significant ( $P = 0.001$ ). Respondents who did not have HIV counseling (OR 7.3), who did not use condoms (OR 1.3), and with regular partners who refused the use of condoms (OR 6.0) were at higher odds of being HIV-positive.

**Conclusion:** HIV prevention services should include socioeconomic support programs, and the clients and regular partners of sex workers should also be targeted for behavior-change messages, to reduce condom resistance.

**Keywords:** HIV prevalence, risk factors, Myanmar, sex workers, condom

## Introduction

Myanmar is one of the countries hardest hit by the human immunodeficiency virus (HIV) epidemic in Asia. The first case of HIV was detected in Myanmar in 1988<sup>1</sup> and of acquired immunodeficiency syndrome (AIDS) in 1991.<sup>2</sup> The adult HIV prevalence reached a peak at 0.9% in 2000,<sup>3</sup> followed by a downward trend reaching 0.6% in 2009 and 0.5% in 2011.<sup>1</sup> It is estimated that around 216,000 people were living with HIV in Myanmar in 2011, of which, 36% were female. In the same year, an estimated 18,000 people died of AIDS-related illnesses. The incidence of new infections was estimated at well above 8,000 in 2011.<sup>4</sup> The HIV/AIDS epidemic in Myanmar has been mostly concentrated in men. However, the number of infected women has been increasing gradually.<sup>1</sup> The HIV epidemic in Myanmar is largely

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concentrated among subgroups of populations with high-risk behaviors. As of 2011, over 60% of new HIV infections occurred among female sex workers, their clients, people who use drugs, and men who have sex with men. It is estimated that by the year 2015, these groups will constitute over 70% of new infections.<sup>4</sup> According to the 2011 HIV Sentinel Sero-surveillance, HIV prevalence rates among female sex workers in Myanmar has dropped, from 18.4% in 2008 to 9.4% in 2012.<sup>5</sup> It is estimated that there are 40,000 to 80,000 sex workers in Myanmar.<sup>3</sup> Although illegal and culturally unacceptable, the sex trade exists in most of the major cities, like Yangon and Mandalay, and in mining and border areas.<sup>6</sup> This widespread existence of sex trade could be due to low levels of education, unemployment, poverty, drug abuse, and migration, especially among women from remote regions and border areas.<sup>7–10</sup>

Sex industry-related jobs may include “direct,” brothel-based work as well as various other indirect types of sex work. Most direct sex workers are highly mobile within the country but are usually concentrated in brothels in crowded major cities, mining areas, or along the country borders.<sup>6</sup> Some brothels provide condoms to the sex workers to protect them from pregnancy and sexually transmitted diseases (STDs). The usual rate for a sexual experience with teenage sex workers may range from 20,000 to 40,000 kyats a night.

According to the findings of the 2011 HIV Sentinel Sero-surveillance, HIV prevalence among female sex workers was the highest among singles, aged 30 to 39 years and plying their trade in urban areas like Yangon (18%), followed by Kyaingtong (11%), Myitkyina (9%), Taunggyi (7.5%), Mandalay (5%), and Lashio (4.7%). The prevalence was found to be significantly higher among direct sex workers (12.2%) than indirect sex workers (6%).<sup>5</sup>

Because prostitution is illegal in Myanmar, sex workers generally do not have access to HIV prevention and treatment programs, for fear of prosecution. The objective of this study was to determine the prevalence of HIV among the female sex workers in the major cities in Myanmar and the risk behaviors associated with it.

## Materials and methods

### Study design and settings

This cross-sectional study was conducted in 2009 in the major cities of Myanmar, namely: Yangon, Mandalay, Taunggyi, Muse, Tachileik, and Lasho. These locations were chosen because of the high number of sex workers and sex-related businesses in these cities.

## Sampling

Due to the sensitive nature of the study, it was not possible to use a sample frame to conduct probabilistic sampling, hence, a convenience sampling process was used. Sex workers in this study were defined as “female adults and young people who receive money or goods in exchange for sexual services, either regularly or occasionally, and who may or may not consciously define those activities as income-generating.”<sup>11</sup> Female sex workers who openly defined themselves as sex workers and who earned a living buying and/or selling sex were classified as “direct” sex workers, and women for whom sex work was not the first source of income and who did not consider themselves as sex workers were classified as indirect sex workers.<sup>12</sup> Both direct and indirect female sex workers aged 15 years or older who had traded sex for money in the month prior to the study were recruited from brothels (Yangon, Mandalay, Taunggyi, Muse, Tachileik, and Lasho), karaoke (Yangon, Mandalay, and Taunggyi) and massage parlors (Yangon, Mandalay, and Lasho). Refusal to participate was the main exclusion criterion.

## Tools

A quantitative questionnaire was developed and field tested prior to the actual study. Besides the sociodemographic questions, the knowledge and awareness of HIV and sexually transmitted infections (STI), and the risk-taking behaviors of the participants were questioned. The interviews were conducted by trained research assistants who were able to communicate in the local languages. The interviewers were trained for 3 days and had an additional 2 days of field practice. The interviews were conducted in various locations that would assure privacy during the interview. The HIV status of the respondents was asked and confirmed with their blood test reports from the laboratories of the Myanmar National AIDS Programme STI/AIDS Teams and nongovernmental organizations (NGOs).

## Ethics

This study was ethically conducted and received approval from the State Health Department. An informed verbal consent was taken before commencing the interview and reviewing the blood test report. The confidentiality of the participants has been preserved.

## Data analysis

Data analysis was done using SPSS version 18.0. (IBM, Armonk, NY, USA). Results were tabulated and cross tabulated. The chi square test was used to analyze the

relationship between the variables. A *P*-value of <0.05 was considered statistically significant. Odds ratio (OR) was used to quantify the risk.

## Results

A total of 226 sex workers were identified as eligible participants, however 17 were excluded for refusal to give consent, and the data of nine respondents were excluded because of numerous missing and unreadable data. The remaining 200 direct and indirect female sex worker respondents participated in the study. The age of the participants ranged from 15 to 33 years, with a mean age of 25 years. Most were Myanmar (60.5%), Buddhist (83.0%), between the ages 22 and 29 (59.0%), not married and either living alone (40.0%) or living with spouses (40.0%), and with the highest level of education up to middle school (40.5%). Most of the participants were previously unemployed (73.0%), and at the time of the study, most were working in brothels as direct sex workers (52.5%). Almost all of them were mobile, moving from one place to another working as sex workers, and 40% of the respondents were ethnic minorities. The majority had an income of between 200,000 kyats to 300,000 kyats per month. Most were on the move alone (41.0%), for more than 5 years (49.5%), and had never returned home (53.5%). There were varied methods of contraceptives used, but only 23 (11.5%) of the participants used condoms (Table 1).

As seen in Table 2, almost everyone was aware of STI (99.5%) and HIV (100.0%) and had a fair knowledge of HIV transmission; however, only 70 (35.0%) had HIV counseling. Out of the 136 (68.0%) who tested for HIV, 25 (18.4%) were HIV-positive. Only 30 (15.0%) respondents had a history of taking drugs, mostly Yaba, (67.5%) and at the time of the study, no one was injecting drugs. The age range during which the respondents first started having sex was from 13 to 29 years, with the mean age of 19 years; most were within the age group of 18–21 years (54.5%). The number of times the respondents had paid sex per month was between 10 and 90, with a mean of 35. The most common frequency group was 30–49 (41.0%) times per month. Most of the respondents had always (65.0%) used condoms during the past year and during their last encounter with paid clients (67.0%). The most common reason for not using a condom was because the client refused (54.5%). Most of the respondents had one regular partner who was not their client during the period of the study (87.0%) and had regular sex with him (57.5%). Most had not used condoms in the last sexual encounter (69.6%) nor used condoms regularly with

**Table 1** Baseline profile of the respondents

Variables	Frequency	Percentage
Age		
≤17	11	5.5
18–21	34	17.0
22–29	116	58.0
≥30	39	19.5
Marital status and living arrangement		
Not married but living with sexual partner	7	3.5
Not married and living alone	80	40.0
Married and living with spouse	80	40.0
Married but not living with spouse	30	15.0
Married but living with other sexual partner	3	1.5
Race		
Myanmar	121	60.5
Other minorities	79	39.5
Religion		
Buddhist	166	83.0
Christian	25	12.5
Muslim	9	4.5
Education		
Illiterate	14	7.0
Primary	25	17.5
Middle school	81	40.5
High school and tertiary	70	35.0
Present occupation		
Entertainment	54	27.0
Massage parlors	41	20.5
Brothel	105	52.5
Previous employment		
Entertainment	18	9.0
Massage parlors	17	8.5
Commercial sex	7	3.5
Other	12	6.0
Not employed	146	73.0
Income (1 USD = 840 MM kyats)		
100,000–200,000 kyats	76	38.0
200,000–300,000 kyats	88	44.0
>300,000 kyats	36	18.0
Period of mobility		
<1 year	44	22.0
1–5 year	57	28.5
>5 year	99	49.5
Person accompanying		
Friends	63	31.5
Alone	82	41.0
Family	50	25.0
Others	5	2.5
Last trip home		
Past 3 months	24	12.0
4–12 months	20	10.0
>1 year–5 years	38	19.0
>5 years	11	5.5
Never returned	107	53.5
Types of contraceptive presently used		
Pills	25	12.5
Depo injection	17	8.5
Condom	23	11.5
IUD	2	1.0
Mixed method	40	20.0
Others	1	0.5
None	92	46.0

**Abbreviation:** IUD, intrauterine device.

**Table 2** Knowledge, awareness, and risk behaviors of the participants

Variables	Frequency	Percentages
Aware of STI		
Yes	199	99.5
No	1	0.5
Aware of HIV		
Yes	200	100.0
No	0.0	0.0
Ever had counseling for HIV		
Yes	70	35.0
No	130	65.0
Knowledge of HIV – can be transmitted by		
Mosquito bite	4	2.0
Sharing meal with people living with aids	1	0.5
Unprotected sex	197	98.5
Sharing syringe	199	99.5
HIV-positive mother to child	199	99.5
Breastfeeding	195	97.5
Tested for HIV		
Yes	136	68.0
No	64	32.0
HIV-positive		
Yes	25	18.4
No	111	81.6
History of taking drugs		
Yes	30	15.0
No	170	85.0
Type of drug used		
Heroin	9	22.5
Opium	3	7.5
Marijuana	1	2.5
Yaba	27	67.5
Injecting drugs		
Yes	0	0.0
No	30	100.0
Age first started having sex		
≤17	50	25.0
18–21	109	54.5
≥22	41	20.5
Number times had paid sex past month		
<30	63	31.5
30–49	82	41.0
≥50	55	27.5
Used condoms last sexual encounter with client		
Yes	134	67.0
No	66	33.0
Reason for not using condom with client		
Unavailable	10	15.2
Partner refused	36	54.5
Not necessary	10	1.5
Did not remember	10	18.8
Frequency of condom use with client past 1 year		
Always	130	65.0
Sometimes	70	35.0
Had sex with regular partner		
Yes	115	57.5
No	85	42.5

(Continued)

**Table 2** (Continued)

Variables	Frequency	Percentages
Number of regular partners		
1	100	87.0
>1	15	13.0
Used condom last sex encounter with regular partner		
Yes	35	30.4
No	80	69.6
Reason did not used condom with regular partner		
Not available	3	1.5
Partner refused	8	10.0
Not necessary	69	86.3
Frequency of condom use with regular partner		
Always	27	13.5
Sometimes	17	14.8
Never	71	61.7

**Abbreviations:** HIV, human immunodeficiency virus; STI, sexually transmitted infections.

the regular partners (27.0%) because they did not consider it necessary (86.3%).

As shown in Table 3, respondents of other ethnic groups than Myanmars and other religions than Buddhist were about six times (OR 5.9; 95% confidence interval [CI] 2.2–15.9) and five times (OR 4.6; 95% CI 1.7–12.3), respectively, at higher odds of being HIV-positive. Those who were earning an income of less than 200,000 kyats were almost three times (OR 2.9; 95% CI 1.2–7.0) at higher odds of being HIV-positive. The differences in the age groups was found to be statistically significant ( $P = 0.001$ ). Other sociodemographic factors were not found to be statistically significant.

As shown in Table 4, respondents who did not have HIV counseling (OR 7.3; 95% CI 2.8–18.9), who did not use a condom (OR 1.3; 95% CI 1.1–1.4), and with regular partners who refused the use of condoms (OR 6.0 95% CI 3.2;11.3) were at higher odds of being HIV-positive.

## Discussion Prevalence

The prevalence of HIV among the female sex workers in this study (18.4%) was higher than that reported by the HIV Sentinel Surveillance reports of the National AIDS Program, Myanmar, which showed a declining trend from 2008 (18.4%), 2009 (11.2%), 2010 (11.4%), and 2011 (9.4%).<sup>5</sup> The prevalence in this study, was also higher than that reported in Thailand, which reported a prevalence of 2.8% among direct sex workers and 1.7% among indirect sex workers.<sup>13</sup> Similarly, the prevalence of HIV reported among brothel-based sex workers in Cambodia (14.7%)<sup>14</sup> and among Indonesian direct sex workers (10.4%) and indirect sex workers (4.6%)<sup>15</sup> was lower compared with that in this study.

**Table 3** Risk analysis of HIV with sociodemographic factors of the participants

Variable	HIV-positive n = 25 f (%)	HIV-negative n = 111 f (%)	$\chi^2/P$ -value	OR (CI 95%)
Age			7.367/0.001	
≤ 17	5 (55.6)	4 (44.4)		
18–21	4 (18.2)	18 (81.8)		
≥ 22	16 (15.2)	89 (84.8)		
Marital status			3.134/0.77	
Unmarried	15 (25.0)	45 (75.0)		
Married	10 (13.2)	66 (86.8)		
Race			13.931/<0.001	5.85 (2.16–15.85)
Other races	19 (32.8)	39 (67.2)		
Myanmar	6 (7.7)	72 (92.3)		
Religion			10.531/0.003	4.62 (1.74–12.27)
Other religions	10 (41.7)	14 (58.3)		
Buddhist	15 (13.4)	97 (86.6)		
Education			3.581/0.310	
Illiterate	2 (22.2)	7 (77.8)		
Primary	7 (26.9)	19 (73.1)		
Middle school	11 (20.8)	42 (79.2)		
High school and tertiary	5 (10.4)	43 (89.6)		
Present occupation			4.903/0.086	
Entertainment	4 (16.0)	21 (84.0)		
Massage	1 (4.0)	24 (96.0)		
Brothel	20 (14.7)	66 (76.7)		
Income monthly			5.696/0.017	2.88 (1.18–7.02)
<200,000 kyats	15 (28.3)	38 (71.7)		
>200,000 kyats	10 (12.0)	73 (88.0)		
Period of mobility			3.583/0.167	
< 1 year	3 (9.4)	29 (90.6)		
1–5 year	10 (27.0)	27 (73.0)		
> 5 year	12 (17.9)	55 (82.1)		
Accompanying person			4.718/0.094	
Friends and others	12 (29.3)	29 (70.7)		
Alone	9 (14.5)	53 (85.5)		
Family	4 (12.1)	29 (87.9)		
Period returned home			1.234/0.540	
≤ 1 year	8 (24.2)	25 (75.8)		
> 1 year	3 (13.0)	20 (87.0)		
Never returned	14 (17.5)	66 (82.5)		
Previous employment			2/0.368	
Sex-related industry	6 (21.4)	22 (78.6)		
Not sex-related industry	0 (0.0)	8 (100.0)		
Unemployed	19 (19.0)	81 (81.0)		
Contraceptive presently used			2.799/0.123	
Condoms	1 (5.0)	19 (95.0)		
Others	24 (20.7)	92 (79.3)		

**Abbreviations:** CI, confidence interval; HIV, human immunodeficiency virus; OR, odds ratio.

## Socio demographic factors

In this study, the prevalence of HIV was higher in the younger age group and other minority races than Myanmar and in those with a lower income. Ethnic minorities are known to be more vulnerable to HIV infections.<sup>16</sup> Large numbers of Shan (eastern region of Myanmar) women and girls work in the Thai sex industry, and they have been shown

to be more likely to be infected with HIV.<sup>17</sup> Studies among Asian masseuses in San Francisco,<sup>18</sup> among minorities in Laos,<sup>19</sup> African Americans and Hispanics in the USA,<sup>20,21</sup> and among minorities in North America, Asia, and Europe<sup>22</sup> have shown that ethnic minorities have higher prevalence of HIV. The reason for this higher prevalence could be due to poverty, substance abuse, homelessness, unequal access to

**Table 4** Risk analysis of HIV/AIDS with knowledge and risk behaviors of the participants

Variable	HIV-positive n = 25 f (%)	HIV-negative n = 111 f (%)	$\chi^2/P$ -value	OR (CI 95%)
Aware of STI			0.227/0.634	
Yes	25 (18.5)	110 (81.5)		
No	0 (0.0)	1 (100.0)		
Ever had counseling for HIV			19.779/<0.001	7.31 (2.82–18.92)
No	17 (40.5)	25 (59.5)		
Yes	8 (8.5)	86 (91.5)		
Age started having sex			1.464/0.481	
≤ 17	9 (25.0)	27 (75.0)		
18–21	12 (16.4)	61 (83.6)		
≥ 2	4 (14.8)	23 (85.2)		
Number of times had paid sex past month			5.034/0.081	
<30	8 (19.0)	34 (81.0)		
30–49	6 (10.7)	50 (89.3)		
≥50	11 (28.9)	27 (71.1)		
Used condoms last sexual encounter with client			0.432/0.511	
Yes	19 (19.8)	77 (80.2)		
No	6 (15.0)	34 (85.0)		
Reason for not using condom with client			3.269/0.352	
Unavailable	2 (40.0)	3 (60.0)		
Partner refused	2 (8.7)	21 (91.3)		
Not necessary	1 (20.0)	4 (80.0)		
Did not remember	1 (14.3)	6 (85.7)		
Frequency of condom use with client past one year			0.119/0.730	
Always	18 (19.1)	76 (80.9)		
Sometimes	7 (16.7)	35 (83.3)		
Had sex with regular partner			3.134/0.077	
Yes	10 (13.2)	66 (86.8)		
No	15 (25.0)	45 (75.0)		
Used condom during last sex encounter with regular partner			5.988/0.013	1.25 (1.088–1.436)
No	10 (20.0)	40 (80.0)		
Yes	0 (0.0)	26 (100.0)		
Reason did not used condom with regular partner			8.333/0.037	6.0 (3.19–11.29)
Partner refused	2 (100.0)	0 (0.0)		
Not necessary/available	8 (16.7)	40 (83.3)		
Frequency of condom use with partner			4.187/0.78	
Never	9 (19.6)	37 (80.4)		
Always/sometimes	1 (3.3)	29 (96.7)		

**Abbreviations:** CI, confidence interval; HIV, human immunodeficiency virus; OR, odds ratio; STI, sexually transmitted infections.

health care, and unequal treatment once in the health care system.<sup>23–25</sup>

The finding of the present study that sex workers with a lower income were at higher odds of being HIV-positive is consistent with studies conducted elsewhere.<sup>26,27</sup> Low income is associated with poverty-related factors, like no permanent place of residence, poor access to food and other basic necessities, and limited social support networks, all of which can potentially drive the lower-income sex workers into risk-taking sexual behaviors, which expose them to HIV. Economic need is a compelling reason to accept a client who refused to use a condom.<sup>28</sup> According to a study conducted in 2007 by the International Organization

for Migration among Myanmar migrant female sex workers, there were incidences reported when clients had paid extra not to use a condom.<sup>29</sup> Female sex workers with a good income may be more insistent on the use of condoms by their clients, whereas sex workers who do not make enough money for their daily needs may be more inclined to give in to the demands of the clients who do not wish to use condoms.<sup>29</sup>

## Knowledge and risk behaviors

There is evidence that counseling, with or without voluntary confidential testing, is an effective tool for risk-reduction behavior change in the prevention of

HIV/STI transmission.<sup>30–34</sup> These studies show that respondents who received counseling show substantial positive risk-behavioral change, with increasing usage of condoms, resulting in lower transmission of STI and HIV compared with control groups. In addition to the prevention of HIV transmission, counseling also helps to reduce stigma and fear and creates an opportunity for receiving treatment. Counseling is also an opportunity to impart knowledge concerning HIV/AIDS. Studies have shown that sex workers with higher knowledge concerning HIV and its mode of transmission have a lower prevalence of HIV.<sup>35–37</sup>

A study in China reported that lack of sexual knowledge and condom use was associated with a higher prevalence of various STDs.<sup>35</sup> This could facilitate the sexual transmission of HIV. A study conducted by Ding et al<sup>35</sup> found that female sex workers with lower education level, less knowledge about HIV/AIDS, and lower rate of condom use were more vulnerable to HIV infection and STDs. Another study conducted among female sex workers in Yangon, Myanmar found that new entrants to the industry, especially teenage girls, rarely used condoms, and they had lesser knowledge about HIV and STI.<sup>28</sup>

It has been reported that among the Myanmar migrant sex workers, condoms were rarely used with regular noncommercial partners, such as boyfriends and husbands.<sup>29</sup> And according to the Behaviour Surveillance Survey,<sup>38</sup> about half of female sex workers have sex with regular partners in addition to their clients, and condom use at the last sex encounter with regular partner was reported to range from 55% to 62%. This risk behavior is a cause of concern, especially when a significant proportion of those with HIV or at high risk of being infected are spouses or regular partners.<sup>5</sup> It is because of this consistent finding that the HIV Sentinel Sero-surveillance 2011 called for vigilant prevention services targeting the regular sexual partners or intimate partners (spouses) of these high-risk population groups.<sup>5</sup> The possible reason for the lack of condom use could be because the sex workers perceive themselves as lovers of their regular partners and not using condoms is an expression of their love or intimacy. Possibly, they want to show themselves as clean and safe. For the part-time sex workers, maintaining the confidentiality of their profession from their spouses could be another reason.

## Conclusion

This study has shown there is a gap in the HIV prevention programs in Myanmar that needs to be addressed, especially with respect to poverty, which is believed to be

the main reason for involvement in the sex industry by the ethnic minorities. The lack of use of condoms by sex workers when intimate with their regular partners also is a very serious cause of concern.

## Study limitations

The sample size of the sex workers was far from optimal. Due to monetary and time constraints as well as the sensitive nature of the study, recruiting sex workers to participate in this study was difficult, resulting in the researcher employing a nonprobabilistic sampling process.

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## Disclosure

The authors report no conflicts of interest in this work.

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