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Prevalence of HIV and the risk behaviours among injecting drug users in Myanmar

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ABSTRACT

Background: Myanmar has one of the largest HIV positive populations in Asia and injecting drug use represents one of the major causes of HIV transmission.

Aim: the aim of the study was to determine the prevalence of HIV and the risk behaviours among injecting drug users in Myanmar.

Methods: A cross sectional study was designed to collect the data among injecting drug users enlisted in the state harm reduction programme in selected regions.

Results: Of the 590 participants, 152 (25.8%) were HIV positive. Female (OR 5.96. 95% CI 1.31;30.45), using 'used syringes' (OR 1.81. 95% CI 1.23;2.68) and sharing syringe when first used drugs (OR 2.98. 95% CI 2.00;4.44) and injecting drugs past six months (OR 3.36. 95% CI 1.50;6.15) were significant risk factors. Age ($p < 0.001$) and frequency of drug use per day ($p = 0.022$) were also statistically significant. HIV positive IDUs were more likely to use disposable syringes (OR 3.0. 95% CI 1.50;6.15) and were less likely to share syringes (OR 3.41. 95% CI 1.71;6.96) during their last drug use. HIV positive IDUs were also more likely to check for VDRL (OR 1.89. 95% CI 1.26;2.84) and more likely to be VDRL positive (OR 1.90. 95% CI 1.11;3.26).

Conclusion: HIV positive respondents used disposable syringes and few shared syringes the last time they injected drugs. This could probably be due to the education they received in the needle exchange programme centres.

Keywords: Injecting drug use, HIV, risk behaviours, Myanmar

Introduction

Myanmar has one of the largest HIV positive populations in Asia. It is estimated that around 238,000 people are living with HIV and an estimated 17,000 people died of AIDS-related illness in Myanmar in 2009^[1].

The HIV epidemic in Myanmar is mostly due to transmission of the virus among the high

risk groups. These high risk groups include sex workers and their clients, men who have sex with men and the sexual partners of these sub-populations. In addition to this, drug users who share non-sterile injecting equipment are also at a higher risk. The documented mode of transmission among the reported AIDS cases in 2008 included 73% due to unsafe sex, 3% due to injecting drug use (IDU), 3% from

mother-to-child and 2% due to blood transfusion [2].

Myanmar is the second largest opium poppy growing country after Afghanistan, contributing 20% of the opium poppy cultivation of the world in 2008 [3]. Heroin use is widespread and is the primary drug of choice among people who inject drugs. However due to the poppy eradication effort and crop substitution programs, opium and heroin availability has reduced leading to the decline in the use of heroin and opium in recent years [4]. The use of methamphetamine has been found to be increasing among the young people residing in major cities such as Yangon and Mandalay since 2003. The use of so called 'crazy medicine', Amphetamine Type Stimulants (ATS) can influence high risk sexual behaviours which can lead to significant risk of HIV infection. Injecting of amphetamine type stimulants has also been reported to occur, as well as injection of a mixture of opiates and pharmaceutical drugs. According to Myanmar Behaviour Surveillance Survey 2008, among the IDU's in Mandalay, Lashio, and Myitkyina more than a third of the respondents reported having sex while under the influence of amphetamines [5].

Injection drug use represents one of the major causes of HIV transmission in Myanmar. According to the HIV Sentinel-sero Surveillance Survey, in 2008 the prevalence of HIV among the IDU population was 37.5% [6]. The drug user population in Myanmar is estimated to be between 60,000 [7] and 300,000 [8]. In Myanmar, drug users are mandated to register with a government identified facility for treatment [9] and possession of needle and syringe is considered illegal [10]. According to the Central Committee for Drug Abuse Control, there were 63,149 registered drug users in Myanmar in 2002 and the number rose to 69,547 in June 2008 as reported by

major drug treatment centres around the country [11]. Depending on certain published reports, the estimated injecting drug user population varies from 90,000 [7] to 150,000-250,000 [12] and 90,000 to 300,000 [13]. The population prevalence of injecting drug use among 15-64 year-olds was 0.23%, which is the fourth highest population based prevalence of injecting drug use after China, Malaysia, Thailand and Vietnam in the Asia region [14].

IDUs make up a population group with a high prevalence of blood-borne infections, mainly HIV, hepatitis B virus (HBV), and hepatitis C virus (HCV) [15]. In Myanmar, it has been estimated that 12% of the general population carry HBV [16]. A study conducted among the IDUs along the China Myanmar border reported the prevalence of HIV/HBV co-infection and HBV infection among the Myanmar IDUs as 11.3% and 43.1% respectively [17]. According to HIV Sentinel-surveillance Survey 2008, the prevalence of syphilis among the IDUs was 2.9%, HIV/Syphilis (VDRL+) co-infection among the IDU was 3.3% and syphilis (VDRL+) among the HIV negative IDUs was 2.7% [6].

The objective of the study was to determine the prevalence of HIV infection and risk behaviours among injecting drugs users in Myanmar.

Methods and Materials

Setting: The study was conducted in several regions in Myanmar namely in Shan State, Mandalay Division, Yangon Division and Kachin State. These locations were chosen due to the high prevalence of injecting drug users in these locations.

Study design: A descriptive cross sectional study was chosen as the study design. The study was conducted from Dec 2009 to Oct 2010.

Sampling: All current injecting drug users enlisted in the state harm reduction programmes in the regions mentioned above were eligible. The inclusion criteria included those aged 15 years and above who consented and were able to communicate effectively. Respondents who were injecting drugs in the last six months of the study for any non-medical purposes were designated as "current IDUs".

Tools: A quantitative questionnaire was developed and field tested prior to the actual study. The questionnaire had two sections. Besides the questions on socio demography, the first section had multiple response questions on the respondent's first drug use experience and the last drug use experience as well as their awareness of HIV. The second section included questions on risk factors associated with HIV. This section had questions on past and latest drug use history, detoxification history and co morbidity. Interviews were conducted by trained research assistants who were able to communicate in the local languages. The interviewers were trained for three days and an additional two days of field practice. The interviews were conducted in privacy in various locations such as private rooms of tea shops, at the drug user's homes, special rooms in restaurants etc. The blood test reports done by the laboratories of the National AIDS Programme STI/AIDS Teams were requested from the participants.

Ethics: This study was ethically conducted. An informed verbal consent was taken before commencing the interview and reviewing the

blood test report. The confidentiality of the participants is assured.

Research Analysis: Data analysis was done using SPSS version 15.0. Results were tabulated and cross tabulated. Chi square test was used to compare the variables. Odds ratio was used to estimate the risk of HIV.

Results

A total of 590 IDUs participated in the study, 152 (25.8%) were HIV positive and 438 (74.2%) HIV negative. Most of the respondents were males, aged between 22 to 30, Myanmar's, Buddhist, unmarried, employed and with a highest level of education up to middle school.

Table one show the participants' first drug use experience. Irrespective of being HIV positive or negative the most common type of drug used for the first time was heroin followed by opium and the most common method of drug use was by inhalation. The most common body part of injection was the forearm and friends were the most common people the syringe was shared with.

Table two show the participants' last drug experience. Irrespective of being HIV positive or negative the most common drug last used was heroin and IV injection into the forearm was the most common route of administration. Considerably fewer participants shared the syringes and friends were the most common people syringes were shared with. Most respondents received their syringes from harm reduction programmes in their local areas. Majority returned the used syringes to the program centres, however considerable users disposed the syringes recklessly. As shown in this table most of the respondents had poor awareness of how HIV is spread.

As shown in table three among the IDU's females were almost six folds at higher risk of being HIV positive compared to males (OR 5.96. CI 1.31;30.45). More unemployed and employed participants were HIV positive as compared to students ($p=0.017$) and there were more HIV positive respondents in the age group 31 to 40 followed by those within the ages 22 to 30 ($p<0.001$). The differences in race, religion, education and marital status were not found to be statistically significant.

As shown in table four, respondents who used 'used syringes' for the first time (OR 1.81. CI 1.23;2.68) and respondents who shared syringes during the first use (OR 2.98. CI 2.00;4.44) were at higher risk of being HIV positive. Differences in the age first used drugs were found to be statistically significant.

Table five shows the risk behaviours with the last drug use. Respondents who used drugs by injection in the last six months were more likely to be HIV positive (OR 3.36. CI 1.63;7.09). However HIV positive respondents were more likely to use disposable syringes (OR 3.00. CI 1.50;6.15) and not to share syringes (OR 3.71. CI 1.71;6.96) now. Difference in the frequency of drug use was also found to be statistically significant ($p=0.022$).

As shown in table six, HIV respondents are more likely to have tested for VDRL (OR 1.89. CI 1.26;2.84). Respondents who were VDRL positive were more likely to be HIV positive as well (OR 1.90. CI 1.11;3.26).

Discussion

Recent updated global reviews shows that 148^[7] countries have reported injecting drug use compare to only 129 countries in 1998^[18] and the prevalence of HIV infection among injecting drug users was reported to be zero in

only eight of 148 countries^[7]. This suggests an increase in injecting drug use over time.

One study estimates that one in five IDUs globally may be infected with HIV^[7]. Once HIV infection penetrates a network of injecting drug users who share needles there is a possibility that 50% of the network of drug users will get infected within a few months. The prevalence of HIV infection among the IDUs in this study is lower than the prevalence rate of 37.5% reported in the HIV Sentinel Sero-surveillance Survey 2008^[6]. It is also lower than the prevalence reported in another study conducted among Chinese IDUs along Myanmar China border (33.7%)^[17] and in a study among IDU's attending detoxification clinics throughout Thailand (30 to 40%)^[19]. However it is higher than the 18.4% reported in northern Vietnam^[20].

In this study the risk of HIV infection was found to be higher in females, those in the age group between 31 and 40, among the unemployed and those who started injecting at a younger age. In 2009 it was estimated that 33.3 million adults worldwide were living with HIV and AIDS and half were women^[21]. Female IDUs are at a higher risk of contracting HIV not only due to their practice but also from male IDU partners^[22]. Females were more likely to engage in high risk behaviours such as sharing syringes, injecting with sex partners, less likely to use condom, more likely to be stigmatized and more likely to engage in sex work^[23]. All these risk behaviours could possibly contribute to higher risk of protracting HIV than male IDUs. Similar to the finding of this study, results of the Sentinel-surveillance Survey conducted by the Myanmar National AIDS Programme in 2008 indicated that the highest numbers of the HIV positive IDUs were seen among the population in the ages between 30 and 34^[6]. Similarly Celentano et al. also showed that there were more HIV positive IDUs in the age

groups 30 to 39 in his study conducted in Northern Thailand [24]. Older adults have been shown to have less knowledge about HIV risk behaviours compared to their younger counterpart [25]. This poses a serious problem as they may be unknowingly infecting others and may fail to receive appropriate medical care.

Drugs can be taken in a variety of ways including drinking, smoking, snorting etc. but injecting carries the highest risk of HIV transmission. Depending on the location and the population the most commonly used drugs like heroin and opiates, cocaine and amphetamine are injected. Drugs are injected for a variety of reasons, including availability and because injecting drug is cheaper and is more rapid acting. In Mexico [26], Russia [27] and India [28] because sterile needles are unavailable or due to the laws which make it an offence to distribute or possess syringes for non-medical purposes, most IDUs for fear of confrontation with authorities do not use new needles for injecting drugs. In Canada due to police actions during drug busts, needle exchange programme noted a drop by a third [29] leading to receptive or distributive type of sharing. Azim et al had shown in his study that IDUs with either receptive sharing or distributive sharing were at a higher risk of transmitting HIV [30].

Many studies have shown that frequency of injections had significant association with HIV infection. The IDUs with higher frequency of injecting has higher risk of contracting HIV. Jia et al. has shown in his study that higher frequency of injection was an independent risk factor for HIV infection among the IDUs in Yunnan [31]. Lack of awareness and education about the risk of injecting drugs can also lead to needle sharing. In Afghanistan less than half of those who were aware of HIV knew that using a new

needle for injecting drugs reduced the risk of transmission [32].

There is evidence that the needle exchange programme have reduced HIV transmission rates among injecting drug users and there was no evidence to suggest that it encouraged drug use [33]. Only 82 countries worldwide have needle exchange programmes. Even in these countries IDUs do not have adequate access to the services. This could be due to the lack of resources, public or political opposition as well as laws [34]. Needle exchange programmes in Myanmar provide syringes and needles including spirit swab, distilled water and all injecting paraphernalia. In addition to providing drug injecting paraphernalia this program also plays an important part in educating the users on safe injection practices, proper disposal, safe sex practices and it provides an access to other prevention services including substitution services. In the present study it can be seen that more HIV positive respondents use disposable syringes and fewer shared syringes the last time they injected drugs. This could probably be due to the education they received in this centres.

Conclusions

Female injectors are at a higher risk of being HIV positive. Health intervention programmes should focus on this vulnerable group with the emphasis on the harmful effects of sharing needles. Extensive education programmes to increase the awareness among IDU's for prevention of HIV/AIDS among them and their partners can help reduce the prevalence of HIV in this group of people.

Limitations

Due to monetary constraints the total number of participants in this study was less than optimal however the findings of this study may spur more detailed studies.

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Conflict of interest: None to declare

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Table 1: frequency distribution of the respondents first drug use experience (multiple response)

	Positive f (%)	Negative f (%)
Type of drug first used		
Opium	54 (24.7)	148 (21.7)
Heroin	90 (41.1)	234 (34.5)
Cough syrup	11 (5.0)	51 (7.5)
Diazepam	12 (5.5)	45 (6.6)
Marijuana	18 (8.2)	97 (14.3)
Yama	31 (14.2)	71 (10.5)
Other	3 (1.4)	32 (4.7)
Total	219 (100)	678 (100)
Method of first drug used		
IV	35 (18.1)	122 (19.7)
Inhalation	114 (59.1)	302 (48.9)
Sniff	16 (8.3)	57 (9.2)
Oral	26 (13.5)	134 (21.7)
Others	2 (1)	3 (0.5)
Total	193 (100)	618 (100)
Site of first Injection use		
Arm	43 (24.3)	132 (29.8)
Forearm	108 (61)	266 (60)
Finger	1 (0.6)	1 (0.2)
Thigh	1 (0.6)	4 (0.9)
Calf	3 (1.7)	4 (0.9)
Hand	19 (10.7)	29 (6.3)
Neck	1 (0.6)	0 (0)
Other	1 (0.6)	7 (1.6)
Total	177 (100)	439 (100)
Person syringe was shared with the first time		
Sex partner	0 (0)	2 (1.6)
Friends	78 (89.7)	120 (95.2)
family	1 (1.1)	2 (1.6)
Sex worker	8 (9.2)	1 (0.8)
Others	0 (0)	1 (0.8)
Total	87 (100)	125 (100)

Table 2: frequency distribution of respondents last drug use experience (multiple response)

	Positive f (%)	Negative f (%)
Name of the drug last used		
Opium	14 (6.8)	59 (9.9)
Heroin	141 (68.8)	357 (60.5)
Cough syrup	6 (2.9)	26 (4.4)
Diazepam	11 (5.4)	41 (6.9)
Marijuana	12 (5.9)	46 (7.8)
Yama	13 (6.3)	34 (5.7)
Other	8 (3.9)	30 (5.1)
Total	205 (100)	593 (100)
Method of last drug used		
IV	142 (72.4)	362 (61.1)
Inhalation	27 (13.8)	96 (16.2)
sniff	5 (2.6)	25 (4.2)
Oral	22 (11.2)	102 (17.2)
Other	0 (0)	7 (1.2)
Total	196 (100)	592 (100)
Site of IV last used		
Arm	53 (22.9)	139 (30)
Forearm	104 (45)	262 (56.5)
Finger	6 (2.6)	1 (0.2)
Thigh	15 (6.5)	7 (1.5)
Calf	16 (6.9)	6 (1.3)
Hand	30 (13)	37 (8)
Neck	1 (0.4)	0 (0)
Other	6 (2.6)	12 (2.6)
Total	231 (100)	464 (100)
Last person shared syringe with		
Sex partner	0	0
Friends	7 (100)	29 (90.6)
Family	0	0
Sex worker	0	2 (6.3)
Others	0	1 (3.1)
Total	7 (100)	32 (100)
Syringes obtained from		

Harm reduction programmes	167 (46.9)	414 (45.2)
Outreach worker	100 (28.1)	254 (27.7)
Peer educator	32 (9)	87 (9.5)
Drug store	54 (15.2)	154 (16.8)
Other	3 (0.8)	7 (0.8)
Total	356 (100)	916 (100)
How syringes were disposed		
Dustbin	27 (12.4)	66 (11.4)
Away	16 (7.3)	91 (15.7)
Burial	26 (11.9)	63 (10.9)
Latrine	28 (12.8)	87 (15)
Return DIC	114 (52.3)	245 (42.3)
Other	7 (3.2)	27 (4.7)
Total	218 (100)	579 (100)
Awareness of how HIV spreads		
HIV without condom	88 (13.0)	296 (15.2)
HIV mosquito bite	75 (11.0)	162 (8.3)
HIV sharing food	70 (10.3)	151 (7.8)
HIV mother to child	79 (11.6)	271 (13.9)
HIV breast feeding	70 (10.3)	218 (11.2)
HIV share syringe	150 (22.1)	432 (22.2)
HIV where to test	147 (21.6)	413 (21.3)
Total	679 (100)	1943 (100)

Table 3: Risk analysis of HIV with Demographic factors

	HIV positive n = 152 f (%)	HIV Negative n = 438 f (%)	χ^2 / p value	OR (95% CI)
Sex			$\chi^2 = 5.971 /$ 0.014	5.96 (1.31;30.45)
Female	6 (66.6%)	3 (33.3%)		
Male	146 (25.1%)	435 (74.9%)		
Age			$\chi^2 = 23.087 /$ <0.001	
≤21	6 (10.7%)	50 (89.3%)		
22-30	58 (23.8%)	186 (76.2%)		
31-40	73 (36.5%)	127 (63.5%)		
≥41	15 (16.7%)	75 (83.3%)		
Race			$\chi^2 = 3.626 / 0.163$	
Myanmar	57 (22.4%)	198 (77.6%)		
Shan	42 (31.1%)	93 (68.9%)		
Others	53 (26.5%)	147 (73.5%)		
Religion			$\chi^2 = 0.082 / 0.774$	
Buddhist	123 (25.5%)	359 (74.5%)		
Others	29 (26.9%)	79 (73.1%)		
Education			$\chi^2 = 3.912 / 0.271$	
Illiterate	18 (22.8%)	61 (77.2%)		
Primary	56 (31.1%)	124 (68.9%)		
Middle	53 (23.3%)	174 (76.7%)		
High	25 (24.0%)	79 (76.0%)		
Marital status			$\chi^2 = 5.62 / 0.060$	
Unmarried	67 (24.1%)	211 (75.9%)		
Married	61 (24.5%)	188 (75.6%)		
Divorce/widow	24 (38.1%)	39 (61.9%)		
Employment status			$\chi^2 = 8.189 / 0.017$	
Unemployed	30 (28.8%)	74 (71.2%)		
Employed	121 (26.5%)	336 (73.5%)		
Students	1 (3.4%)	28 (96.6%)		

Table 4: Risk analysis of HIV with first drug use experience

	HIV positive n= 152 f (%)	HIV Negative n= 438 f (%)	χ^2 / p value	OR (95% CI)
Age first used drugs			$\chi^2= 15.032$ / <0.001	
≤15	37 (23.1%)	123 (76.9%)		
16-20	80 (27.2%)	214 (72.8%)		
>21	35 (25.7%)	101 (74.3%)		
Reason for drug use			$\chi^2= 1.738$ / 0.419	
Like, relaxation and upset	32 (28.3%)	81 (71.7%)		
Experiment	51 (22.8%)	173 (77.2%)		
Peer pressure	69 (27.3%)	184 (72.7%)		
Age first Injected drug			$\chi^2= 5.341$ / 0.069	
≤19	40 (26.1%)	113 (73.9%)		
20-29	71 (30.1%)	165 (69.9%)		
≥30	41 (20.4%)	160 (79.6%)		
Type of syringe used the first time			$\chi^2= 9.92$ / 0.001	1.81 (1.23;2.68)
Used	78 (32.6%)	161 (35.9%)		
New	74 (21.1%)	277 (78.9%)		
Share syringe the first time			$\chi^2 =0.341$ / <0.001	
Yes	80 (40.2%)	119 (33.9%)		2.98 (2.00;4.44)
No	72 (18.4%)	319 (81.6%)		
Person shared the syringed with	N=80	N=119	$\chi^2 =0.341$ 0.843	
Sex partner, friends and family	69 (39.4%)	106 (60.6%)		
Sex worker	0 (0.0%)	1 (100%)		
Others	11 (47.8%)	12 (52.2%)		

Table 5: Risk analysis of HIV with the last drug use experience

	HIV positive n= 152 f (%)	HIV Negative n= 438 f (%)	χ^2 / P value	OR (95% CI)
Drug use expenditure			$\chi^2= 2.45 /$ 0.117	
≤ 5000	92 (28.3%)	233 (71.7%)		
>5000	60 (22.6%)	205 (77.4%)		
Frequency of drug use per day			$\chi^2= 9.543 /$ 0.022	
1	27 (25.0%)	81 (75.0%)		
2	49 (20.7%)	188 (79.3%)		
3	60 (33.9%)	117 (66.1%)		
≥4	16 (23.5%)	52 (76.5%)		
History of drug injection past 6 months			$\chi^2= 14.291$ / <0.001	3.36 (1.63;7.09)
Yes	148 (28.1%)	378 (71.9%)		
No	4 (6.3%)	60 (93.8%)		
Type of syringe used the last time			$\chi^2= 12.279$ / <0.001	3.00 (1.50;6.15)
Disposable	142 (28.5%)	357 (71.5%)		
Used	10 (11.0%)	81 (89.0%)		
Syringe shared the last time			$\chi^2= 14.843$ <0.001	3.41 (1.71;6.96)
No	141 (29.0%)	346 (71.0%)		
Yes	11 (10.7%)	92 (89.3%)		

Table 6: Co morbidity

	HIV positive n= 152 f (%)	HIV Negative n= 438 f (%)	χ^2 / P value	OR (95% CI)
Tested VDRL			$\chi^2= 10.371$ / 0.001	1.89 (1.26;2.84)
Yes	104 (30.8%)	234 (69.2%)		
No	48 (19.0%)	204 (81.0%)		
Tested Hep B			$\chi^2= 1.21$ / 0.271	
Yes	44 (29.1%)	107 (70.9%)		
No	108 (24.6%)	331 (75.4%)		
VDRL status	N=104	N=234	$\chi^2= 6.191$ / 0.013	1.90 (1.11;3.26)
Yes	36 (44.4%)	51 (58.6%)		
No	68 (27.1%)	183 (72.9%)		
Hep B status	N=44	N=107	$\chi^2= 2.979$ / 0.084	
Yes	8 (5.3%)	9 (94.7%)		
No	36 (2%)	98 (98%)		