Travel, sexual behaviour, and the risk of contracting sexually transmitted diseases

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This study investigates sexual behaviour and the risk of contracting sexually transmitted diseases among travellers departing from Hong Kong, with an aim of supporting the design of local intervention in continuing health promotion. Travellers were interviewed by five trained multilingual interviewers in the departure lounge at Kai Tak International Airport, Hong Kong, between May and June 1996, by using a structured, pretested questionnaire. Forty-four percent (168/383) of the respondents who travelled at least once within the previous year had had sex with strangers during their travel and 37% (139/376) of the respondents reportedly do not use condoms during sexual intercourse. Middle-aged and married travellers were more likely to be in the high-risk group. These findings reflect the urgent need to target travellers in any strategy that is designed to prevent the spread of sexually transmitted diseases in Hong Kong and the Asia Pacific region.

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Key words: HIV infections/prevention & control; Knowledge, attitudes, practice; Risk-taking; Sexually transmitted diseases/psychology; Travel

Introduction

Travel is considered to be an important risk factor in the spread of sexually transmitted diseases (STDs) including human immunodeficiency virus (HIV) infection in the Asia Pacific region, as elsewhere in the world. Various aspects relating HIV infection risk to international travel have been reviewed by von Reyn et al,[1] and Hawkes and Hart.[2] As travellers are away from their normal environment and often in circumstances that allow anonymous promiscuity, they may become involved in high-risk sexual activity. Some travellers move from country to country solely to exploit sexual opportunities with people from different races and nationalities.[3] Such travellers have a high risk of contracting STDs, including HIV, because their sexual relations are often with persons who have a high probability of carrying these diseases.[3]

A higher rate of sexual contact with overseas (62%) compared with local (21%) prostitutes was indicated by 883 male attenders of a general hospital in Sweden.[4] Other studies indicate significant associations between travel, sexual behaviour, and HIV infection.[2,5-8] In addition, studies suggest a high incidence of sexual relationships with a new partner during travel for European expatriates in Africa,[9] travellers in the United Kingdom,[10] young travellers in Australia,[11] and Japanese tourists in Thailand.[12] In Hong Kong, there is also an association between travel and STDs among subcontinental travellers,[13,14] attenders of an STD clinic,[15] and university staff.[16] High-risk activities such as sexual intercourse with commercial sex workers and the inconsistent use of condoms have been identified in some studies.[10,12-16] Taken together, the studies implicate sex during travel as an important public health issue because it carries a high risk of acquiring and transmitting STDs.

Hong Kong is a hub of international travel and entertains a large number of both business and holiday travellers each year. The high per capita income of the population, limited local entertainment facilities (especially sex-related), and the availability of hospitality services in neighbouring countries encourage a large number of local people to travel out of Hong Kong. The demand for overseas travel is increasing everywhere in the world and Hong Kong residents (6.3 million) made over 37 million overseas visits in 1996—a 55.8% increase compared with 1990 and a 7.8% increase compared with the previous year (Hong Kong Tourist Association, written communication). There is

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evidence that a substantial proportion of this rise in overseas travel involves various high-risk sexual activities. To develop a risk profile of the sexual behaviour of travellers and to assess the likely impact of travel in promoting HIV infection and other STDs in the community, we have carried out a series of studies among different groups of the Hong Kong population. This report describes the result of the study conducted among travellers at Kai Tak International Airport in Hong Kong.

Methods

Subjects

Travellers who were leaving Hong Kong for another country, either for business or tourism, were selected for interview in the departure lounge at Kai Tak International Airport between May and June 1996. Travellers who were accompanied by their family and those not within the age range of 18 to 65 years were excluded. A random location in the departure lounge was used as a starting point and every third person in each row was approached for interview.

Interviewers

Five interviewers who were fluent in a total of eight languages (Cantonese, Mandarin, Japanese, English, French, German, Hindi, and Bengali) were recruited to perform the interviews. Interviewers were trained in techniques of conducting research in the sensitive area of sexual health, and regular meetings were organised to discuss the progress of the survey and any special problems encountered.

Questionnaire

A structured questionnaire was designed mainly to obtain information on HIV-related knowledge, attitude, and risk behaviour. The questionnaire sought information in the following areas: demographic characteristics (10 multiple-choice type questions); perceived susceptibility to AIDS (three 4-point scale questions and one yes/no type question); attitudes to people having sex during travel (one yes/no question); attitudes to having multiple sexual partners (one 4-point scale question); attitudes to sex during travel and safe sexual practice (four multiple-choice questions); and travel history over the previous year (one yes/no question). Additional questions, not reported here, tested knowledge of and attitudes towards HIV and acquired immunodeficiency syndrome (AIDS), preferences for travel destinations, substance use, and self-efficacy towards condom use.

Procedure

Most data were collected during a face-to-face interview. The questions on sexual behaviour, however, were given to the subjects for self-completion to improve the reliability of the responses. Questionnaires were also given to those participants who were willing and able to complete the questionnaire by themselves. In such cases, interviewers were available to answer any inquiries from the participants.

Questionnaire evaluation

Respondents' sexual behaviour was assessed from responses to a question asking whether they had had sex during travel within the last 12 months with the local people of a destination, other tourists, or commercial sex workers. The question used a yes/no forced-choice response format. The response to this question was used as an indication of whether respondents had had sex with strangers. Safe sexual practice was assessed from a question asking respondents to indicate whether they usually used condoms during sexual intercourse (with response categories of 'always', 'sometimes', 'often', 'not at all', and 'not applicable'). For the purpose of analysis, these responses were recoded into 'consistent use' or 'inconsistent use' of condoms, or 'do not use condoms'; 'not applicable' was considered as missing data.

Statistical analysis

Data were entered as a dBase III (database package for data management) file and analysed using the Statistical Package for Social Sciences for Windows version 6.1. Statistical analyses were performed on data from those who had travelled within the previous year and from those who had had sexual contact during travel. Questionnaires were excluded from analysis if more than one section was incomplete. Questionnaires with occasionally unanswered questions, were included in the analysis, thus sometimes resulting in variations of sample size. The predictor variables were recoded into the categories shown in Tables 1 to 4 for a meaningful interpretation of the findings. Proportionate differences were analysed using the Chi squared test. To estimate relative risks, crude odds ratios (ORs) with 95% confidence intervals were obtained using Epi info 5—a word processing, database, and statistics programme for epidemiological study which was developed jointly by the World Health Organization and the United States Centers for Disease Control. Multiple regression analyses were performed to adjust for potential confounders. Due to the smaller number (109/438) of female respondents in the study, analyses were not performed separately for males and females. However, the analyses were adjusted for age and gender since these two factors may influence sexual behaviour and safe sexual practices.[17-18] Both adjusted and unadjusted ORs are quoted in the results.

Results

A total of 504 travellers were approached and 438 (87%) agreed to be interviewed. Among the subjects, 45% were Caucasian, 22% were Chinese, 32% were Asians, and 1% was African. Seventeen percent were aged between 18 and 25 years, 65% between 26 and 45 years, and 18% between 46 and 65 years. Seventy-five percent of the subjects were male, 57% were married, 35% were single, and 8% were separated, divorced, or living with a partner. Most (72%) of the participants were university or college graduates. Ninety-one percent (383/438) of the respondents had travelled at least once within the previous year and 44% (170/383) had had sex (commercial or otherwise) with strangers (local people, commercial sex workers, or other tourists).

Sexual behaviour during travel

Sexual intercourse during travel was associated with gender, age, ethnicity, and sexual attitude (Table 1). Younger people aged 18 to 25 years were more likely, over the course of travel during the previous year, to have had sexual intercourse with strangers than those in the other age groups (OR=0.30; 95% confidence interval [CI], 0.16-0.54 for the 26-45 years age group; OR=0.30; 95% CI, 0.14-0.61 for the 46-65 years age group). Males were more likely (OR=1.70; 95% CI, 1.01-2.84) than females, and Caucasians were more likely (OR=3.97; 95% CI, 2.09-7.53) than Chinese travellers to have had sex with strangers during travel. Those who approved of multiple sexual partners were more likely (OR=2.27; 95% CI, 1.42-3.61) to have had sex during travel than those who disapproved. Travellers who agreed that some people travel mainly for sexual experience were less likely (OR=0.52; 95% CI, 0.28-0.97) to have had sex during travel than those who did not report so.

Table 1. Unadjusted and adjusted odds ratios (95% confidence intervals) for travellers who had sexual intercourse with strangers* (n=383)

Variables	Proportion of travellers who had sexual intercourse with strangers† (%)	Unadjusted OR (95% CI)	Adjusted‡ OR (95% CI)
Gender			
Female	35/86 (41)	1.00	1.00
Male	132/289 (46)	1.23 (0.73-2.06)	1.70 (1.01-2.84)
Age			
18-25 years	40/60 (67)	1.00	1.00
26-45 years	100/251 (40)	0.33 (0.18-0.62)	0.30 (0.16-0.54)
46-65 years	27/67 (40)	0.34 (0.15-0.74)	0.30 (0.14-0.61)
Ethnicity			
Chinese	20/73 (27)	1.00	1.00
Caucasian	98/178 (55)	3.25 (1.73-6.14)	3.97 (2.09-7.53)
Others	50/129 (39)	1.68 (0.86-3.29)	2.08 (0.49-8.78)
Marital status			
Married	83/221 (38)	1.00	1.00
Never married	73/136 (54)	1.93 (1.22-3.04)	1.49 (0.90-2.47)
Divorced/separated/widowed	12/23 (52)	1.81 (0.71-4.65)	2.07 (0.85-5.06)
Education			
Secondary school or below	40/95 (42)	1.00	1.00
College/university	126/280 (45)	1.13 (0.68-1.85)	1.12 (0.69-1.83)
Frequency of travel			
<5 times	104/254 (41)	1.00	1.00
≥5 times	64/126 (51)	1.49 (0.95-2.34)	1.54 (0.98-2.41)
Attitudes to having multiple sexual partners			
Disapprove	93/237 (39)	1.00	1.00
Approve	70/119 (59)	2.21 (1.38-3.55)	2.27 (1.42-3.61)
People travel for sex?			
No	33/55 (60)	1.00	1.00
Yes	84/203 (41)	0.47 (0.25-0.90)	0.52 (0.28-0.97)
Travellers usually have sex with commercial sex workers?			
No	42/79 (53)	1.00	1.00
Yes	80/194 (41)	0.62 (0.35-1.08)	0.72 (0.41-1.25)

* Sexual intercourse with local people, commercial sex workers, or another tourist
† Total cases may not add up to 383 due to missing cases
‡ Adjusted for gender and age (as appropriate)

Condom use

Of the respondents, 36 (8%) reported that condom use was 'not applicable' to them; 26 (6%) failed to answer this question. These 62 cases were not included in the analysis. Of the remaining 376 respondents, 237 (63%) reported they usually use condoms during sexual intercourse (with 47% using them always and 16% using them sometimes or often); 37% of the respondents do not use them. Those aged between 26 and 45 years, and 46 and 65 years (OR=0.27; 95% CI, 0.12-0.61 and OR=0.08; 95% CI, 0.03-0.19, respectively) were less likely to use condoms than those within the age range of 18 to 25 years (Table 2). Never-married respondents were more likely (OR=3.10; 95% CI, 1.67-5.73) than married respondents to use condoms during intercourse. Respondents who reported a high perceived susceptibility of acquiring HIV compared with those with low perceived susceptibility of acquiring HIV were more likely (OR=2.74; 95% CI, 1.70-4.36) to use condoms during sexual intercourse.

Risk behaviour

Among the travelling public in the study, 44% (168/383) reportedly had had sex with strangers during their travel within the previous year. Of these 168 respondents, eight claimed that the question about condom use was not applicable and two respondents did not reply to this question, leaving 158 for analysis. Of these 158 travellers, a high-risk group was identified as those who had had sex during travel with strangers and reportedly did not usually use condoms (n=50, 32%). A low-risk group comprised those who had had sex during travel with strangers and reportedly usually

Table 2. Unadjusted and adjusted odds ratios (95% confidence intervals) for travellers who usually use condoms during sexual intercourse (n=376)

Variables	Proportion of travellers using condoms* (%)	Unadjusted OR (95% CI)	Adjusted† OR (95% CI)
Gender			
Female	54/80 (67)	1.00	1.00
Male	178/291 (61)	0.76 (0.43-1.32)	1.09 (0.62-1.92)
Age			
18-25 years	52/60 (87)	1.00	1.00
26-45 years	160/247 (65)	0.28 (0.12-0.65)	0.27 (0.12-0.61)
46-65 years	23/68 (34)	0.08 (0.03-0.21)	0.08 (0.03-0.19)
Ethnicity			
Chinese	52/74 (70)	1.00	1.00
Caucasian	99/180 (55)	0.52 (0.28-0.96)	0.63 (0.34-1.17)
Others	85/122 (70)	0.97 (0.49-1.91)	1.23 (0.63-2.40)
Marital status			
Married	121/231 (52)	1.00	1.00
Never married	102/123 (83)	4.42 (2.51-7.83)	3.10 (1.67-5.73)
Divorced/separated/widowed	13/22 (59)	1.31 (0.50-3.49)	1.98 (0.77-5.10)
Education			
Secondary school or below	59/99 (60)	1.00	1.00
College/university	173/272 (64)	1.18 (0.72-1.95)	1.31 (0.78-2.16)
Religious belief			
Yes	150/252 (60)	1.00	1.00
None	85/122 (70)	1.56 (0.96-2.54)	1.27 (0.77-2.10)
Travelled at least once within the previous year?			
No	16/29 (55)	1.00	1.00
Yes	217/344 (63)	1.39 (0.61-3.16)	1.50 (0.65-3.49)
Had sex with strangers during travel within the previous year?			
No	107/187 (57)	1.00	1.00
Yes	113/168 (67)	1.54 (0.97-2.43)	1.31 (0.82-2.09)
Tested for HIV‡?			
No	126/206 (61)	1.00	1.00
Yes	103/159 (65)	1.17 (0.74-1.84)	1.39 (0.88-2.20)
Afraid of contracting HIV?			
No	61/136 (45)	1.00	1.00
Yes	167/228 (73)	3.37 (2.10-5.40)	2.74 (1.70-4.36)

* Total cases may not add up to 376 due to missing cases
† Adjusted for gender and age (as appropriate)
‡ Those who answered 'don't know' were considered as missing cases

use condoms (n=108, 68%). The characteristics of these two risk groups are shown in Table 3. Those in the age range of 26 to 45 years and 46 to 65 years were more likely (χ^2=27.59, degrees of freedom [df]=2, not significant) to be in the high-risk group than those in the age range of 18 to 25 years. Married travellers were more likely (χ^2=18.72, df=2, not significant) than never-married travellers to be in the high-risk group. Respondents who were not afraid of HIV infection were more likely (χ^2=16.92, df=1, not significant) to be in the high-risk group than those who were afraid, and those who had not been tested for anti-HIV antibody were more likely (χ^2=4.06, df=1, P=0.043) to be in the high-risk group than those who had been tested.

Logistic regression analyses, which included all the variables discussed above in the univariate analyses, showed that travellers who were middle-aged (OR=2.33; 95% CI, 0.55-9.87 and OR=13.59; 95% CI, 1.90-97.50 for age groups of 26-45 years and 46-65 years, respectively), married (OR=3.40; 95% CI, 1.12-10.28), not tested for anti-HIV antibody (OR=4.65; 95% CI, 1.67-12.81) and not afraid of HIV infection (OR=3.46; 95% CI, 1.40-8.50) were more likely to belong to the high-risk group than those in the reference group (Table 4). These findings did not differ when only the significant variables in the univariate analyses were included in the model. When an interaction term (eg Chinese/non-Chinese interviewer versus Chinese/non-Chinese interviewee) was further included into the above logistic model, the result showed a significant interaction effect (P=0.013). There was no further change in the estimates of other variables in the model (data not shown).

Discussion

Considering the length of the questionnaire and the sensitive nature of some questions—namely, those which sought information on sexual behaviour during the previous year—the response rate of this study was good. Although travel per se is not an independent risk factor for STD infection, low risk perceptions and the accessibility of sexual services may lead to high-risk sexual behaviour and thus an increased risk of contracting STDs.[10] The results reported here show that a considerable proportion of travellers were involved in risky sexual behaviour abroad. Almost one in two

Table 3. Association between risk group and various factors

Variables	Risk group		χ^2 value	P value
	Low-risk, n=108* No. (%)†	High-risk, n=50* No. (%)†		
Gender				
Female	21 (70)	9 (30)	0.06	0.809
Male	86 (68)	41 (32)		
Age				
18-25 years	29 (83)	6 (17)	27.59	ns
26-45 years	72 (74)	25 (26)		
46-65 years	6 (24)	19 (76)		
Ethnicity				
Chinese	14 (78)	4 (22)	2.01	0.366
Caucasian	61 (64)	34 (36)		
Others	33 (73)	12 (27)		
Marital status				
Married	43 (53)	38 (47)	18.72	ns
Never married	57 (86)	9 (14)		
Divorced/separated/widowed	8 (72)	3 (27)		
Education				
Secondary school or below	26 (72)	10 (28)	0.28	0.592
College/university	81 (67)	39 (33)		
Tested for HIV?				
No	44 (61)	28 (39)	4.06	0.043
Yes	61 (76)	19 (24)		
Afraid of contracting HIV?				
No	29 (49)	30 (51)	16.92	ns
Yes	76 (81)	18 (19)		

* Total cases may not add up to 108 or 50 due to missing cases
† Figures in parentheses are row percentages
ns not significant

Table 4. Summary of logistic regression model to predict high-risk travellers

Independent variables (reference group)*	Log OR	SE	Wald statistic	P value (overall)†	OR‡ (95% CI)	OR§ (95% CI)
Male (female)	-0.10	0.64	0.03	0.874	0.90 (0.26-3.16)	
Ethnicity (Chinese)				(0.601)		
Caucasian	0.03	0.79	0.00	0.972	1.03 (0.22-4.84)	
Others	-0.52	0.84	0.38	0.537	0.60 (0.12-3.07)	
Age (18-25 years)				(0.018)		
26-45 years	0.85	0.74	1.33	0.249	2.33 (0.55-9.87)	2.04 (0.55-7.64)
46-65 years	2.61	1.01	6.74	0.009	13.59 (1.90-97.50)	14.61(2.26-90.02)
Marital status (never married)				(0.043)		
Married	1.22	0.57	4.63	0.031	3.40 (1.12-10.28)	3.18 (1.07-9.39)
Separated/divorced/widowed	-0.32	1.11	0.08	0.772	0.72 (0.08-6.54)	0.74 (0.09-6.43)
Education (secondary school or below)	0.67	0.61	1.22	0.268	1.95 (0.59-6.42)	
Tested for HIV? (yes)	1.54	0.52	8.69	0.003	4.65 (1.67-12.81)	4.15 (1.60-10.73)
Afraid of contracting HIV? (yes)	1.24	0.46	7.30	0.007	3.46 (1.40-8.50)	3.43 (1.45-8.11)

* Low-risk groups as reference groups
† P values in parentheses are for overall test of significance where there were more than two levels of categorical variables
‡ All independent variables were included in the model
§ Only significant variables were included in the model

travellers questioned had had sex with a stranger during the previous year—less than half of these reportedly always use condoms.

The rates of sexual contact with strangers during travel reported in this study are comparable to studies from Europe that report casual sexual contact during travel abroad in 20%[19] to 41%[20] of travellers. Our study investigated sexual behaviour during the previous year and not just the most recent journey, which is one possible reason why we report higher rates of sexual activity compared with the United Kingdom.[19] The difference may also indicate an increasing pattern of sexual activity among the travelling public and/or promotion of sexual services and other tourist attractions, particularly in Asia, where the economic differential between travellers and locals can be high. The proportion of travellers using condoms (63%) in this study is similar to that in a study conducted among attenders of an STD clinic in Hong Kong.[15] In contrast, among travellers in the United Kingdom who attended a hospital out-patients department[19] and STD clinic,[21] 33% and 36%, respectively, reported condom use. Furthermore, in a survey in Thailand,[6] 30% of German-speaking tourists reported the use of condoms. The increasing trend of condom use among international travellers in this and another local study[15] may reflect the current promotion of condom use as a prevention strategy for HIV/AIDS. It may also reflect an increase in the general awareness of HIV infection and other STDs, and in the perceived risks of infection.

Never-married respondents were three times more likely than married respondents to use condoms. As the questionnaire asked about the usual practice of condom use and did not differentiate condom use between regular partners and casual partners, different explanations might account for this finding. For example, married respondents in a (presumed) monogamous relationship may have considered themselves to be at less risk of contracting an STD and hence also did not use condoms in extramarital sex. Alternatively, married respondents may have been more likely to use other forms of contraception, which may have transferred to extra-marital sex. A perception of low risk of HIV infection among married people and their higher likelihood of extramarital sexual activity place both themselves and their spouses at a greater risk of contracting HIV or other STDs. In addition, the 13% of never-married respondents who usually do not use condoms carry a high potential risk for STD infection if they are not in a monogamous relationship with a trustworthy partner. These factors help explain the cross-sectional transmission of HIV infection among both married and unmarried travellers.

Perceptions of risk of HIV infection from certain activities are associated with the intention of being involved in such activities,[22] because of the perceived severity of and susceptibility to their consequences, and the perceived effectiveness of preventive means. In this study, subjects who had a higher perceived susceptibility of being infected with HIV were more

likely to use condoms than those with low perceived susceptibility. The high prevalence of condom use among those who had been tested for HIV antibody indicates that risk perception may influence the understanding about risk status and hence adherence to preventive actions. Condom use in those who had travelled in the past year may be explained by exposure to various health promotion campaigns while abroad. There is thus a need for randomised controlled trials that target travellers to estimate the outcomes and cost-effectiveness of practicable interventions.

There are several limitations of this type of study. The data were collected by different interviewers who may have had different sampling or interviewing techniques, despite having been instructed in a standard technique and sampling procedure. There were more Caucasians (who were less reluctant to talk about sexual issues than others) in the sample—interviewers probably approached Caucasians preferentially. In addition, only two of the five interviewers spoke Chinese dialects (all five could communicate in English) which may also have resulted in more Caucasians in the sample population. Respondents interviewed by interviewers of their own ethnicity (eg Chinese respondents interviewed by Chinese interviewers) may have reported their sexual behaviour differently than those who were interviewed by interviewers of another ethnicity. Thus, there may have been an interaction effect between interviewer and interviewee.

The higher proportion of males in the sample may reflect a higher proportion of males travelling alone, females were more likely to travel in groups or with children which explains why more females were excluded from the study. Again, interviewers may have approached travellers whom they thought would be more likely to agree to being interviewed (eg passengers on delayed flights or those sitting alone). This may have contributed to the high response rate (87%) in the study which is comparable to that from other studies on travellers' sexual behaviour: response rates of 81%[5] and 97% have been reported.[20] We experienced more refusals from ethnic Chinese people, perhaps due to increased conservativeness regarding sensitive issues.

This study did not identify the travellers who are Hong Kong residents; thus, one should be cautious when extrapolating the findings to Hong Kong residents. Nevertheless, this study established evidence of high-risk sexual behaviour among travellers who travelled without family. It also indicated a low perception of risk among the high-risk travellers, such as those who have sex during travel and generally do not use condoms, those who are married and middle-aged, those who regard themselves as being at low risk of HIV infection, and those who carry a potential for the spread of the infection through cross-sectional transmission. The lower rates of sexual activity reported by Chinese travellers may be related to conservativeness in disclosing their behaviour on sexual issues, lack of confidence about the anonymity of the study, or low actual rates of sexual contact during travel.

The high-risk group identified in this investigation may indulge in more high-risk activities due to their low perceptions of risk. In reality, it is these people who are at the highest risk of contracting and transmitting STDs. Travel as a risk factor for the spread of HIV is a neglected issue in Hong Kong. Further studies are urgently needed to define the factors that influence the perception of risk and the level of risk behaviour in travellers in the region as a step towards developing effective preventive measures.

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