ORIGINAL ARTICLE

The HIV-Associated Risk Behaviour among Male Drug Abusers in Malaysia

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Summary

To examine the risk factors for HIV type-I infection among male drug addicts in Malaysia, a case-control study was conducted on inmates, aged 20-40 years, at a drug rehabilitation centre in January, 1994. Stratified random sampling was performed. A total of 87 cases and 261 controls, chosen by frequency matching for age and ethnicity, answered self-administered questionnaires. About 59.8% of the subjects administered drugs intravenously and of these, 71.2% shared needles. Practices significantly associated with HIV infection were needle-sharing (OR=8.53; 95% CI=3.36-5.52), sexual relationship with prostitutes (OR=3.70; 95% CI=2.10-6.56), homosexuality (OR=4.05; 95% CI=1.49-11.11) and non-condom use while having sex with prostitutes (OR=2.27; 95% CI=1.05-4.97).

Key Words: HIV, Drug abusers, AIDS, Sexually transmitted diseases, Risk behaviour

Introduction

HIV infection and drug addiction are important health threats in Malaysia. The number of drug abusers is on the increase and despite the intensive treatment and rehabilitation programmes undertaken, the recurrence rate is about 61%[1]. Blood screening programmes amongst drug addicts held in rehabilitation centres and prisons throughout the country are now on-going. With an estimated 100,000 hardcore addicts, of whom 80% inject heroin and share needles routinely, it follows that approximately 80,000 addicts would be at risk of contracting the HIV virus[2]. Sorenson suggests that the risk of HIV infection among drug addicts is higher since drug abuse weakens their immune system[3]. Furthermore, when in a state of intoxication there is a further possibility that they may engage in unsafe sex or share contaminated needles.

The estimated cumulative total of HIV infected persons since the start of the pandemic is about 15 million, including one million children[4]. This total is expected to reach 40 million by the year 2000[5]. The prevalence of HIV infection in Malaysia is still low compared to the neighbouring countries; nonetheless, the situation needs to be constantly monitored. The first AIDS patient identified in Malaysia was in December 1986 and until September 1994, there have been detected 10,048 HIV infected cases[6].

The World Health Organization's strategy of HIV prevention is by behaviour modification, that is, avoiding the activities known to be at risk for HIV infection[7]. As such, this study is undertaken with the aim of determining the relationship between high risk behaviour and HIV infection among Malaysian male drug addicts.

Subjects and Methods

This case-control study was conducted at the largest drug rehabilitation centre in Malaysia. The sample was chosen by stratified random sampling and the inclusion

criteria were drug addicts aged 20-40 years, had completed detoxification and had received their confirmation test results (Western Blot) from the Institute for Medical Research, Malaysia by 31st December, 1993. The total sample size was 348, 87 HIV-positives as cases and 261 HIV-negatives as controls, matched for age and ethnicity[8].

Pre-tested self-administered questionnaires in Bahasa Malaysia were used to collect the information. An Indian and Chinese translator was provided for 38 subjects who were illiterate and could not converse in Bahasa Malaysia. The researcher as well as her two assistants were unaware as to the serological status of the subjects at the time of data collection.

Data was analysed using EpiInfo version 5 (CDC Atlanta, 1990). The Chi squared test of association was used on the categorical data, while for quantitative data t-test for two independent samples was used to test for the difference in mean age. Stratified analysis using Mantel Haenszel test was used to statistically adjust for education and occupation[9]. Odds ratio was used to estimate the risk together with 95% confidence intervals.

Results

The mean age for cases were 30.9 ± 5.1 years and 29.0 ± 5.5 years for the controls ($p > 0.05$). On the whole, about 77% of the subjects were Malays, about 75% had received secondary school education, 74% claimed to be single and the majority had permanent or temporary jobs, only 5% were unemployed before being detained. The cases and controls were comparable by age, ethnic group, level of education, marital and occupational status (Table I).

The study showed that cases from broken homes were three times more at risk to contract HIV compared to those who came from stable families (OR=2.16; 95% CI=1.01-4.58) (Table II). There was a significant association between HIV infection and early misbehaviour, such as being detained by the police for various offences while still schooling (OR=2.15; 95% CI=1.09-4.25) or had had disciplinary action taken against them by the school principal (OR= 2.05; 95% CI=1.12-3.69) (Table III).

The odds of developing HIV infection for those who injected drugs intravenously (IVDUs) was 9 times

Table I

Characteristics		Cases (n = 87)	Controls (n = 261)	p*
Ethnic	Malay	70	199	0.67
	Chinese	7	29	(NS)
	Indian	10	33	
Education	None	1	12	0.318
	Primary	19	42	(NS)
	Secondary	64	200	
	College/University	3	7	
Marital Status	Married	15	53	0.882
	Single	66	191	(NS)
	Divorced	6	17	
Occupation	Permanent	26	104	0.079
	Temporary	54	148	(NS)
	Unemployed	7	9	

** p < 0.05 is significant NS = not significant*

Table II
Family problems experienced before 15 years of age

Problems	Cases	Controls	p*	OR	95% CI
Parents divorced	15	23	0.047	2.16	1.01-4.58
Either parent passed away	21	46	0.239	1.49	0.79-2.77
Parents often quarrel	6	29	0.354	0.59	0.19-1.53

** p < 0.05 is significant OR = Odds Ratio CI = Confidence Interval*

Table III
Misbehaviour during school years

Behaviour	Cases	Controls	p*	OR	95% CI
Smoke cigarettes	53	139	0.263	1.37	0.81-2.31
Use drugs	20	53	0.704	1.17	0.63-2.18
Detained by police	19	30	0.026	2.15	1.09-4.25
Disciplinary action	27	46	0.016	2.05	1.12-3.69

** p < 0.05 is significant OR = Odds Ratio CI = Confidence Interval*

Table IV
Distribution of cases and controls involved in high risk activities

Activities	Cases no/total	Controls no/total	OR	95% CI
Inject drugs	78/87	130/261	8.73	4.03-19.52
Needle sharing	72/78	76/130	8.53	3.36-25.52
- 10 persons or less	52/72	62/76	0.59	0.25-1.36
- 11 persons or more	20/72	14/76	1.77	0.76-4.15
Sex with prostitutes	64/87	112/261	3.70	2.10-6.56
Sex with multiple partners	58/87	159/261	1.28	0.75-2.21
- 10 persons or less	49/58	148/159	0.40	0.14-1.14
- 11 persons or more	9/58	11/159	2.47	0.88-6.91
Homosexuality	11/87	9/261	4.05	1.49-11.11
Never use condom during;				
- sex with prostitute	51/64	71/112	2.27	1.05-4.97
- sex with multiple partners	47/58	128/159	1.03	0.45-2.39
- sex with other men	8/11	6/9	1.33	0.13-13.74

OR = Odds Ratio CI = Confidence Interval

greater than those who did not (OR=8.73; 95% CI=4.03-19.52) (Table IV). In terms of needle sharing, the risk of contracting HIV was 9 times greater in IVDUs who shared needles compared to those who did not (OR=8.53; 95% CI=3.36-25.52), however the number of persons sharing did not associated with the risk of HIV infection.

In terms of sexual behaviour, significantly more cases admitted having visited prostitutes and they were 4 times more at risk of being infected with HIV compared to those not involved (OR=3.70; 95% CI=2.10-6.56) (Table IV). Those who did not use condoms during sex with prostitutes were 3 times more likely to contract HIV compared to those who used condoms (OR=2.27; 95% CI=1.05-4.97). This study however, did not show a positive association between HIV infection and sex with multiple female partners. There were 20 (5.7%) homosexuals in this study, and they were 4 times more likely to get HIV compared to non-homosexuals (OR=4.05; 95% CI=1.49-11.11).

When the HIV-related high-risk behaviours were compared amongst the races, only needle-sharing and sex with prostitutes showed statistical significance (Table V). Even though all races were at risk, the Malays were 33 times more at risk if they shared needles (OR=32.74; 95% CI=5.08-1352) and 5 times more at risk if they had sexual relations with prostitutes (OR=4.21; 95% CI=2.25-7.91).

The effect of confounders on the association between HIV infection and the related high-risk behaviours was tested using the Mantel Haenszel technique[8]. Results showed that the difference between the crude odds ratio

Table V
High risk behaviour associated with HIV infection by ethnic group

High risk behaviour	Ethnic groups	OR	95% CI
Needle sharing	Malay	32.74	5.08-1352
	Chinese	7.20	0.41-409
	Indian	6.67	0.65-325
Sex with prostitutes	Malay	4.21	2.25-7.91
	Chinese	1.13	0.15-13.9
	Indian	undefined	

OR = Odds Ratio CI = Confidence Interval

Table VI
Odds ratio after adjustment for confounders in the association between HIV infection and high-risk behaviour

High risk behaviour	Crude OR	OR after adjustment for	
		Education	Occupation
IVDU	8.73	8.00	8.58
Sex with prostitutes	3.70	3.64	3.64
Homosexuality	4.05	4.02	3.70

OR = Odds Ratio Adjusted OR calculated using Mantel Haenszel technique

and the adjusted odds ratio for the suspected confounders tested was less than 10%. Thus education and occupation were not confounders in this study (Table VI).

Discussion

The results of this study suggest that addicts who came from broken families were thrice more at risk of getting HIV compared to those with stable family backgrounds. Children below 15 years are still dependent upon their parents, but when family crises arise, parents tend to neglect their children. Findings of our study suggest that HIV infection was associated with addicts who had shown antisocial and criminal behaviour in early life. This finding is comparable to the study done by Tomas *et al.*, which showed a strong association between intravenous drug use and early misbehaviour[10]. All the respondents smoked and a significant percentage had developed the habit while still in school. About 21% of them admitted trying drugs while still schooling. According to reliable sources, in 1993, 180 students from Forms 1-6 were found to have used drugs[1]. The actual figure must surely be higher since urine tests for morphine among students in schools are not done routinely, but more often conducted at the request of headmasters. The mean age when they began experimenting with drugs was 20.9 ± 4.0 years. Schrager *et al.* showed that in the Bronx, New York, the mean age when adolescents started trying drugs was 19 years[11]. Over the few years between leaving school and the age of 20, the prevalence of smoking amongst the inmates had increased from 55.2% to 92%. At the same time, drug addiction increased by 31%, from 21% to 52%. The inmates were found to be sexually active at the age of 20, the possible reason being that they also began having an active social life at around that age.

The study also showed that HIV infection was significantly associated with certain high-risk behavioural practices like intravenous drug use ($p < 0.0001$), sharing of needles during drug use ($p < 0.0001$), sexual relations with prostitutes ($p < 0.0001$) and homosexual relationships ($p < 0.05$). A descriptive study on 61 HIV-seropositive patients at the Kota Baru Detoxification ward in Kelantan showed that 58.6% of the subjects shared needles with 2-10 others[12]; this contrasts with 71.2% in this present study, indicating that needle-sharing occurs predominantly in small groups of addicts.

Needle-sharing was most widely practised by the Malays (76.1%) compared to the Indians (64.5%) and Chinese addicts (38.1%). Perhaps, this is one reason why the majority of HIV seropositives are Malays. As regards condom use, almost 80% of the cases did not use condoms during sexual encounters with prostitutes compared to 63.4% among the controls ($p < 0.05$). Swaddiwudhipong *et al.* found that half of his subjects from urban areas and two-thirds from the rural areas of Mae Sot, Tak Province, Thailand, did not use condoms[13]. An evaluative study following health education campaigns and condom distribution to 621 prostitutes in the same province revealed that condom use rose three-fold to 50.4% within that year[14]. Subsequently, the incidence of gonorrhoea and the HIV seroconversion rate dropped. The underlying mechanism hypothesized is that the presence of syphilitic or herpetic ulcerative genital lesions facilitate entry of the HIV through the disrupted membranes[15]. Similar studies have demonstrated that free condom distribution and intensified HIV/STD health education campaigns directed at prostitutes are effective in increasing condom usage, thereby reducing the risk of HIV transmission[16,17]. Health promotion programmes offered to the high-risk groups should therefore emphasize safer and regular use of condoms during sex.

Before firm conclusions are drawn, the limitations of this study should be acknowledged. The study population was obtained from the largest drug rehabilitation centre in Malaysia, whereby inmates are brought from all over Malaysia and thus can be said to be representative of the drug addict population in the country. However, the control group from such an institution obviously does not reflect the general population; perhaps another study in future can use a control group from the community for comparative purposes. Secondly, the small sample size for Chinese and Indians may have limited our ability to ascertain significant associations for certain risk factors. However since the odds ratios are increased, this suggest that the Chinese and Indians, although not statistically significant because of their small numbers are associated with increased risk of seroconversion. Thirdly, the data

obtained was based on self-confessed reports and was entirely dependent on the recollection of the inmates' previous experiences. No other records against which the data could have been compared were available.

There is no explanation to why some drug addicts involved in the high-risk activities associated with HIV infection seroconverted while others did not, even though the present study showed evidence that the majority of them had been exposed to the etiologic agent. Important factors such as the host immunity and nutritional status could be the contributing factors to HIV susceptibility. The present study will provide impetus for further research in this field.

Conclusion

This study shows that male drug addicts in Malaysia are largely involved in the HIV-related risk factors which include intravenous drug use, needle-sharing, homosexuality, sexual relations with prostitutes and non-condom use while having sex with prostitutes. As such HIV intervention programmes should be targeted at drug addicts because they will serve as a dominant source for heterosexual transmission within the country. Focusing intensive health education could be the best approach to control the growing HIV epidemic in Malaysia.

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