

HIGH RISK BEHAVIOR RELATED TO HIV TRANSMISSION AMONG RECENTLY DIAGNOSED TB PATIENTS IN JAKARTA

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Abstract. This study investigated the demographic and high risk behavior characteristics among recently diagnosed pulmonary tuberculosis patients aged 18-40 years old in Jakarta, Indonesia. Three hundred and four participants were recruited voluntarily from two general hospitals. Among the study population, 38.5% were unemployed, 69.7% were in low socio-economic condition, and 69.7% had a high school or higher level of education. About 8% had received a transfusion, 0.3% were intravenous drug users (IVDU) and had sex with other IVDU's, no males admitted to being homosexual, 3.2% of males were bisexual, 20.1% (35.5% of males, 4% of females) engaged in extramarital heterosexual intercourse, and 3.6% (7.1% of males) had one or more sexually transmitted diseases (STD). We found very strong associations between gender and extramarital heterosexual activity ($p < 0.001$, prevalence odds ratio (POR) 13.11), between occupation and extramarital heterosexual activity ($p < 0.001$, POR 3.84), and between extramarital heterosexual contact and a history of an STD ($p < 0.001$, POR 20.86). High risk activities were common among these TB patients, especially among males. These results suggests that the necessary social conditions for transmission of HIV are common in Jakarta.

INTRODUCTION

Subdit Penyakit Kelamin (1993) and Pusat Penyuluhan Kesehatan Masyarakat (1993) reported that from 1987 to June 30, 1993 there were 144 HIV-positive cases out of a total of 836,043 tested individuals in Indonesia (Subdit Penyakit Kelamin, 1993). With a known mode of transmission, 94% of positive cases were due to sexual transmission. Since this fatal disease is still incurable, promotive and preventive strategies especially through education and behavior interventions are essential. However, studies done in Indonesia regarding sexual practices, particularly sexual behaviors among general population currently are still limited. Thus the level of risk of HIV transmission in the general population of Indonesia is not known.

A study done by Yadi *et al* (1992) reported that 7.85% of 242 male travellers had ever had extramarital sexual intercourse. Hermawan (1992) reported that 0.61% of 495 female workers had had extramarital sexual intercourse. Several other studies in Indonesia reported very high percentages of high risk sexual practices among certain subgroups

of the general population, especially very mobile people.

Mariyah (1992) reported in her study that 90% of 30 migrant construction laborers in Bali had sexual contact with multiple partners. Suarmiartha, *et al* (1992) reported that 88% of 120 long trip truck drivers engaged in risky sexual practices with multiple partners.

Recently diagnosed tuberculosis patients represent a subgroup perhaps more representative of the general population with regard to sexual practices than the above subgroups. In this paper we report the prevalence of specific sexual behaviors in this group.

The results of this study should help health officials to recognize the potential for the spread of human immunodeficiency virus (HIV) and other sexually transmitted diseases in Indonesia and to develop effective intervention/prevention programs.

MATERIALS AND METHODS

Study population and procedures

Data were collected from eligible patients who agreed to participate in this cross sectional study.

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Eligible patients were defined as pulmonary tuberculosis cases who had been diagnosed within the last 12 months, with or without extrapulmonary involvement, who were 18-40 years old and were under treatment in either of two general hospitals in Jakarta (general hospital Persahabatan and general hospital Pasar Rebo) during the time of enrolment in the study. Eligible patients were identified and recruited with the cooperation of the physicians who diagnosed them at the hospital clinics. The physicians were asked to refer the eligible patients who met the study criteria to the investigator with information about their diagnosis without revealing the patients' identities. The eligible patients were then invited to participate in this study and their consent was obtained using an informed consent form. The consent form did not contain any identifying information on the participants, assuring that the patients' identities could not be discovered.

During the 5 months of data collection process (July-November, 1993), 304 participants (96%) were recruited among 318 eligible patients. The interviews were done anonymously. Basic demographic variables investigated included gender, age, ethnicity and sub-ethnic group, education, marital status, and occupation, as well as pregnancy status for female participants. Variables regarding high risk practices included history of receiving a transfusion of blood (or blood product), exposure to blood (or blood products) in health or laboratory facilities, injecting nonprescription drugs or other substances, sexual contacts with persons known to have injected nonprescription drugs/substances, sexual intercourse with individuals of the same gender, sexual intercourse with both men and women, extramarital heterosexual intercourse, history of sexually transmitted diseases, and number of different sex partners in the last 12 months. The questionnaire was administered by a trained interviewer.

Statistical analysis

Descriptive analysis of demographic and behavior variables was done. Several methods for testing hypothesis, such as chi-square test, Fisher exact test, Pearson correlation test, student's *t*-test, ANOVA test, Kruskal Wallis test were used to analyze relationships among variables. To estimate the effect of independent variables on dependent

variables, we also measured the prevalence odds ratio (POR) with the corresponding 95% Cornfield confidence interval.

RESULTS

Demographic characteristics

Table 1 presents the demographic characteristics of the study population. Of the 304 participants 155 were males, and 149 were females. Fifty-two percent of participants were 21 years old to 30 years old. Only 0.7% of participants were not native Indonesian (*eg* Chinese descendants). Only 34.4% of native Indonesian participants were natives of Jakarta (called "Betawi people"). Most of participants (69.7%) had moderate to high levels of education. Having moderate education means that they have spent education in senior high school, and having high education means that they have experienced a level of education beyond senior high school, such as academy or university. About 70% or participants had spent more than seven years in school. Sixty percent of participants worked in the private sector (such as being employees in private enterprises, or running private businesses) while 38.5% were unemployed. Judging from the participants' occupation, 69.7% were in a low socioeconomic condition. About 54% were married. Among female participants, only 4.1% were pregnant.

Practice characteristics

Table 2 presents the prevalence of high risk behaviors characteristics for HIV/STD transmission among participants. Table 3 presents the age distribution percentages of participants reporting their high risk practices at the time reported they committing that activity. Tables 4 summarizes the statistically significant associations between extramarital heterosexual intercourse and other variables.

In this study we found that 8.2% of participants had ever received a blood transfusion. There was no difference in percentages of transfusion between male and female participants. Only one person (0.3%) was an intravenous drug user (IVDU) and

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Table 1

Demographic characteristics (Total n = 304).

| Characteristic | Participants | Percent |
|-------------------------------------|--------------|---------|
| Gender | | |
| male | 155 | 51.0 |
| female | 149 | 49.0 |
| Age | | |
| 18-20 yrs | 47 | 15.5 |
| 21-30 yrs | 158 | 52.0 |
| 31-40 yrs | 99 | 32.5 |
| Ethnicity | | |
| native Indonesian | 302 | 99.3 |
| Chinese descendent | 2 | 0.7 |
| Sub-ethnicity^a | | |
| native of Jakarta (Betawi) | 104 | 34.4 |
| Java | 73 | 24.4 |
| Sunda | 69 | 22.8 |
| others | 56 | 18.5 |
| Level of education | | |
| low | 92 | 30.3 |
| moderate | 195 | 64.1 |
| high | 17 | 5.6 |
| Employment | | |
| employed in public sector | 33 | 10.8 |
| employed in private sector | 154 | 50.7 |
| unemployed | 117 | 38.5 |
| Socio-economic condition | | |
| low | 212 | 69.7 |
| moderate/high | 59 | 19.4 |
| uncertain | 33 | 10.9 |
| Marital status | | |
| married | 165 | 54.3 |
| not married | 139 | 45.7 |
| Pregnancy status^b | | |
| pregnant | 6 | 4.1 |
| not pregnant | 142 | 95.9 |

a: only for native Indonesian; n = 302

b: n = 149

also had sex with other individuals who were also intravenous drug users. None of the male participants (0%) admitted to being homosexual. Five male participants (3.2%) admitted to having sexual intercourse with both males and females, and among them 60% were married. Forty percent of participants admitting to having bisexual activity practiced this behavior within the last one year with up to 3 different sex partners.

We also found that 20.1% of participants engaged in extramarital heterosexual intercourse;

Table 2

High risk behavior characteristics for HIV/STD transmission (Total n = 304).

| Characteristic | Participants | Percent |
|---------------------------------------|--------------|---------|
| Transfusion | 25 | 8.2 |
| IVDU ^a | 1 | 0.3 |
| Sexual contact with IVDU ^b | 1 | 0.3 |
| Homosexual activities ^c | 0 | 0.0 |
| Bisexual activities ^c | 5 | 3.2 |
| Extramarital heterosexual contact | 61 | 20.1 |
| Prior STD's ^d | 11 | 3.6 |
| Occupational accident ^e | 0 | 0.0 |

a: n = 302 (2 cases were missing)

b: n = 300 (4 cases were missing)

c: n = 155 (only for male participants)

d: n = 302 (2 cases were missing)

e: n = 1 (only 1 sample worked in health or medical field)

Table 3

The age distribution percentages of participants reporting their high risk practices when they committed that activities.

| Characteristic | Participants | Percent |
|--|--------------|---------|
| Age when reported committing the latest extramarital heterosexual contact^a | | |
| 10-19 yrs | 6 | 9.8 |
| 20-29 yrs | 40 | 65.6 |
| 30-39 yrs | 15 | 24.6 |
| Age when reported suffering the latest STD's^b | | |
| 10-19 yrs | 1 | 9.1 |
| 20-29 yrs | 8 | 72.7 |
| 30-39 yrs | 2 | 18.2 |

a: n = 61

b: n = 11

39.3% within the last one year, most of them reported 1 to 3 different sex partners. Thirty-six percent of male participants engaged in extramarital heterosexual intercourse whereas only 4% of females did. We also found that 65.6% did the latest extramarital sexual activities when they were at the age of 20 to 29 years. Table 4 demonstrates that having extramarital heterosexual intercourse

Table 4

Correlates of extramarital heterosexual activity (yes vs no) among participants (n = 304).

| Variables associated | p-value | Prevalence odds ratio (POR) | Cornfield 95% CI |
|----------------------|----------------------|-----------------------------|------------------|
| Gender | < 0.001 ^a | 13.11 | (5.13 - 35.57) |
| Age | < 0.001 ^b | - | - |
| Occupation | < 0.001 ^a | 3.84 | (1.95 - 7.62) |
| STD | < 0.001 ^a | 20.86 | (3.98 - 146.29) |

a: Obtained using chi-square tests for proportion

b: Obtained using *t* test for continuous measures

was strongly associated with gender ($p < 0.001$), age ($p < 0.001$), occupation ($p < 0.001$) and history of suffering from sexually transmitted disease ($p < 0.001$).

Table 4 also shows that the odds of having extramarital heterosexual contact among male participants compared to females, were 13.11 and the odds of having this activity among participants who suffered from STD compared to participants who did not were 20.86. This table also showed that the odds of conducting this activity among participants who worked in private sectors (*ie* participants who were being employees in private enterprises, or running their own private business) were 3.84 times the corresponding odds among participants who did not work in the private sector.

DISCUSSION

The National Survey of Family Growth in the USA suggested that over time, most people have a number of sexual partners and those who are in their 20s and 30s tend to have the highest number (Ehrhardt, 1992). This National Survey also indicated that over time males have more sexual partners than females (Ehrhardt, 1992).

The failure to find homosexual individuals in this study suggested that the issues related to homosexuality are still very culturally sensitive in Indonesia and that men who have sex with other men are unlikely to admit to it. Oetomo (1992) stated that it is hard to find much information about homosexuals in Indonesia because gay people are still afraid of stigmatization.

Extramarital heterosexual intercourse was quite common (20%) among participants in their aged 20s, especially among males (male female ratio was 9). This observation is consistent with findings from other studies. Satoto (1992) reported that among 1,086 high school students, 4.1% of males engaged in premarital sexual intercourse but only 1.5% of females did (male female ratio 3 : 1). These findings suggest that there are many opportunities for HIV transmission in the general population in Indonesia.

We also observed a very strong association between having extramarital heterosexual intercourse and occupation ($p = 0.0002$). The likelihood of having extramarital heterosexual contact among participants who worked in the private sector was 3.84 times the corresponding likelihood of having the same activity among participants who did not work in private sector (POR = 3.84). Perhaps private business or certain conditions related to this occupation may give more opportunities for the participants to commit extramarital heterosexual practices than in the public sector.

In this study we found 7.1% of male participants and none of the female participants reported experiencing sexual transmitted diseases (STD). Other studies in Indonesia have reported higher proportions of people afflicted by STD. Mariyah (1992) reported that 51.9% of migrant construction laborers who committed sexual intercourse had been afflicted with STD. Yadi *et al* (1992) reported that 23.3% of male travellers who ever practiced sexual contact during the trip, had ever been infected with STD. We also found that 73% of 11 participants who got STD, reported that they had an STD when they were 20 to 29 years. This finding supports the

previous conclusion that the most active phase of sexual life is in the 20s and 30s.

Several limitations or weaknesses regarding this study should be noted. It is very possible that many participants were ashamed to answer questions regarding high risk practices, so the actual proportion of high risk behaviors might have been higher if we had probed the participants more intensely or conducted in-depth interview. As had been reported previously the proportion of eligible patients who declined to participate in our study was quite small (4.4%). So the problem of selection bias caused by voluntary enrolment in this study was not serious. In this study we did not analyze all the possible confounding factors and interaction or modification effects that might have occurred. In interpreting the results presented in this report we should extrapolate the findings among participants in both hospitals to other populations or other environment such as general population of Jakarta or Indonesia only with great caution. Our results, however suggest that factors which promote HIV/STD transmission are more common in the general population of Indonesia than previously thought.

CONCLUSION AND RECOMMENDATIONS

From this study we have found participants reporting many kinds of high risk practices such as having transfusion, being intravenous drug users (IVDU), having sexual intercourse with IVDU's, having bisexual relationship, having extramarital heterosexual intercourse. Extramarital heterosexual intercourse was particularly prevalent among males. Participants also reported a previous history of sexually transmitted diseases (STD). We found a very strong relationship between gender and extramarital heterosexual activity, between occupation and extramarital heterosexual activity, and between extramarital heterosexual contact and STD, all factors suggest promoting conditions for transmission of HIV. Although, Indonesia is a religious nation, our study suggests that the level of promiscuity among certain communities may be quite high. Therefore Indonesia has the factors necessary to promote and sustain a rapid, devastating epidemic, especially in the absence of systematic and vigorous intervention. Additional surveys need to be done to confirm the impression from the current study that sexual promiscuity is occurring in the

general population of Indonesia at a high enough to sustain an epidemic of HIV. Such studies are also appropriate for other countries in Southeast Asia at high risk of HIV transmission in which the sexual behavior of the general population has not been determined.

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