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Global Health Management Journal
www.publications.inschool.id

GHMJ
Global Health Management Journal

Original Research Article ISSN 2580-9296 (ONLINE)

Sentinel surveillance for HIV among people who inject drugs at Gia Lai Province, Vietnam

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ARTICLE INFO

Article history:
Received 28 May 2018
Reviewed 31 May 2018
Received in revised form 11 June 2018
Accepted 29 June 2018

Keywords:
HIV Sentinel surveillance
People Who Inject Drug (PWID)
Gia Lai
Vietnam

ABSTRACT

Background: HIV remains a public health challenge, especially among people who inject drug (PWID). The HIV Sentinel Surveillance (HSS), together with the HIV/AIDS case reporting, are two core components of the HIV/AIDS surveillance system providing systematic, on-going monitoring of HIV epidemic in Viet Nam. The HSS was first conducted in 1994 to determine HIV prevalence among the high-risk group by collecting blood sample. But in 2009, this system was monitored the risk behaviors by addition of a brief behavioral questionnaire, known as HSS+. In Central Highland, the HIV situation in Gia Lai province has primarily affected PWID, which are main criteria to select into the surveillance system.
Aims: This study aims to determine risk factors for HIV infection to improve intervention programs for PWID in Gia Lai province, Vietnam.
Methods: We performed a cross-sectional survey of 150 randomly selected PWID from June to September 2014 in Gia Lai province. Face-to-face interviews were conducted to collect information regarding drug use, sexual behavior, accessibility of HIV/AIDS counseling and testing services. Blood samples were collected and tested for the presence of HIV antibodies using ELISA and rapid test. For data analysis, the frequencies and proportions were calculated. Chi-square or Fisher's exact tests and multivariable logistic regression were performed to assess the association between risk factors and HIV infection.
Results: We identified 14 infections among 150 PWID (prevalence = 9.3%). Among PWID, 22.7% (34/150) had shared needles and 3 HIV prevalence among PWIDs injecting drug for at least 3 years was 2.4%. HIV prevalence among PWIDs who have had sexual intercourse with more than one commercial sex worker (CSW) per month was 6.5%. In multivariable logistic regression, the odds of HIV infection with sharing needles, injecting for over 3 years, and sexual intercourse with more than one CSW per month was 6.7 (95% CI: 1.6-27.7), 6.1 (95% CI: 1.2-30.3) and with 4.0 (95% CI: 1.0-15.3), respectively.
Conclusion: We identified a few modifiable risk factors among PWID. Based on these data, we recommend improving harm reduction intervention and behavior change communication. The sentinel surveillance site should continue monitoring PWID behavior over time.

INTRODUCTION

In Vietnam, a total of 216,254 HIV infections have been reported as of 30 November 2013 since the HIV became a notifiable disease in 1994 [1]. Half of the HIV-infected individuals have been people who inject drugs (PWID) [2]. Almost HIV-infected individuals have been people who inject drugs

Cite this article as Hoang TN, Pham DT, Thu HNT. Sentinel surveillance for HIV among people who inject drugs at Gia Lai Province, Vietnam. Global Health Management Journal. 2018; 2(2): 25-31.

(PWID) (PWID: 39.2% and heterosexual sex: 18%) [2]. HIV continues to affect high-risk groups such as PWID (incidence: 10.3%), commercial sex workers (CSWs) (incidence: 2.6%), and men who have sex with men (MSM) (incidence: 3.9%). HIV continues to affect high-risk groups such as PWID, commercial sex workers (CSWs), and men who have sex with men (MSM). Geographic differences have been reported, such as in North Western Vietnam transmission among PWID appears to be more prevalent, whereas in South Western Vietnam sexual transmission is the top mode of HIV transmission [2].

The HIV Sentinel Surveillance (HSS) and the HIV Sentinel Surveillance combine with behavioral (HSS+) is national sentinel surveillance, which conducted annually, from May to September. First training and planning activities usually take place in May and provinces are expected to send data to regional or national institutions by the end of October. Testing for HIV follows strategy 2, which means that only two types of testing methods with different assays, and therefore the test results are not confirmed by a third test to enable the confirmation for those who were screened positive of their results.

The HSS together with the HIV/AIDS case reporting, are two core components of the HIV/AIDS surveillance system providing systematic, on-going monitoring of HIV epidemic in Viet Nam. The HSS was first conducted in 1994 in 10 provinces and then expanded to 12 provinces in 1995 and eventually to 40 out of 63 provinces nationally in 2003. It is expected that the HSS data will provide evidence for (1) describing prevalence of HIV in different population groups; (2) monitoring trends of HIV prevalence among different sentinel populations; (3) programming and planning HIV activities in the provinces; and (4) serving as a key source of data for HIV estimation and projection at the national level. Since its implementation, the HSS targets two different groups of populations: (i) Most at Risk Populations (MARPs) including PWID, CSWs, and MSM and (ii)- non MARPs including urban and rural pregnant women, males with sexually transmitted infection, tuberculosis patients and military recruits.

Since 2009, World Health Organization (WHO), Vietnam Administration of HIV/AIDS Control (VAAC), and National Institute of Hygiene and Epidemiology (NIHE) piloted a brief behavioral questionnaire added to HSS. The revamped surveillance system is now known as "HSS+". HSS+ includes behavioral questionnaires for three MARPs groups, and these questionnaires contain key behavioral indicators in addition to HIV prevalence. After the success of the pilot, WHO and Joint United Nations Program on HIV and AIDS (UNAIDS) advocated the VAAC to expand the HSS+ to as many HSS provinces as a resource allows. In 2013, the number of provinces that implemented HSS and HSS+ increased to 40, with 22 provinces implementing HSS+.

In Gia Lai, which is one of the mountainous provinces in Central Highland with more than 1.4 million people in 2013, the HIV epidemic has primarily affected PWID. The HIV rates per 100.000 persons were 58 in the province. Moreover, the HIV prevalence of Gia Lai province in According to the HIV surveillance data as of September 2014, 36% of 785 HIV-infected cases in the province were PWID, 2% were CSW [3]. In Central Highland, Gia Lai is only province, which was included as part of the HSS in 2004 and HSS+ in 2012 to detect and identify HIV-infected individuals. In addition, the province has made efforts, such as free needles distribution programme and harm reduction activities, to implement HIV/AIDS prevention and control activities to reduce HIV.

To date, despite the aforementioned efforts, gaps remain. First, the intervention programmes have not necessarily covered high-risk groups in Gia Lai province. Second, risk behaviors and access to intervention services have not been well-studied, mainly because such data were unavailable. As of 2012, the sentinel surveillance system has collected behavioral information, providing an opportunity to investigate risk behavior related to HIV transmission among PWID in Gia Lai. There are many studies on HIV, but lack of study on risk behavior in Gia Lai province. In 2011, the behavioral and biological survey among PWID in Central Highland showed that Gia Lai was highest HIV prevalence (19.3%), following Kon Tum (11.4%), Dak Nong (8.4%) and Dak Lak province (6.4%) [4]. Therefore, our findings aimed to determine risk factors for HIV infection by analyzing 2014 HIV sentinel surveillance data in Gia Lai, with the hopes of providing evidence to improve intervention programmes for PWID in Gia Lai province.

METHODS

Study design and subject selection

We performed a cross-sectional survey of 150 randomly selected PWID from June to September 2014 in Gia Lai province. This study is a part of the

national HIV sentinel surveillance data, which compile information from annual cross-sectional studies that are performed according to the National Technical Guidelines for HIV/STIs Sentinel Surveillance [5]. This cross-sectional study involves face-to-face interviews to collect information about drug use, history of drug use, and sexual behavior. In addition, the blood samples were collected and tested to determine the HIV status according to the guidelines [5]. For the purpose of our data analysis, individuals who were aged 16 years or older and have injected drugs in the past one month were identified using the provincial surveillance data, labor department records, and police records and were included in the analyses.

Data analysis

We first used descriptive statistics to describe the data. Chi-square or Fisher's exact tests were then used to compare proportions of HIV status among PWID with potential risk factors such as ever sharing needles, duration of drug use, ever having vaginal intercourse with CSWs, frequency of vaginal intercourse with CSWs in the past month and age. Multivariable logistic regression was performed including the variables that were significant in the Chi-square tests, to examine risk factors for HIV infection among PWID. For each variable, the odd ratio, 95% confidence intervals and P-values were calculated. The P- value of less than 0.05 was considered to be statistically significant. The data were analyzed by Epi-Info 7.1 (CDC, Atlanta, GA, USA).

Ethics

The study was approved by IRB of National Institute of Hygiene and Epidemiology, Vietnam on 27th May 2014 (reference number: VN01059-07). Written informed consent was signed by all participants. Extended information on material and methods have been reported previously.

RESULTS

Descriptive analysis

There were 150 PWID in 2014. The average age was 27 years (range 17-53 years) with the 20-24 year-old age group representing the largest group (30.7%) (Table 1). In addition. The average age of the initiation of injection drug use was 23 years (range 14-46 years). There were 64.7% (97/150) who knew the place providing HIV testing service. Of the 150 PWID, 14 were HIV positive, giving the prevalence of 9.3%.

Among the 150 PWID, 67 (44.7%) reported injecting drugs for more than 3 years, 50 (33.3%) reported having ever shared needles, and, of those who reported sharing needles, 34 (22.7%) reported sharing needles in the past one month. Forty-six (30.7%) PWID reported having vaginal intercourse with CSWs and of those who had vaginal intercourse with CSWs, 11 (8.1%) reported having vaginal intercourse more than 1 time in the past month. There were remained the PWID do not use condom during intercourse with CSWs. Among 139 PWID who reported having recent vaginal intercourse with either regular partners or CSWs, 81 (58.3%) regularly not used condoms (see Table 1).

Risk factors for HIV

The univariate analysis identified ever sharing needles, duration of injection drug use, ever having sex with CSW, and frequency of sex with CSW in the past month as significant risk factors for HIV infection (Table 2). In multivariable analysis, all of these risk factors, but ever having sex with CSW, remained significantly associated with HIV infection.

The univariate analysis represented that the age group was not significantly difference between aged under 25 and aged more than 25. Those people sharing needles and people injecting drug more than 3 years are more likely infected with HIV (0.1 times) than people who do not sharing needles and injecting drugs less than 3 years ($p<0.05$). The respondents have intercourse with CSW have 0.3 times infected with HIV higher than those who do not have sex with CSWs ($p<0.05$). But PWID had intercourse with CSWs more than one time per month have 0.2 times higher than those who have intercourse with CSWs less than one time per month ($p<0.05$). Moreover, the group aged 25 or older had 0.6 times infected with HIV than PWID under 25 years, but not statistically significant ($p>0.05$).

In the results of multivariable showed that people sharing needles, injecting drugs seniority, sexual intercourse with CSWs and sexual intercourse with CSWs once per month, but age group had statistically significant with HIV status ($p< 0.05$). The people share needles have 6.7 times most likely at risk of HIV infected than those who do not sharing needles (95% CI: 1,6-27, $p<0.05$). The people injecting drugs more than 3 years have 6.1 times most likely to infect HIV than people injecting drugs under 3 years (95% CI: 1,2-30,3, $p<0.05$).

Other risk behaviors of PWID is having sex with CSWs, the results represented that the people

intercourse with CSWs has 1.8 times most likely at risk of infected with HIV than who do not have sex with CSWs, but the not statistically significant with HIV status (95% CI: 0.5-6.3, p>0.05). Especially, the frequency of sexual intercourse with CSWs has 4.0 times most likely infected with HIV than those who had intercourse with prostitutes once per month (95% CI: 1,0-15,3, p<0.05).

Table 1. The characteristics of PWID in Gia Lai 2014

Characteristics	*Frequency (N)*	*Percentage (%)*
Marital status (N=150)		
Single	84	56.0
Married	63	42.0
Divorced	2	2.0
Age group (N=150)		
<20 years	28	18.7
20-24 years	46	30.7
25- 30 years	33	22.0
>30 years	43	28.6
Knew the place providing HIV testing service (N=150)		
Yes	97	64.7
No	53	35.3
Had ever sharing needles (N=150)		
Yes	50	33.3
No	100	66.6
Sharing needles in the past 1 month (N = 150)		
Yes	34	22.7
No	116	77.3
Duration of injection drug use (N=150)		
<3 years	83	55.3
≥ 3 years	67	44.7
Ever having vaginal intercourse with CSWs (N=150)		
Yes	46	30.7
No	104	69.3
Frequency of vaginal intercourse with CSWs in 1 month (N=136)		
≤ 1 time	125	91.9
>1 time	11	8.1
Using condom in most recent vaginal intercourse with CSWs (N=139)		
Yes	58	41.7
No	81	58.3

DISCUSSION

Overall, the finding showed that 22.7% (34/150) had shared needles and 30.7% (46/150) had vaginal intercourse with CSWs in PWID group in Gia Lai. The study demonstrated three main risk factors for HIV infection among PWID in Gia Lai: having vaginal intercourse with CSWs in the past one month; ever sharing needles; and duration of injecting drugs over 3 years.

Table 2. The risk factors for HIV status among PWID in Gia Lai province in 2014

Independent variables	*Univariate*			*Multivariable*		
	HIV status (N=150)			*HIV status (N=150)*		
	Positive N (%)	*Negative N (%)*	*OR (95% CI); p value*	*OR*	*95% CI*	*p value*
Age group				-	-	-
< 25 years *(Ref)*	5 (7.1)	69 (93)	0.5 (0.2 – 1.6); 0.284	-	-	-
≥ 25 years	9 (11)	67 (89)		-	-	-
Had ever sharing needles						
No *(Ref)*	3 (3.0)	97 (97)	0.1 (0.03 – 0.38); <0.001	1	-	-
Yes	11 (22)	39 (78)		6.7	(1.6-28)	0.009
Duration of injecting drugs						
<3 years *(Ref)*	2 (2.4)	81 (97.6)	0.1 (0 – 05); 0.001	1	-	
≥ 3 years	12 (18)	55 (82)		6.1	(1.2-30)	0.028
Vaginal Intercourse with CSWs						
No *(Ref)*	6 (5.8)	98 (94.2)	0.3 (0.1 – 0.9); 0.024	1	-	
Yes	8 (17.4)	38 (82.6)		1.8	(0.5-6.3)	0.382
Frequency of vaginal intercourse with CSWs in 1 month						
≤ 1 time *(Ref)*	8 (6.5)	117 (93.5)	0.2 (0.04 – 0.8); 0.045	1	-	
>1 time	3 (23.0)	8 (77)		4.0	(1.0-15)	0.043

Note: OR: odds ratio. CI: confidence interval

In our analysis, HIV prevalence among PWID in Gia Lai province was 9.3%. This result is similar with HIV sentinel surveillance in 2013 (9.3%), but lower than 2012 (9.7%) [6]. This result also is lower than that 19.7% of PWID estimated by the study of Integrated Biological and Behavioral in the broader region of the Central Highlands of Vietnam in 2011, and in Ho Chi Minh City (46.1%), but was higher than Da Nang City (1%) [4, 7, 8]. Moreover, the finding was inconsistent with the study in other countries including Indonesia with high HIV prevalence in 2010 (60%) [9]. The HIV prevalence decline in comparison with previous studies may have been due to effective intervention strategies in PWID group conducted in 2014 in Gia Lai province, but the potential risk for community remaining as the HIV control challenge [2].

It is anticipated that PWID population in Gia Lai would face the threat of HIV infection, especially among needle sharing group. This study demonstrated that 22.7% of PWID had ever shared needles in the past month. This result was lower than other studies conducted in 2012- 2013 (35.9% and 71.2%, respectively) and was lower than other provinces such as Ho Chi Minh City (39.3%), Da Nang City (39%) in 2013 [2, 3]. Moreover, this finding was lower than the similar study in Dak Lak provinces (76%), Bac Giang province (16.3%), Thai Nguyen province (15%), but higher than the similar study in Hue City (18.7%) [10, 11, 12, 13]. The study in 23 cities of American showed 31.8% of PWID sharing needles, which was higher than this finding [14]. The result was similar with study in Hanoi and Ho Chi Minh City, where the PWIDs remained high HIV infection due to risk behaviors such as the history of infecting and the durian of injecting drugs [15]. This suggests that behavioral modification and safe injection counseling programs between 2012-2013 in Gia Lai were effective/successful in targeting PWID. The multivariable analysis supported our conclusion that sharing needles and longer duration of injecting drugs were associated with a higher risk of HIV infection. [15, 16].

In this study, there was 30.7% PWID reporting that they had ever had vaginal intercourse with CSWs, and

58.3% PWID having sex without using condom in the most recent. This percentage decreased from the result of HIV sentinel surveillance in 2012 and 2013 (68% and 61%, respectively) [1]. However, the figures are still higher than the national average in 2013 in having intercourse and in frequency of intercourse with CSW (23% and 37.1%) [10]. This result were lower than the study in Hue City with 44.7% PWID had intercourse with CSWs [13]. The multivariable analysis showed conclusion that the PWIDs with frequency of sexual intercourse with CSWs were associated with HIV infection [1, 16]. This risk behaviors among PWID in Gia Lai will lead to potential infection for the community. The findings possibly reflecting ineffectiveness and/or limited implementation of harm reduction activities specifically for CSWs by local government. Main interventions were behavioral change communication activities and voluntary counseling and testing services offered only at provincial HIV/AIDS center, restricting access to those who live in remote areas.

This study has a few limitations. First, additional risk behavior questions that are not currently included in the PWID questionnaire, such as sexual behaviors with men who have sex with men (MSM), and regular sex partners, would have improved our understanding of different risks in PWID. Second, the respondents may not have answered truthfully to the interview questions that are part of the HSS+ questionnaire. Third, the figures we presented may have underestimated the PWID population because PWID often fear capture by police and therefore may not admit injecting drug use. In addition, the data sources capturing PWID population are limited. However, we explored all possible sources to identify PWID.

CONCLUSION

HIV prevalence among PWID in Gia Lai was 9.3%, where working age group, specifically ages between 20 and 24, was most prominent. There are 30.7% sharing needles and of which 58.3% had sex with CSWs without using condom. Especially, there was remaining 22.7% PWID sharing needles. Most frequent risk behaviors included ever sharing needles; duration of injecting drugs over 3 years; having sex with CSW in the past one month.

Based on the findings, the further studies should be conducted to better understand underlying reasons for needle sharing behavior among PWID to provide evidence for future HIV prevention and interventions. The study findings suggest the need for strengthening harm reduction programme implementation by local government such as “free needles distribution”, “Volunteering counseling and testing services”, and “Methadone treatment”. The sentinel surveillance should continue to monitor the risk behaviors among PWID in Gia Lai, Vietnam.

ACKNOWLEDGEMENT

The authors would like to thank Dr. Amy Kasper (WPRO), Dr. Mikiko Senga (WPRO), Dr. Hien Do (WHO Vietnam) and Dr. Matt Moore (CDC Vietnam) for their thoughtful review of the manuscript.

CONFLICT OF INTERESTS

None declared.

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