FACTORS AFFECTING HIV INFECTION AMONG INJECTING DRUG USERS (IDUS) IN KHANHHOA PROVINCE, VIETNAM 2008

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Thesis
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ABSTRACT

This study determines factors affecting HIV infection among IDUs in Khanhhoa province, Vietnam. Secondary data from a cross-sectional survey on knowledge, attitude, and behavior regarding HIV/AIDS among IDUs, which was conducted by Khanhhoa Department of Health from July to December 2008, was used for analysis. Simple random sampling design was used to select a total of 350 IDUs living in 7 districts in Khanhhoa province. IDUs were contacted directly in order to answer a questionnaire and have a blood test by "peers" (other IDUs who were collaborators of the program) and health officers.

The results of binary logistic regression reveal that injecting duration, rehabilitation, alcohol use, and having a tattoo affect HIV infection. Injecting duration was positively associated with HIV infection and IDUs who had ever been in a rehabilitation center were more likely to be infected with HIV than those who had never been in a rehabilitation center. Having a tattoo increased one's risk of HIV infection. Surprisingly, alcohol use was negatively associated with HIV infection.

KEY WORDS: HIV infection/ IDUs/ Risk factors/ Khanhhoa/ Vietnam

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
SW	Sex Worker
HIV	Human Immunodeficiency Virus
IDU	Injecting Drug User
MOH	The Ministry of Health of Vietnam
PLHA	People living with HIV/AIDS
STD	Sexually Transmitted Disease
UNAIDS	The United Nations Joint Program on HIV/AIDS
VAAC	Vietnam Administration of HIV/AIDS Control

CHAPTER I
INTRODUCTION

1.1 Problem Identification

HIV epidemic is growing to become a huge global threat. In 2008, the number of people living with HIV/AIDS (PLHA) worldwide continued to grow, reaching 33.4 million (UNAIDS, 2009), with an estimated 2.7 million new HIV infection cases and about a million deaths due to AIDS-related illness. Although there were some achievements in preventing new HIV infection, the number of people living with HIV/AIDS continues to increase.

The primary methods of transmission of HIV are different from region to region. In Eastern Europe and Central Asia, blood contact transmission among injecting drug users (IDUs) due to sharing needles is the main method, while sexual transmission among heterosexual couples is more common in other parts of Asia.

In South and South East Asia in 2008, there were about 3.8 million people living with HIV and about 280,000 new cases of HIV (UNAIDS, 2009). Although the number of people living with HIV/AIDS in 2008 decreased to 200,000, compared with 4 million people living with HIV/AIDS in 2001, the number of people living with HIV/AIDS is still high. The epidemic in Asia has been concentrated in some high-risk populations such as injecting drug users, sex workers and men who have sex with men.

More than 4.5 million people in Asia were estimated to inject drugs and whose HIV prevalence is highest in Asia. Regionally, 16% of injecting drug users are believed to be infected with HIV. In some parts of Asia, HIV prevalence among IDUs is higher than in others. For example, HIV prevalence among injecting drug users is about 30%-50% in Thailand, 37.5% in Myanmar and nearly 52% in Indonesia (UNAIDS, 2009).

According to Ministry of Health of Vietnam, up to December 31st 2009, the number of people living with AIDS in Vietnam was 160,019. Since the first case

of HIV was found in December 1990 until December 31st 2009, there have been 44,540 people who died of AIDS. New HIV infection cases in 2009 were 15,713. Like other parts of Asia, Vietnam is now facing a concentrated HIV epidemic, with most cases being found among IDUs, sex workers (SWs) and man having sex with man (MSM). These high risky populations have the highest rate of HIV infection with 18.4% among IDUs and 3.2% among sex workers (Vietnam Administration of HIV/AIDS Control (VAAC), 2010).

In Vietnam, IDUs make up the largest group of the HIV positive population, with more than half of the HIV cases (50.6%) in Vietnam being IDUs. IDUs are at risk of HIV infection due to their risk behaviors such as sharing injecting equipment and having unsafe sex with other high risk populations. A study in Angiang province Vietnam shows that 5% of IDUs had reported sharing needles, and risk of HIV infection among those who had shared needles was 7.3 times more than others who had not shared. About 12% of IDUs reported having sexual relationship with sex workers and non-regular partners, and the likelihood of HIV infection was about 3.4 times as high as that of others (Tuan et al., 2007). In addition, with active sexual behavior and risk behavior such as not using a condom when having sex, IDUs would spread HIV to their non-injecting partners.

1.2 Problem Justification

Khanhhoa province is located on the South Central coast of Vietnam and has about 1,200,000 people. As one of the main tourism centers of Vietnam, Khanhhoa has a high proportion of SWs and IDUs, and now Khanhhoa is one of the provinces with the highest HIV prevalence in Vietnam, especially among IDUs and SWs (VAAC, 2010).

IDUs are at greater risk of HIV infection than the general population, moreover IDUs can put others at risk of HIV infection with their risk behavior (VAAC, 2010). Therefore, to study factors affecting HIV infection among IDUs is necessary in decreasing the HIV prevalence among IDUs for Vietnam in general and for Khanhhoa province in particular.

In Khanhhoa, there have been some studies about IDUs, but those studies just focused on knowledge, attitude and behavior about HIV and its prevalence among

IDUs. Few studies have tried to learn about the factors affecting HIV infection of IDUs. Therefore, this study is needed for Khanhhoa province and can provide useful information on effective and practical support for HIV intervention programs in the future.

1.3 Research Question

What are the factors affecting HIV infection among injecting drug users (IDUs) in Khanhhoa Province, Vietnam 2008?

1.4 Research Objectives

-Ultimate objective

Findings will provide information for program administrators in reducing HIV infection among injecting drug users in Khanhhoa province, Vietnam

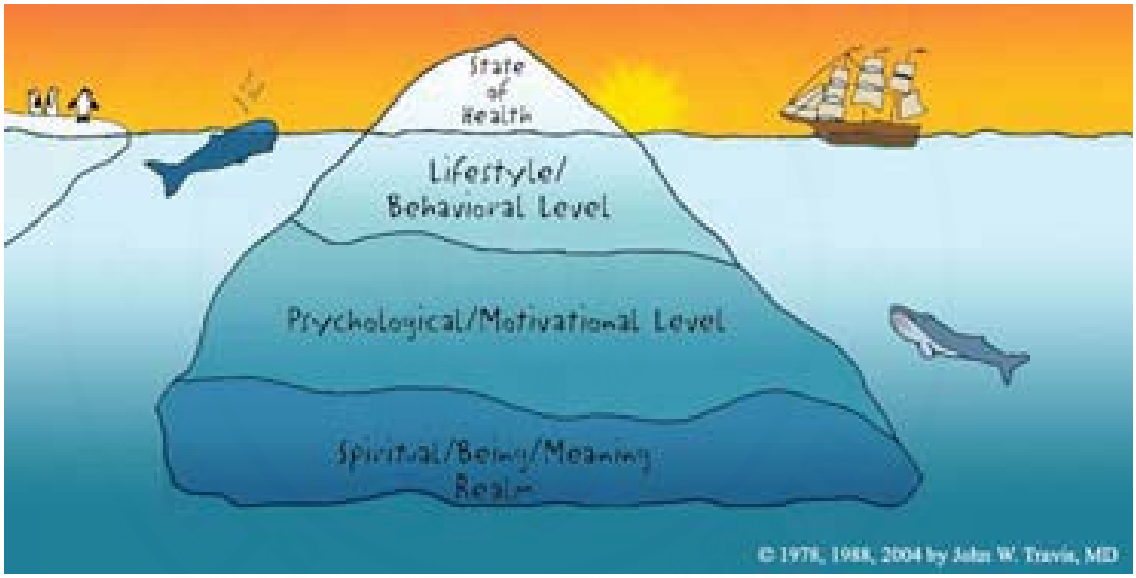
-Immediate objectives

To determine the factors affecting HIV infection among injecting drug users in Khanhhoa province, Vietnam 2008

CHAPTER II
LITERATURE REVIEW

2.1 Theoretical Models

Figure 2-1. Iceberg Model of Health



Source: John W. Travis (1972, 1981, 2004). *Wellness Workbook*

Iceberg Model of Health was used to further explain the state of health. Like the tip of the iceberg which can be seen above the water and is just one-tenth of the iceberg, the state of health is also the apparent part. It is necessary to look underwater to see all the parts of the iceberg as well as to understand which creates the state of health. This model reveals that lifestyle and behavior level directly create state of health. Other factors also are found as the reasons affecting lifestyle and behavior level by looking 'deeper in the water'. Those are psychology, motivation, spirit and being, which all indirectly affect state of health.

In applying the Iceberg Health model to this study, HIV status is similar to health status, sexual and injecting behaviors affect directly the HIV status as lifestyle and behavior levels in the theory; other socio-demographic factors play a role as psychology, motivation, spirit and being in the theory.

2.2 Related Literature Review

2.2.1 HIV infection among IDUs

In Asia, more than 4.5 million people were estimated to inject drugs, and about 16% of them were infected with HIV (UNAIDS, 2009). HIV prevalence in some countries is higher than others in Asia, such as in Thailand 30%-50% of IDUs were believed to be infected, in Myanmar HIV prevalence among IDUs was 37.5% and 52% of IDUs in Indonesia were living with HIV (UNAIDS, 2009).

In Vietnam, 50.6% of HIV cases were IDUs and HIV prevalence among IDUs was about 18.4% in 2009 (VAAC, 2010). HIV prevalence among IDUs in 2009 (18.4%) was lower than in 2008 (20.4%), but it is still high and differs from province to province.

2.2.2 Socio-demographic factors of IDUs and HIV infection

a) Age and HIV infection

A study on IDUs in Thailand shows that age had a relationship to HIV infection, young injectors were found at greater risk for HIV infection (Perngmark et al, 2003), and most of the HIV-positive IDUs belong to the age group 15–24 (Kivela et al, 2006). Another study about IDUs in Baltimore reports that injecting drug users who were younger than 30 years were more than twice as likely to have HIV infection (Steffanie et al, 2001). Young IDUs tended to start their injection recently, and at the beginning, they used to inject with their partners who taught them how to inject. Lacking injecting skills, this may lead them to share needles with older, 'skillful and experienced' IDU friends who might have already been infected with HIV (Perngmark et al, 2003), this may be associated with increasing risk of HIV infection. Young IDUs at initiation were also significantly associated with HIV prevalence, persons who start injection in early age were at higher risks for HIV infection (Uuskula et al, 2005).

In addition, younger age relates to lower economic status, which might lead young IDUs to risky behaviors such as unsafe sex or sharing injecting equipment (Minh et al, 2006; Thanh et al, 2008). A study in Baltimore, Maryland found several differences between males who reported sharing needles and males who did not share needles in the past 6 months, males who shared needles were more likely to be younger (Rothwell et al, 2007).

b) Sex and HIV infection

HIV infection of IDUs is different between male and female. Female IDUs were found to be involved with HIV risk behaviors more than male IDUs. For example, females IDUs were more likely to share needles than males, females IDUs were more likely to have regular injecting drug sexual partner (Choi et al, 2006) and when injecting with their partner, females were easily injected by male after the male had already injected (Cleland et al, 2007; Evans et al ,2003).

Moreover, female IDUs were less likely to clean used needles and less likely to use a condom with their regular sexual partner than males (Cleland et al, 2007). Females also were more likely to use sex in exchange for money or drugs for themselves or their injecting drug sexual partner (Cleland et al, 2007). They had more risk of HIV infection because of their powerlessness in negotiating safe sex with male customers (Choi et al, 2006). In addition, a study in Baltimore, Maryland found that women who exchanged sex for drugs or money were almost three times more likely to share needles than others (Rothwell et al, 2007). Therefore, female IDUs seem to be more likely to become infected with HIV than male IDUs.

On the other hand, a study in China found that the male IDUs were twice as likely to be HIV positive comparing with females (Zhang et al, 2007). Another study shows a strong association of males with heroin injection, needle sharing and higher sexual risk, it was predictive factor of increased HIV risk (Li et al, 2009).

c) Marital status and HIV infection

A study about IDUs on the border of Vietnam and China says that being married or living as married related to HIV negatively (Hammett et al, 2005). Another study found that male IDUs who reported not having a different gender sexual partner were more likely to have HIV infection. Maybe lack of sexual partnership also was a factor of drug dependence, and high-risk injection practices are more common in the absence of a partner who can provide social support (Strathdee et al, 2001). Being married was found to be an important factor in protecting from injecting drug. Tuan and others found that HIV infection among IDUs who were unmarried was five times greater than that of married others (Tuan et al, 2007). Another study found that men who were never married or who were separated, divorced, or widowed were more

likely to be HIV infected comparing with those who reported themselves as married (Razak et al, 2003).

d) Education of IDUs and HIV infection

A study in Vietnam found that low education level was associated with HIV infection, and low education level may lead to HIV risk behaviors (Minh et al, 2006). Swe and others also found that IDUs in Myanmar who were illiterate were twice as likely to be HIV positive (Swe et al, 2010).

On the contrary, a study in Thailand found that IDUs who completed Thai compulsory education had an HIV prevalence greater than others who reported no formal education (Razak et al, 2003). Strathdee and others also found that higher levels of education were positively associated with HIV (Strathdee et al, 2001).

e) Income of IDUs and HIV infection

A study in China found that higher income was a risk factor of HIV infection. IDUs with high income could use drug more often, which also increased their risk of HIV infection (Jia et al, 2008). Other studies on IDUs found that higher annual income was associated with HIV positive status (Strathdee et al, 2001) because higher economic reflected greater access to HIV risks (Razak et al, 2003).

f) HIV knowledge of IDUs and HIV infection

A study about IDUs in the border of Vietnam and China also reported that higher levels of HIV knowledge were related to reduction of HIV risk behavior, such as buying or getting needles in safe places and reducing or stop sharing of injection equipment (Hammett et al, 2005).

In Vietnam, 98% of HIV-positive IDUs reported that they started to reduce their risk of HIV infection since hearing about HIV, whereas 62% of HIV-positive IDUs in China reported taking some risk reduction measures (Hammett et al, 2005).

g) Alcohol use of IDUs and HIV infection

A study of Arsteh in North America and Western Europe has reported an increased rate of HIV sexual risk behavior associated with alcohol consumption among IDUs. Drinking was considered related with sexual risk behaviors such as no condom use or having multiple sexual partners. The relationship between drinking and HIV sexual risk behavior was also based on kind of drinking partners, context of drinking and other factors (Arasteh et al, 2008).

Another study in Russia also showed that alcohol use had affected HIV infection with increased infection risk and possible disease progression. This study also showed that people with heavy alcohol use tend to engage in riskier behaviors, such as sex with multiple partners, unprotected vaginal and anal intercourse, and injection drug use. Also, alcohol abuse plus drug use may lead IDUs to more risky sex and drug use behaviors such as drinking, which was associated with inconsistent condom use and increasing needle sharing (Krupitsky et al, 2005).

h) Having tattoo and HIV infection

A study in India shows that 63% of IDUs who had tattoos were HIV positive, compared with 5% HIV prevalence among those who did not have tattoos (Panda et al, 2005).

In many countries, most of people who tattooed themselves were in high-risk populations such as IDUs, CSWs or other. Because of profit, tattoo makers rarely changed the used needle or cleaned it before use with new customers. The used needle might be infected with HIV from previous customers, and consequently, placed the following customers at risk of HIV infection (Panda et al, 2005).

i) Ever had STD and HIV infection

A study on IDUs in the USA reported that STDs (herpes simplex or syphilis) were associated with higher HIV infection (Altice et al, 1998). STDs were considered one indicator of high sexual risk behavior among IDUs (Jia et al, 2008). A personal history of STDs was associated with an increase in risk of HIV infection (Altice et al, 1998; Jia et al, 2008; Strathdee et al, 2001; Razak et al, 2003).

2.2.3 Injecting factors of IDUs and HIV infection

a) Duration of injecting of IDUs and HIV infection

A study about IDUs in Pakistan reported that duration of injecting drug was positively associated with HIV infection (Altaf et al 2009). If the duration of injecting drugs were long, IDUs would get more risk of infection with HIV (Kivela et al, 2006).

One study on risk factors of HIV infection of IDUs in a drug treatment center in Hochiminh city showed that longer history of injecting drugs was associated with HIV infection (Tran et al, 1998; Jia et al, 2008). A study of Hien said that IDUs on the street in Hochiminh city who had been injecting for 5–9 years were at higher risk for HIV infection (Hien et al, 2001).

Another study in Longan, Vietnam found that those with longer than 1 year but not over 3 years of injecting drugs had a higher prevalence of HIV compared to those with less than 1 year of injecting (Minh et al, 2006).

b) Frequency of injecting of IDUs and HIV infection

A study of Aborigines reported that there was a strong association between frequency of injection and HIV infection among both the Aboriginal men and women (Craib et al, 2003). Higher frequency of injection were the independent risk factors for HIV infection among IDUs in China (Jia et al, 2008) and the frequency of recent (past 3 months) injection of IDUs in Thailand was associated with HIV prevalence (Razak et al, 2003).

c) Place of injecting drug and HIV infection

Injecting at shooting galleries where drug dealers provide drugs who also are injectors may explain the high prevalence of HIV infection among IDUs in Hochiminh city (Hien et al, 2001). In these places, IDUs shared syringes and needles as well as other injecting equipment, which may be infected with HIV from an infected IDU. Moreover, IDUs who inject at shooting galleries and on the street had a higher rate of needle sharing, maybe because of the lack of access to injecting equipment for safer practices (Hien et al, 2001; Rothwell et al, 2007).

Hien and others also showed that IDUs who did not visit shooting galleries, but injected at a friend's house or at home had lower risk of HIV infection, which provides proof that shooting galleries played an important role in the spread of the HIV epidemic among IDUs in Hochiminh city (Hien et al, 2001).

d) Needle sharing behavior of IDUs and HIV infection

A study of IDUs in Baltimore reports that high risk of HIV infection is associated with injection behaviors such as needle-sharing behaviors (Strathdee et al, 2001). Another study says that IDUs would be almost twice as likely of being HIV positive if they had injected with used needles and syringes in the 4 weeks prior to the interview (Rhodes et al, 2002).

In other studies, IDUs who had shared injecting equipment were reported to be 7.3 times in HIV infection in Vietnam (Tuan et al, 2007), 5 times more likely to develop HIV in Myanmar (Swe et al, 2010), 2 times of being HIV positive in Estonia (Uuskula et al, 2005) than others who had not shared. Sharing injection needle and/or syringe were also independent risk factors for HIV infection among IDUs in China (Jia et al, 2008).

e) Rehabilitation history and HIV infection

One study on risk factors of HIV infection among IDUs in drug treatment in HCMC shows that IDUs with a history of previous treatment for drug detoxification were associated with HIV positive status (Tran et al, 1998; Hien et al, 2001). Many drug users returned to drug use after leaving the drug treatment clinic, and when they entered into treatment clinics again they were found to have a more profound drug addiction, leading to more frequent needle-sharing practices or sharing in higher-risk situations (Tran et al, 1998). A study in Myanmar also found that IDUs with a history of unsuccessful drug treatment were more likely to be HIV positive (Swe et al, 2010).

2.2.4 Other literature review

Besides, there are some variables should be included in this study, but data did not allow.

-Number of sexual partner of IDUs and HIV infection

A study on people living with AIDS in Vietnam suggests that those who reported having multiple sexual partners before were less likely to use condoms consistently and more likely to engage in needle and syringe sharing behavior (Thanh et al, 2009).

Another study about IDUs in Russia shows that IDUs who had reported three or more sex partners in the past 6 months was associated with an increased risk of HIV infection (Kozlov et al, 2006).

-Consistent condom use with regular partner of IDUs and HIV infection

Most of IDUs had low condom use with regular sex partners because they considered that it was not necessary to use condoms with regular partners. In addition, many regular sexual partners of IDUs were IDUs or CSWs with high prevalence of HIV infection and the rate of partner change was high amongst IDUs. This certainly could place IDUs and their partners at risk of HIV infection (Houlding et al, 2003).

Another study reports that inconsistent condom use was significantly associated with an increased risk of HIV infection, because condom use was highly correlated with sexual risk behaviors (Strathdee et al, 2001).

-Consistent condom use with irregular sexual partner of IDUs and HIV infection

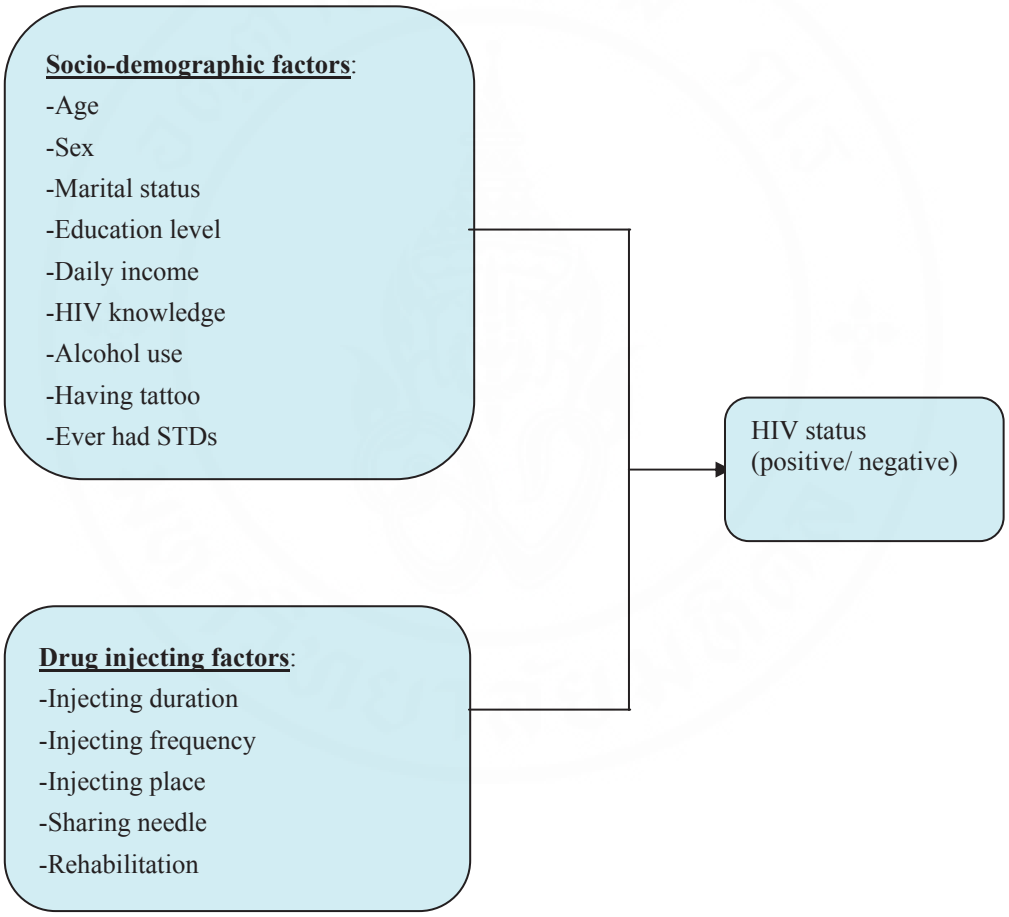
Irregular sexual partner includes commercial sex partners and other irregular sexual partner. Irregular sexual partner of IDUs played an important role as a bridge to transmit HIV between IDUs and non-injecting populations (Strathdee et al, 2001). Commercial sex workers (CSWs) also had high HIV prevalence, therefore IDUs can be infected with HIV from CSWs.

A study in Vietnam found that IDUs who had sexual relationships with both female sex workers and other non-regular partners were 3.4 times more at risk of HIV infection compared with injecting drug users who reported not having non-regular sexual contacts. (Tuan et al, 2007)

2.3 Conceptual Framework

From the theory and the literature review, this study uses the following framework (Figure 2-2).

Figure 2-2: Conceptual Framework



2.4 Research Hypotheses

In Khanhhoa province Vietnam:

(H1) Young IDUs are more likely to become infected with HIV than older IDUs.

(H2) IDUs who had been married or living with a lover are less likely to be infected with HIV than IDUs who were single or divorced.

(H3) IDUs who had a tattoo are more likely to be infected with HIV than IDUs who did not have a tattoo.

(H4) IDUs who had a long injecting duration are more likely to become infected with HIV than DUs who had a short injecting duration.

(H5) IDUs who had shared needle with partners when injecting are more likely to be infected with HIV than IDUs who had not shared needle with partners.

(H6) IDUs who had ever been in a rehabilitation center are more likely to be infected with HIV than IDUs who had never been in a rehabilitation center.

CHAPTER III
METHODOLOGY

3.1 Source of Data

This study uses data from a cross-sectional survey on knowledge, attitude and behavior on HIV/AIDS prevention among IDUs in Khanhhoa province, Vietnam, which was conducted by Khanhhoa Department of Health from July to December 2008.

3.1.1 Sample Design and Sample Size

Based on the geographic map of "hotspots" of IDUs (the places where there were many IDUs) in Nhatrang city and other districts of Khanhhoa province, list of IDUs by code of each area were created. The list was then used to make the sampling frame. Simple random sampling design was used to select a total of 350 IDUs who lived in 7 districts of Khanhhoa province.

IDUs were contacted directly for answering the questionnaire and having blood test by "peer" (other IDUs who were collaborators of the program) and health officers, donated about 2-3ml of blood for HIV test under the standards of the Ministry of Health.

3.1.2 Measurements and Questionnaire Design

IDUs were interviewed face to face to get information about social demographic and behavioral characteristics by structured questionnaire based on national guidelines.

The questionnaire included 7 parts:

Part 1: General information

Part 2: Communication access

Part 3: HIV/AIDS knowledge

Part 4: Attitude toward People living with HIV/AIDS

Part 5: Sexual history

Part 6: Injecting history, tattoo

Part 7: Result of HIV test

Some selected questions were used for this study. The detailed questions are presented in the Appendix.

3.2 Sample of the Study

All 350 IDUs of the survey were used as the sample in this study.

3.3 Ethical Aspects

IDUs participated anonymously, voluntarily, and willingly in the survey. Before the interview, respondents were introduced the purpose and meaning of the interviews, as well as the right of participants to refuse or to take part. Interviewees signed informed consent forms for confirmation of their verbal agreements to be interviewed and to give blood samples**.**

3.4 Operational Definition of Variables:

Table 3-1 Operational definition of variables

Variables	Categories	Measurement
Independent variables		
Age (year)	Age of IDUs at the time of the survey Age is used as a categorical variable 1= 25 and less 2= 26-30 3= 30 and over	Ordinal
Sex	Gender of IDUs at the time of the survey Sex is used as a categorical variable. 0= male 1= female	Nominal
Marital status	Marital status of IDUs at the time of the survey 1= single 2= spouse 3= divorced	Nominal

Variables	Categories	Measurement
Education level	Education level of IDUs at the time of the survey Education was divided into 3 groups 1= illiterate and primary school 2= secondary school 3= high school and higher	Ordinal
Daily income	Average income per day of IDUs at the time of the survey Daily income was divided into 2 group based on average income in Khanhhoa 2008 (Statistic Office of Khanhhoa, 2008) 0= 60,000 VND and over 1= less than 60,000 VND	Ordinal
HIV knowledge	Knowledge about HIV of IDUs at the time of the survey Completely correct answer of total 7 questions is defined as having good knowledge , if not, poor knowledge (see Appendix) 0=good knowledge (7 scores) 1=poor knowledge (0-6 scores)	Nominal
Alcohol use	Frequency of alcohol use 0= never drink 1= ever drink	Nominal
Having tattoo	The IDUs have tattoo or not 0=don't have tattoo 1=have tattoo	Nominal
Ever had STDs	History of having STDs of IDUs at the time of the survey Ever had STDs was divided into 2 groups 0=never had STDs 1=ever had STDs	Nominal
Injecting duration	Number of year that IDU has been injected drug ,from the first injection up to the time of survey 1= less than 4 years 2= 4-7 years 3= over 7 years	Ordinal
Injecting frequency	Number of injecting of IDU per day/week 1=less than 4 times per week	Ordinal

Variables	Categories	Measurement
	2= 4-7 times per week 3= 2-3 times and over per day	
Injecting place	Place where IDUs injected 0=at home or at friend's house 1=at street or gathering place	Nominal
Sharing needle	Injecting drug by used needles of others 0= never shared needles 1= ever shared needles	Nominal
Rehabilitation	History of having been in rehabilitation center of IDUs at the time of the survey Rehabilitation was divided into 2 groups 0=never 1=ever	Nominal
Dependent variable		
HIV status	HIV status of IDUs from blood test at the time of the survey 0= negative 1= positive	Nominal

3.5 Data Analysis

Descriptive statistics were used to describe socio-demographic, injecting characteristics and HIV status of IDUs.

Binary logistic regression was used to examine the effect of socio-demographic and injecting factors on HIV infection of IDUs.

3.6 Limitation of the Study

This study uses secondary data from a cross-sectional survey, therefore, it is impossible to have all independent variables that influence HIV infection of IDUs.

This data is based on self-reported of IDUs, so they may possibly be over or under-reporting, and may suffer from recall bias.

Samples may be biased as it is limited to those IDUs that could be contacted for the study. Other IDUs may be more difficult to find.

CHAPTER IV
RESULTS AND DISCUSSION

This chapter includes three sections. The first section describes the socio-demographic factors and injecting factors of the sample. The second section shows relationship of HIV status with injecting factors controlling for socio-demographic factors by using binary logistic regression analysis. The third section discusses the results of analyses of this study.

4.1 General characteristics

4.1.1 Socio-demographic factors of IDUs

Table 4-1 shows some selected socio-demographic factors of the 350 IDUs in this study. Most of IDUs were male (94%) and they were young with 30% at the age under 20, 18.9% at the age 21-25 and 25.7% at the age 26-30. The mean age of this group was 26.6 and ages ranged from 14 to 54. There were 68.9% of IDUs being single whereas 24.3% were married and 6.9% were divorced. Most of IDUs had low education, over half of them (51.4%) had secondary school and 16.9% were at primary school, just 28.8% were at high school level or higher. IDUs whose daily income was under 60,000 Vietnamdong (VND) (average income in Khanhhoa province, (Statistic Office of Khanhhoa, 2008)) made up 81.4%. IDUs in this study had high level of HIV knowledge, with 84.9% being able to answer correctly all seven questions (good knowledge). About 48.6% of them reported drinking infrequently and 29.1% reported never drink, while 22.3% of them reported drinking frequently. Among IDUs, there were 39.4% reported to having tattoos on their body and 13.4% of them ever had been infected with STDs.

Table 4-1 Number and percentage distribution of IDUs by socio-demographic factors, Khanhhoa province, Vietnam, 2008

Socio-demographic variables	Number	Percent
Age group		
20 and less	105	30.0
21-25	66	18.9
26-30	90	25.7
31-35	44	12.6
36 and over	45	12.9
Median = 26; Mean = 26.6; SD = 8.4 ; Min = 14; Max = 54		
Sex		
Male	329	94.0
Female	21	6.0
Marital status		
Single	241	68.9
Spouse	85	24.3
Divorce	24	6.9
Education levels		
Illiterate	10	2.9
Primary (Grade 1-5)	59	16.9
Secondary (Grade 6-9)	180	51.4
High school (Grade 10-12) and higher	101	28.8
Daily income		
60,000 VND and over	65	18.6
Under 60,000 VND	285	81.4
Median = 42,500; Mean = 50,917; SD =38,855; Min = 0; Max = 300,000		
HIV knowledge		
Good (7 scores)	297	84.9
Poor (0-6 scores)	53	15.1
Alcohol use		
Everyday	21	6.0
Usually	16	4.6
Often	41	11.7
Sometimes	170	48.6
Never drink	102	29.1
Having tattoo		
No	212	60.6
Yes	138	39.4
Ever had STDs		
No	303	86.6
Yes	47	13.4
Total of each variable	350	100.0

4.1.2 Injecting factors of IDUs

Table 4-2 shows the injecting factors of IDUs in this study. Injecting factors include duration and frequency of injecting drug, place of injecting as well as needle sharing behavior of IDUs during the past 6 months at the time of the survey. The mean number of years of injecting duration is about 5.8, and the highest injecting duration is 34 years. About 28% of IDUs had injected for 1 year or less, while nearly half had injected for 2-7 years and 28.6% had reported over 7 years of injection. Over thirty percent of IDUs had less than 4 injections per week, while 42.3% had injected 4-7 times per week, and 25.1% had injected more than 1 time per day.

Table 4-2 Number and percentage distribution of IDUs by injecting factors, Khanhhoa province, Vietnam, 2008

Injecting variables	Number	Percent
Injecting duration (year)		
Less than 2 years	98	28.0
2-4 years	81	23.1
5-7 years	71	20.3
Over 7years	100	28.6
Median = 4; Mean = 5.8; SD = 6; Min = 0; Max = 34		
Injecting frequency (times)		
Less than 4 times per week	114	32.6
4-7 times per week	148	42.3
2-3 times and over per day	88	25.1
Injecting place		
At home and friend's house	102	29.1
At street and gathering place	242	70.9
Sharing needles		
Never	317	90.6
Ever	33	9.4
Rehabilitation		
Never	284	81.1
Ever	66	18.9
Total of each variable	350	100

Most IDUs in this study had injected on the street or gathering place (70.9%) while 29.1% had injected at home or their friend's house. Just 9.4% of IDUs reported to use needles of others, while 90.6% had never done it. IDUs who reported to have ever had been in a rehabilitation center was 18.9%.

4.1.3 HIV status of IDUs

Table 4-3 Number and percentage distribution of IDUs by HIV status, Khanhhoa province, Vietnam, 2008

HIV status	Number	Percent
Positive	50	14.3
Negative	300	85.7
Total	350	100.0

According to Table 4-3, 14.3% IDUs were HIV positive at the time of the survey.

4.1.4 Distribution of IDUs HIV status by all factors

Table 4-4 shows that IDUs who are aged 25 and younger had the lowest HIV infection (7%) but the IDUs aged 26-30 had the highest percent of HIV infection (28.9%). HIV status of females in this study was twice that of male's (28.6% versus 13.4%). Just 10.8% single IDUs have been infected with HIV while 17.6% married IDUs had been infected and 37.5% of IDUs who had been divorced have been infected with HIV. HIV status of IDUs who reported never drinking was much higher than that of others who ever drank (24.5% versus 10.1%). Illiterate IDUs had the highest percent of HIV infection (18.8%) while secondary school IDUs and high school IDUs were not much different in HIV status at 12.2% and 14.8% respectively. Most of IDUs in this study had low income (less than 60,000 Vietnamdong per day) and they had the higher percent of HIV infection at 15.1%.

Table 4-4 Percentage distribution of HIV status by all factors among IDUs in Khanhhoa province, Vietnam, 2008

All factors		HIV status (N=350)				
		Positive	Negative	Total	Number	Chi-Square
Age	25 and less	7.0	93.0	100	171	**23.10*** **
	26-30	28.9	71.1	100	90	
	31 and over	13.5	86.5	100	89	
Sex	Male	13.4	86.6	100	329	3.72
	Female	28.6	71.4	100	21	
Marital status	Single	10.8	89.2	100	241	**13.75** **
	Married	17.6	82.4	100	85	
	Divorced	37.5	62.5	100	24	
Alcohol use	Never drink	24.5	75.5	100	102	**12.29*** **
	Ever drink	10.1	89.9	100	248	
Education level	Illiterate and primary school	18.8	81.2	100	69	1.82
	Secondary school	12.2	87.8	100	180	
	High school and higher	14.8	85.2	100	101	
Daily income	60.000 VND and over	10.8	89.2	100	65	0.81
	Under 60.000 VND	15.1	84.9	100	285	
HIV knowledge	Good (7 scores)	15.8	84.2	100	297	3.79
	Poor (0-6 scores)	5.7	94.3	100	53	
Having tattoo	No	9.0	91.0	100	212	**12.44*** **
	Yes	22.5	77.5	100	138	
Ever had STDs	No	13.2	86.8	100	303	2.17
	Yes	21.3	78.7	100	47	
Injecting duration	Less than 4 year	3.8	96.2	100	158	**30.29*** **
	4-7 years	17.4	82.6	100	92	
	Over 7 years	28.0	72.0	100	100	
Injecting frequency	Less than 4 times per week	7.9	92.1	100	114	5.71
	4-7 times per week	16.9	83.1	100	148	
	2-3 times and over per day	18.2	81.8	100	88	
Injecting place	At home or friend's house	16.7	83.3	100	102	0.67
	At street or gathering place	13.3	86.7	100	248	
Sharing needles	Never	13.9	86.1	100	317	0.45
	Ever	18.2	81.8	100	33	
Rehabilitation	Never	7.4	92.6	100	284	**58.41*** **
	Ever	43.9	56.1	100	66	

*Note: *p<0.05; **p<0.01; ***p<0.001*

The majority of IDUs in this study had good knowledge about HIV but they also had the higher percent of HIV infection (15.8%). Over one-third of IDUs had

tattoos on their body and 22.5% of them were infected, while just 9% of others who did not have tattoo were infected with HIV. HIV positive IDUs who had ever been infected with STDs in the past was 21.3% compared with 13.2% of others who had never been infected.

Regarding injecting factors, years of injection increased HIV percent of IDUs. HIV positive of “less than 4 years injecting” group was lowest with 3.8%. Other IDUs with “more than 7 years injecting” had the highest HIV percent with 28% and HIV percent of the “4-7 years injecting” group was 17.4%. IDUs who had injected 2 times and more per day had the highest HIV positive percent at 18.2%. HIV positive in this group was a little higher than that of the IDU group who had injected 4-7 times per week (16.9%). IDUs with injecting frequency “less than 3 times per week” had the lowest HIV percent (7.9%). The HIV positive status between “injecting at home and friend’s house” and “injecting at street and gathering place” IDUs was not much different (16.7% versus 13.3%). About nine percent of IDUs reported ever injected by used needles of others, and the HIV positive level of this group was higher than IDUs who had never injected by used needles (18.2% and 13.9%). Nearly half of IDUs (43.9%) who had ever been in a rehabilitation center were infected with HIV, while just 7.4% of others who had never been in rehabilitation center were infected with HIV.

After being tested by Chi-Squared test, age, marital status, alcohol use, having tattoo, injecting duration and rehabilitation were found to have a relationship with HIV status.

4.2 Effects of injecting factors on HIV infection

To examine the net effects of injecting factors on HIV infection, binary logistic regression models were used because the dependent variable has two categories (positive and negative). The results are presented in Table 4-5. Model 1 shows the effects of socio-demographic factors on HIV infection. Model 2 focused on effects of injecting factors on HIV infection, controlling for socio-demographic factors. The results were considered as statistical significant if the level of significance was at 0.05.

Model 1 shows that age, alcohol use and having tattoo are significantly associated with HIV positive status. The odds of IDUs at age 26 to 30 were 4 times more likely to be infected with HIV than those who were 25 and younger. 'Ever drink' IDUs were 62% less likely to be infected with HIV than others. Having tattoo was positively associated HIV infection as IDUs who had tattoo were 2.71 times more likely to be infected with HIV than those who did not have tattoo. Sex, marital status, education, daily income, HIV knowledge and STDs history were not significantly associated with HIV infection. With socio-demographic factors, Model 1 can significantly explain the probability of HIV infection.

In Model 2, injecting variables were added in order to examine the net effect of injecting factors and HIV infection, controlling for socio-demographic factors. The results show that injecting duration and rehabilitation history were significantly associated with HIV positive status. The longer injecting duration of IDUs, the more risks of HIV infection they had. IDUs who have injected for 4 to 7 years were 3.3 times more likely to get infected with HIV than IDUs who have injected for less than 4 years. And IDUs who have injected for over 7 years were 7.6 times more likely to be HIV positive than those who have injected for less than 4 years. The result also reveals that IDUs who had ever been in a rehabilitation center were 5.2 more likely to be HIV positive than those who had never been in a rehabilitation center. In this study, injecting frequency, injecting place and sharing needles were not significantly associated with HIV infection. At a significant level of 0.10, IDUs who have injected 4 to 7 times per week were 2.7 times more likely to get infected with HIV than those who have injected less than 3 times per week ($p<0.10$). The result also shows that IDUs with 2 injections and more per day were also more likely to be HIV positive than those with 3 injections and fewer per week but this was not significant.

Particularly, age of IDUs was associated with HIV infection in Model 1 but it was not associated in Model 2. On the contrary, daily income was not associated with HIV infection in Model 1 but it was associated with HIV infection at the 0.10 level. IDUs who had a daily income less than 60,000 VND (average daily income of people in Khanhhoa province, 2008) were 2.5 times more likely to get infected with HIV than those who had a daily income of 60,000 and more than 60,000 ($p<0.10$).

Table 4-5 Odds ratios of HIV infection by injecting factors, controlling for socio-demographic factors

All factors		HIV status (Positive)					
		Model 1			Model 2		
		Coef.	S.E.	Odds ratio	Coef.	S.E.	Odds ratio
Age	25 and less (ref)						
	26-30	**1.39**	**0.44**	**4.03****	0.07	0.55	1.07
	31 and over	0.63	0.55	1.89	-0.81	0.70	0.44
Sex	Male (ref)						
	Female	0.71	0.65	2.05	0.74	0.80	2.09
Marital status	Single (ref)						
	Married	0.12	0.45	1.19	0.45	0.54	1.56
	Divorced	0.66	0.60	1.94	0.92	0.69	2.51
Education level	Illiterate & primary school (ref)						
	Secondary school	-0.30	0.44	0.74	-0.30	0.49	0.74
	High school and higher	-0.08	0.49	0.92	-0.06	0.53	0.95
Daily income	60.000 VND and over (ref)						
	Under 60.000 VND	0.64	0.47	1.90	**0.92**	**0.53**	**2.50†**
HIV knowledge	Good (7 scores) (ref)						
	Poor (0-6 scores)	-0.97	0.67	0.38	-1.04	0.71	0.35
Alcohol use	Never drink (ref)						
	Ever drink	**-0.96**	**0.35**	**0.38****	**-0.80**	**0.39**	**0.45***
Having tattoo	No (ref)						
	Yes	**0.99**	**0.36**	**2.71****	**0.81**	**0.41**	**2.25***
Ever had STDs	No (ref)						
	Yes	-0.15	0.51	0.86	-0.23	0.61	0.79
Injecting duration	Less than 4 years (ref)						
	4-7 years	-	-	-	**1.18**	**0.57**	**3.26***
	Over 7 years	-	-	-	**2.03**	**0.62**	**7.63*****
Injecting frequency	Less than 4 times/ week (ref)						
	4-7 times/ week	-	-	-	**0.96**	**0.51**	**2.71†**
	2-3 times and over/ day	-	-	-	0.31	0.58	1.36
Injecting place	At home or friend's house (ref)						
	At street or gathering place	-	-	-	0.03	0.43	1.03
Sharing needles	Never (ref)						
	Ever	-	-	-	0.27	0.61	1.31
Rehabilitation	Never (ref)						
	Ever	-	-	-	**1.66**	**0.42**	**5.23*****
	LR Chi-square		**49.67*****			**91.82*****	
	Pseudo R square		**0.17**			**0.32**	

*Note: † p< 0.10; *p<0.05; **p<0.01; ***p<0.001*

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4.3 Discussion

This study aims to find factors affecting HIV infection among IDUs in Khanhhoa province, Vietnam. Some socio-demographic and injecting factors are used as independent variables, HIV status is used as the dependent variable.

The results of this study point out some factors affecting HIV infection among IDUs in Khanhhoa province, Vietnam. For example, alcohol use was found to have a relationship with HIV positive status. The IDUs who had ever drunk were 55% less likely to be HIV positive than the others who had never drunk. This finding was quite different from previous studies, which reported that drinking had increased risks of HIV infection (Arasteh et al, 2008; Krupitsky et al, 2005). This study also shows that having a tattoo was positively associated with HIV infection. The IDUs who had tattooed their body were 2.3 times more likely to be infected with HIV than others who had never tattoed their body. This finding confirmed previous conclusions that having a tattoo affected HIV infection (Panda et al, 2005). In many countries, most people who tattooed themselves were in high-risk of HIV infection population such as IDUs, CSWs and others. In addition, tattoo makers rarely had changed the used needle or cleaned it before using for new customers (Panda et al, 2005). In Khanhhoa province, most IDUs had low-income, so they usually chose low-price tattoo centers, which had low hygiene standards. Perhaps it was the reason why having a tattoo increased risks of HIV infection among IDUs.

Duration of injecting of IDUs in this study was found to have a positive relationship with HIV infection. IDUs with 4 to 7 years injection were 3.3 times more likely to be infected with HIV than those with less than 4 years injection. Those IDUs with more than 7 years injecting were 7.6 times more likely to be infected with HIV than those with less than 4 years injection. The longer injecting duration of IDUs the higher risks of HIV infection and was consistent with some previous studies (Altaf et al, 2009; Jia et al, 2009; Kivela et al, 2006; Tran et al, 1998). If IDUs had long injecting duration, they could repeat their risk behaviors many times more than IDUs with short injecting duration. It can explain why IDUs who had long duration of injecting were more likely to be infected with HIV than others who had shorter duration of injecting. History of rehabilitation also was associated with HIV positive status in this study. IDUs who had been in a rehabilitation center were 5.2 times more

likely to be infected with HIV than those IDUs who had never been in a rehabilitation center. This finding was similar with some previous studies, that rehabilitation history was positively associated with HIV positive status (Hien et al, 2001; Swe et al, 2010; Tran et al, 1998). In fact, many IDUs returned to drugs after leaving the rehabilitation center. IDUs with rehabilitation history were found to have more injecting friends and know more drug supply places. That can lead IDUs to failure in drug abandon and put them at more risk of HIV infection such as leading to more frequent needle sharing practices or sharing in higher risk situation (Tran et al, 1998).

Daily income and injecting frequency were found associated with HIV infection at significance 0.1. IDUs with low income were 2.5 times more likely to be HIV positive than IDUs with higher income. This result contradicted with other studies, which revealed that higher income was positively associated with HIV infection (Jia et al, 2008; Strathdee et al, 2001; Razak et al, 2003). In many low-economic countries like Vietnam, low income limited life standards of IDUs and limited their choices of life, so it might lead them to more risky practices involving HIV infection. IDUs with 4 to 7 injections per week were 2.7 times more likely to be infected with HIV than IDUs with less than 4 injections per week. It confirmed the result of other studies, which also found that high frequency of injecting increased risks of HIV infection (Craib et al, 2003; Jia et al, 2008; Razak et al, 2003).

Besides these, some unexpected results also were found. Some socio-demographic factors were not associated with HIV infection. Age, sex, marital status, education, HIV knowledge and STDs history were found not to have a relationship with HIV infection. These results were inconsistent with some previous studies, which found that young IDUs were at greater risk for HIV infection in study in Thailand (Perngmark et al, 2003); female IDUs were more likely to infect HIV than male IDUs (Choi et al, 2006); unmarried IDUs were more likely to be HIV infected than married IDUs (Razak et al, 2003; Tuan et al, 2007); low education IDUs were more at risk of HIV infection than higher education IDUs (Swe et al, 2010); IDUs with high level of HIV knowledge were less likely to be infected with HIV than those with low level of HIV knowledge (Hammett et al, 2007); and IDUs with STDs history were associated with increasing risk of HIV infection (Altice et al, 1998; Jia et al, 2008). Injecting place and sharing needle did not have a relationship with HIV infection, while other

studies showed that injecting at home or friend's house had lower risk of HIV infection (Hien et al, 2001) and sharing needle was positively associated with HIV infection (Jia et al, 2008; Swe et al, 2010; Tuan et al, 2007). IDUs in this study only reported their sharing needle behavior during last 6 months. Therefore, this result might not reflect the real relationship of sharing needle and HIV infection among IDUs in this study.

Looking back on the hypotheses in Chapter 2 and results, one can see that:

(H1)-The young IDUs are more likely to be infected with HIV than the older IDUs. In this study, age was not significantly associated with HIV infection. This finding does not support this hypothesis.

(H2)- IDUs who had been married or living with a lover are less likely to be infected with HIV than IDUs who were single or divorced. In this study, marital status was not significantly associated with HIV infection. This finding does not support this hypothesis

(H3)- IDUs who had tattoo are more likely to be infected with HIV than the IDUs who did not have tattoo. The result found that IDUs who had tattoo were 2.3 times more likely to be infected with HIV than the IDUs who did not have a tattoo. The finding supports this hypothesis.

(H4)- IDUs who had long duration of injecting are more likely to be infected with HIV than IDUs who had a short duration of injecting. The result found that IDUs with 4 to 7 years injection were 3.3 times and IDUs with more than 7 years injecting were 7.6 times more likely to be infected with HIV than those with less than 4 years injection. The finding supports this hypothesis.

(H5)- IDUs who had shared needle with partner when injecting are more likely to be infected with HIV than IDUs who had not shared needles with partners when injecting. In this study, sharing needle was not significantly associated with HIV infection. This finding does not support this hypothesis

(H6)- IDUs who had ever been in a rehabilitation center are more likely to be infected with HIV than IDUs who had never been in a rehabilitation center. The result found that IDUs who had ever been in a rehabilitation center were 5.2 times more likely to infect HIV than IDUs who had never been in a rehabilitation center. The finding supports this hypothesis.

Table 4-6. Comparison of findings and hypotheses

Hypotheses	Findings	
	Support	Sig.
(H1)-The young IDUs are more likely to infect HIV than the older IDUs		
(H2)- IDUs who had been married or living with lover are less likely to infect HIV than the IDUs who were single or divorced.		
(H3)- IDUs who had tattoo are more likely to infect HIV than the IDUs who did not have tattoo	√	*
(H4)- IDUs who had long duration of injecting are more likely to infect HIV than the IDUs who had short duration of injecting	√	*
(H5)- IDUs who had shared needle with partner when injecting are more likely to infect HIV than the IDUs who had not shared needle with partner		
(H6)- IDUs who had ever been in a rehabilitation center are more likely to infect HIV than the IDUs who had never been in a rehabilitation center	√	***

√: support hypothesis; * p<0.05; ** p<0.01; ***p<0.001

CHAPTER V
CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This study aims to find the factors affecting HIV infection among IDUs in Khanhhoa province, using secondary data from a cross-sectional survey on knowledge, attitude and behavior on HIV/AIDS prevention among IDUs in Khanhhoa Province, Vietnam, which was conducted by Khanhhoa Department of Health from July to December 2008. The dependent variable in this study is HIV status and some socio-demographic factors and injecting factors are used as independent variables. Socio-demographic variables include age, sex, marital status, education, daily income, HIV knowledge, alcohol use, having tattoo and ever had STDs. Injecting variables include injecting duration, injecting frequency, injecting place, sharing needle and rehabilitation.

Most IDUs in this study were male and still young, nearly half of them were 25 years old and younger, with the mean age of 26.6. Over two-third of them were single and at the secondary school and lower with daily income less than 60,000 Vietnamdong (average income of people in Khanhhoa province). More than fourth-fifth of them had good HIV knowledge, while about two-fifth of them had tattoo's.

The key findings from this study are that some of the injecting factors are significantly associated with HIV infection. The longer injecting duration of IDUs the higher risks of becoming infected with HIV they became. IDUs with 4 to 7 years of injection were 3.3 times more likely to be infected with HIV than those with less than 4 years injection. Those IDUs with more than 7 years injecting were 7.6 times more likely to be infected with HIV than those with less than 4 years injection. Rehabilitation history was also found to have a relationship with HIV infection. Those who had ever been in a rehabilitation center were 5.2 times more likely to be HIV positive than those who had never been in a rehabilitation center.

Some socio-demographic factors were found to be associated with HIV infection. Factors positively associated with HIV infection were having a tattoo comparing with not having a tattoo. Those IDUs having tattooe were 2.3 times more likely to be HIV positive than those not having tattoos. Daily income also was positively associated with HIV infection at significant level 0.10. Those IDUs whose daily income was less than 60,000 Vietnamdong were 2.5 times more likely to be HIV positive than those with daily income at 60,000 VND and over. Alcohol use was the only factor that was negatively associated with HIV infection, IDUs who reported ever drinking were 55% less likely to be HIV positive than IDUs who reported never drinking.

5.2 Recommendation for HIV/AIDS prevention program

Results of the research will advocate policy makers and stakeholders in understanding the situation of IDUs and providing more effective and practical support for prevention programs to reduce the impacts of the HIV/AIDS epidemic among this group in Khanhhoa province. Findings of the study revealed some characteristics of IDUs which can put them at higher risk of HIV infection. Therefore, the intervention program should pay close attention to those special groups of IDUs beside the general IDUs population. Intervention programs such as “free clean syringes and needles distribution” and “behavior change communication” should focus on IDUs having low income, tattoo, long injecting duration and rehabilitation history as they are at more risk of HIV infection.

5.3 Recommendation for future studies

Perhaps due to the small sample size this study, the analysis could not find a relationship with HIV infection for some factors, therefore a larger sample size is needed for future studies. Moreover, additional questions on sexual characteristics and the concern with HIV intervention programs of IDUs should be put in the questionnaire to explore more information from the IDUs.

Qualitative research is necessary in the future in order to know the deep reasons of the risk behaviors of IDUs.

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APPENDIX

Selected questions that are used in this study

Order	Questions	Code
101	Gender	Male 1 Female 2
102	When were you born?	Year: …….. Don't know year 88
104	What is your highest level of education?	illiterate 1 primary (grade1-5) 2 secondary (grade 6-9) 3 high school(grade 10 - 12) 4 College, universitye 5 post graduate 6
106	What is your marital status?	Single 1 Married 2 Separated, Divorced 3 Widowed 4
113	How much is your income per day?	..... VND
116	During the last 4 weeks how often have you had drinks containing alcohol?	Every day 1 Nearly 7 days per week 2 3-4 days per week 3 Sometimes 4 Never 5
118	Have you ever been in rehabilitation center for detoxication?	Yes 1 No 2
304	From items 304a to 304g, in which ways can HIV be spread by?	
304 a	Sharing injection needle when injecting drug	Yes 1 No 2 I don't know 3
304 b	Being stung by mosquitoes	Yes 1 No 2 I don't know 3
304 c	Having sex without using condoms	Yes 1 No 2 I don't know 3
304 d	HIV-infected mothers transmit the virus to children	Yes 1 No 2 I don't know 3
304 e	Sharing stuff (cups, chopsticks, blankets, screen)	Yes 1 No 2 I don't know 3
304 f	Regular communication (shaking hands ,embracing and kissing, touching on HIV-	Yes 1 No 2

Order	Questions	Code
	infected person)	I don't know 3
304g	According to your knowledge, to prevent HIV infection is possible, isn't it?	Yes 1 No 2 I don't know 3
511	Have you ever been infected STDs?	Yes 1 No 2 I don't remeber 3
608	When did you begin to inject drug?	Year:.....
612	During your injection time, how often have you injected drug?	No 1 Under once a month 2 1 - 3 times a month 3 once a week 4 2 - 3 times a week 5 4 - 6 times a week 6 Once a day 7 2 – 3 times a day 8 Over 4 times a day 9 No answer 99
613	Which place have you often injected drug?	At home 1 Friend's house 2 At street 3 center 4 orther 5 *Specify*.....
614	During last 6 months, have you ever used needle or syringe which be used by other to inject drug?	Always 1 Usually 2 Often 3 Sometimes 4 Never 5
627	Have you ever tatooed your body?	Yes 1 No 2
701	Result of HIV test	Positive 1 Negative 2

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