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ORIGINAL ARTICLE

Reasons for not using condoms among the Hong Kong Chinese population: implications for HIV and STD prevention

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Objective: To assess the prevalence and reasons for non-use of condoms among the Hong Kong Chinese population and obtain baseline data to monitor sexual behavioural change.

Methods: Cross sectional self administered questionnaire surveys in convenience sampled groups of Hong Kong Chinese residents were carried out.

Results: Of the 1508 respondents, 24% reported consistent condom use and 76% inconsistent use. Overall, 17% of respondents reported having sex with strangers. People who were at increased risk for inconsistent condom use included STD clinics attendees, those who never married, and those reporting low self efficacy for condom use or sex with strangers. Common reasons for not using condoms were trust in partner, use of other contraceptives, and reduced sensation while using condoms.

Conclusions: Given the reported high prevalence of travel and sexual contact with strangers, and misconceptions about condoms among the Hong Kong Chinese population, innovative condom social marketing campaigns are needed. Periodic monitoring of condom use behaviours should be an integral part of HIV/STD surveillance activity.

In addition to its role as a barrier contraceptive, condom use is a major strategy for preventing human immunodeficiency virus (HIV) infection and sexually transmitted diseases (STDs).^{1–3} Information on condom use and its correlates in a given population is essential to set national goals for sexual behavioural change and to design targeted interventions. Furthermore, periodic measurement of condom use patterns is considered an important adjunct surveillance tool to assess progress towards specific goals for sexual behavioural change. In the absence of reliable measures of temporal changes in HIV incidence, monitoring trends in condom use and sexual behavioural change is particularly important to HIV prevention programmes.

Hong Kong (population 6.5 million) is a special administrative region of the People's Republic of China. Although HIV prevalence is estimated at below 0.1% in the adult population, the absolute number of STD cases detected in the government social hygiene clinics from 1994 to 1999 showed a nearly two-fold increase.⁴ Sexual (heterosexual, 56%; homosexual, 19%; bisexual, 5%) intercourse accounts for majority of the 1693 reported HIV cases (as of the end of September 2001) in Hong Kong.⁵ Therefore, any HIV/STD prevention initiatives should aim to increase consistent condom use among the public. While considerable information is available on prevalence of condom use, characteristics of people using condoms and reasons for non-use in Western countries,^{1–3} little is known about condom use among Hong Kong Chinese people. In this study we present data obtained from surveys on Chinese participants conducted during 1996–7 on the prevalence and reasons for non-use of condoms among the selected population groups in Hong Kong, 94% of whom are Chinese.

METHODS**Study design**

We conducted a series of cross sectional surveys among samples of different occupational groups to estimate population specific risks and suggest population specific prevention strategies. Approval for this study was obtained from the ethics committee of the Faculty of Medicine, the University of Hong Kong.

Subjects

Participants in this study were individuals who responded to a questionnaire survey conducted among five easily accessible population groups in Hong Kong. These included people working in the business sector, university staff, police training school staff and police recruits, social hygiene clinic attendees, and travellers at the Hong Kong International airport. Different methodological approaches were used for data collection in different settings. In the business sector, 5/100 companies randomly approached from a list of 1000 companies agreed to participate in the study. Copies of the questionnaire with an attached prepaid addressed envelope were then distributed to participating company employees. For university staff, a local university provided an approved name list of all teaching and administrative staff. Questionnaires were then mailed out with an attached prepaid addressed envelope to all staff on the list. For police training school, questionnaires with an addressed envelope were distributed to all the staff and recruits. They were requested by the institute to drop the sealed questionnaire in a locked collection box. For social hygiene clinic (SHC), subjects were randomly selected from the two conveniently selected SHCs, details of which are described elsewhere.⁷ For the Hong Kong international airport (previously known as Kai Tak airport), subjects were randomly selected from the departure lounge and were interviewed by trained interviewers, details of which are described elsewhere.⁸

Police recruits were expected to be young people with a minimum of 12 years of education. Respondents drawn from the business sector and from the airport were expected to form a more heterogeneous group than the university sample. Social hygiene clinics in Hong Kong serve as sexually transmitted disease clinics, and are hereafter referred to as STD clinics.

Questionnaire

A 70 item anonymous and confidential questionnaire (presented in both English and Chinese) was developed for use in this study and mailed to the members of the business sector,

Table 1 Distribution of study participants and percentage who use condoms inconsistently by selected characteristics and adjusted odds ratios (OR) for inconsistent use of condoms among Chinese, Hong Kong, 1997

Variables	All respondents		OR (95% CI)
	No (%)	Inconsistent condom use (%)	
Population group			
Business sector	244 (21)	71	1.00
University staff	168 (14)	64	0.92 (0.52 to 1.65)
Police training school (PTS)	284 (24)	85	1.46 (0.77 to 2.75)
Social hygiene clinic (SHC)	422 (35)	79	2.97 (1.44 to 6.13)
Airport travellers	74 (6)	70	0.91 (0.40 to 2.07)
Sex			
Female	516 (44)	70	1.00
Male	667 (56)	80	1.33 (0.83 to 2.13)
Age group (years)			
Over 45	167 (14)	62	1.00
18–25	313 (26)	86	5.88 (2.38 to 14.29)
26–45	709 (60)	75	1.85 (0.96 to 3.57)
Marital status			
Married	617 (52)	68	1.00
Never married	491 (41)	86	1.84 (1.12 to 3.05)
Divorced/separated/widowed	81 (7)	79	0.69 (0.28 to 1.68)
Education level			
Secondary school or below	731 (63)	79	1.00
College or university	434 (37)	70	0.99 (0.60 to 1.62)
Religion			
Yes	310 (26)	68	1.00
No	874 (74)	79	1.25 (0.82 to 1.89)
Sex with stranger during travel			
No	611 (79)	71	1.00
Yes	161 (21)	86	2.42 (1.23 to 4.75)
Smoking behaviour			
Never smoker	587 (49)	70	1.00
Ever smoker	599 (51)	82	1.16 (0.76 to 1.76)
Alcohol use			
Never drinker	276 (23)	70	1.00
Ever drinker	691 (58)	76	0.90 (0.51 to 1.58)
Regular drinker	221 (19)	83	0.56 (0.26 to 1.19)
Self efficacy score			
High score	550 (50)	74	1.00
Low score	549 (50)	81	1.70 (1.14 to 2.53)

university staff, and police training school with a prepaid envelope who then mailed back the completed questionnaire to the research office. A covering letter accompanying the questionnaire explained the purpose of the survey and asked for voluntary participation. Agreement to complete and return the questionnaire was considered as consent given to participate in the study. No other informed consent was obtained.

The questionnaire recorded respondents' demographic information age, sex, ethnicity, length of stay in Hong Kong, marital status, highest educational attainment, religious belief and travel history. HIV antibody test status was assessed using a "yes/no" forced choice format question "Have you ever had an HIV antibody test (AIDS test)?" Sexual behaviour was assessed with the question "Have you had sex with someone who is not your usual sex partner within the last 12 months?" Condom use was assessed with the question "Do you generally use condoms during sexual intercourse?" and the response categories were "always, often, sometimes, never, and not applicable/refused." Respondents reporting that they never use condoms were then asked to specify which of seven reasons ("difficult to get, embarrassing to buy, partner does not like them, necessary only with prostitutes, partner is trustworthy, my friend told me that condoms are "pleasure killers," use different contraceptives, other (specify)") determined their non-use. Four multiple choice questions were used to assess respondent's use of cigarettes, alcohol, and illegal drugs. Nine questions were asked to assess respondents' perceived self efficacy (PSE) (a measure of people's beliefs regarding how successful they will be when they undertake

something, whether coping behaviour will be initiated, how much effort will be expended, and how long it will be sustained in the face of obstacles).⁹ These items were derived from the 12 item general self efficacy scale of Schwarzer *et al.*¹⁰ A four point Likert scale (not at all true, barely true, moderately true, and exactly true) was used to rate the responses. A simple Likert scoring system was adopted to generate a composite score: 1 for "not at all true," 2 for "barely true," 3 for "moderately true," and 4 for "exactly true." Respondents scoring 28 (mean score) or below were categorised as having low self efficacy and those scoring above mean (>28) were categorised as having high self efficacy score.

To maximise reliability, pre-pilot, and pilot studies were conducted to identify problems associated with the readability of the survey items, time required for completion of the survey questionnaire, and to assess the feasibility of such surveys among the targeted population. The pre-pilot study was conducted among 40 subjects (20 from social hygiene clinic and 20 from police training school) and identified problems with the length of the questionnaire, and its wording. After appropriate revision, a pilot study was conducted with another 20 subjects from the business sector, which identified a few queries about the meaning of some questions. These were appropriately explained in the final survey. Multiple concepts within an item that could produce more than one response were avoided ensuring that the concept being tested or question being asked was clear and comprehensive. To minimise misinterpretation between the Chinese and English versions, the translated questionnaire was back translated and necessary changes made to ensure compatibility. The instrument's

Table 2 Reasons for not using condoms, Hong Kong, 1997

Reasons	Total	Female	Male
	No (%)	No (%)	No (%)
(1) Situational constraints			
Difficult to get	7 (3)	2 (29)	5 (71)
Embarrassing to buy	8 (3)	3 (38)	5 (63)
(2) Sexual sensation			
Partner does not like them	41 (15)	22 (54)	19 (46)
Pleasure killers	11 (4)	4 (36)	7 (64)
(3) Partner relationships			
Partner is trustable	146 (53)	67 (46)	79 (54)
Necessary only with prostitutes	8 (3)	1 (13)	7 (88)
(4) Reasons related to pregnancy			
Use different contraceptives	50 (24)	28 (56)	22 (44)
(5) Other reasons			
Other reasons (don't know, don't think about it, no reason)	66 (24)	45 (68)	21 (32)

internal consistency (Cronbach's α) was calculated, which ranged from 0.77–0.88. (A copy of the questionnaire can be obtained from the corresponding author on request.)

Analysis

The analysis was performed using *SPSS* for windows version 10.0. We restricted this analysis to responses from people aged 18–65 years who identified themselves as Chinese. The small number ($n=17$) of respondents who were aged below 18 or over 65 were excluded from the analysis. Respondents refusing to respond to the question on condom use and sexual behaviour were excluded. From the final sample, we first obtained the percentage of respondents who reported they used condoms always, often or sometimes, and not at all. We defined people as “consistent” condom users if they reported that they used condoms “always” and the remainder as “inconsistent” condom users. As the number of subjects who reported used condoms “not at all” was small in certain subject groups, we grouped them with “inconsistent” condom users for analysis purposes. Inconsistent users are also likely to be at increased risk relative to consistent users and therefore more appropriate to pool with non-users. We then examined selected demographic and behavioural characteristics of respondents who were inconsistent condom users. Multiple logistic regression models identified subgroups of people at increased risk for inconsistent condom use. In the multiple logistic regression model inconsistent condom use was the dependent variable and demographic and behavioural characteristics were the independent variables. We assessed the common reasons for non-use among the subset of people who reported that they never use condoms. The reasons for non-use of condoms were grouped as situational constraints, sexual sensation, partner relationships, pregnancy related, or others. We created separate multivariate logistic regression models for these three common reasons for not using condoms (which accounted for majority of non-users) in which demographics and behavioural characteristics were the independent variables.

RESULTS

A total of 4157 questionnaires were distributed through mailing (business sector 1130, university staff 936, police training school 1000) and during interview (Kai Tak airport 504, social hygiene clinic 587), and 2157 completed questionnaires were received/collected. We excluded data on 97 respondents for whom information on demographics, condom use, or sexual behaviour was incomplete. Thus, our final sample comprised 2060 respondents, giving an overall response rate of 50% (response rate ranged from as low as 28% among university

staff to as high as 87% in the Kai Tak airport). Of these 2060 respondents, 1508 were reportedly ethnic Chinese and the following analysis is based on these Chinese respondents only.

Of these 1508 respondents ($n=1508$), 56% were men, 52% married, and the majority were aged 45 years or younger (table 1). Overall, 24% of the respondents reported that they used condoms always, 22% reported that they never used condoms, and the remainder reported using condoms sometimes or often. Thus, overall, 76% of respondents were classified as inconsistent users of condoms. Among all the respondents, the most common reason for condom use was contraception (70%), followed by prevention of STDs (46%) and AIDS (36%) and partner's desire (10%) (multiple responses were allowed).

Groups with the highest levels of inconsistent condom use included police training school staff and recruits, attendees of STD clinics, men, people aged 18–25 years, people who were never married, people with secondary level or lower education, people who reported having no religious belief, people who reported having sex with strangers, smokers, alcohol drinkers, and people with a low PSE score (table 1). However, in the multiple logistic regression model which included all the aforementioned variables, adjusted odds ratios for inconsistent condom use were significant only among STD clinic attendees, people who have never been married, those who reported having sex with strangers, and those with low PSE scores (table 1).

Among the 265 people who reported that they never use condoms, the three most common reasons for non-use were related to partner relationship (trustable partner), pregnancy (using alternate contraceptive), or sexual sensation (partner dislike for condoms) which was true for both men and women (table 2). The associations between reasons for not using condoms and population group, sex, age group, marital status, education level, religion, smoking behaviour, alcohol use, drug use, attitude towards smoking, casual sex during travel, having had HIV antibody test, self efficacy score were examined using χ^2 tests separately for each of these three reasons. A significantly higher proportion of ever smokers (25%) than never smokers (13%) ($p<0.01$), those who had not been tested for HIV (23%) than those tested (11%) ($p<0.01$), and those with low (25%) rather than high (10%) self efficacy scores ($p<0.001$) were more likely to report diminished sexual sensation as a reason for non-use of condoms. Respondents who reported partner relationships as their reason for non-use of condoms were more likely to be male (64%) than female (47%) ($p<0.001$), those with college or above levels of education (66%) than secondary school or below (46%) ($p<0.001$), ever (61%) than never (43%) alcohol users ($p<0.01$), and those who were not tested for HIV (59%) than those tested (44%) ($p<0.01$). A significantly higher proportion of never

(31%) than ever (13%) smokers ($p < 0.001$) reported reasons related to pregnancy as their reasons for not using condoms.

All the variables found significant in the χ^2 test were included in the logistic regression models created separately for each of the three most common reasons for not using condoms. In the multiple logistic regression models for the category "partner relationship" as a reason for not using condoms was significant only for men (odds ratio OR) 2.7; 95% confidence interval (CI): 1.2 to 5.8). Similarly, "sexual sensation" was significant among those who have not had an HIV test (OR, 3.4; 95% CI: 1.4 to 8.6) and those who had low self efficacy scores (OR, 4.76; 95% CI: 1.92 to 12.5). For the category "reasons related to pregnancy," only ever smokers (OR, 3.03; 95% CI: 1.47 to 6.25) showed an increased risk in the multiple logistic regression model.

DISCUSSION

We found that only a quarter of Hong Kong Chinese adults use condoms consistently. In this first survey of condom use among different population groups in Hong Kong, people who were social hygiene clinic attendees, people who had sex with an unknown partner, and those who reported having sex with strangers were significantly more likely to be inconsistent condom users. Our report suggests that previously reported^{6, 11} most commonly cited reasons for not using condoms (partner relationship (trustable partner), pregnancy (using an alternate contraceptive other than condom), and sexual sensation (dislike for condoms)) also apply to Chinese people living in Hong Kong. Unlike in other populations¹¹ sex does not appear to have a significant role in inconsistent condom use among Chinese people in Hong Kong.

Diminished sexual sensation seems to be an important deterrent to condom use.¹¹ Innovative social marketing strategies including those that promote positive aspects of condoms or that eroticise condoms are needed to dispel misconceptions about condoms. This is particularly important because 50–92% of Hong Kong residents had reported international travel in the past year.¹² Furthermore, one out of six respondents in a survey in Hong Kong reported casual sexual contact with a person who is not the usual sexual partner.¹³

The percentage of inconsistent condom users was high among people who visit STD clinics, probably because they represent a group of people at increased risk for engaging in risky sexual behaviours including non-use of condoms. Police recruits in this study represent young people of mid to lower socioeconomic strata and they are also more likely to be at increased risk for risky sexual behaviours and reported a high prevalence of condom non-use. Consistency of condom use was higher with new and casual partners than regular partners among US women and the consistent condom use decreased in partnerships that changed status from new to regular.¹⁴ In this study, inconsistent condom users might have been in stable relationships with presumably uninfected partners using condoms only as barrier contraceptives. Future studies should identify factors associated with condom usage in steady relationships as well as in casual relationships.

Over-reporting of condom use is a consistently reported bias when measures of use are obtained in face to face interviews.^{15–17} Although self administered survey reduces such bias, self reports are subject to recall bias. However, studies comparing the responses of partners have found fairly good reliability in the reporting of sexual behaviours.¹⁸ Sexual behaviour of non-Chinese people, whose condom use patterns are not addressed in this paper, can influence HIV/STD transmission in Hong Kong. However, given the smaller proportion of non-Chinese (about 6%) among the Hong Kong population the probability of such risks is expected to be minimum. Furthermore, data available elsewhere on other ethnic groups

Key messages

- Information on condom use and its correlates in a given population is essential to set national goals for sexual behavioural change and to design targeted interventions
- Considerable information is available on the prevalence of condom use and characteristics of people who use condoms and reasons for not using condoms in people of Western countries, but little is known about condom use patterns among Chinese ethnic groups in Hong Kong
- This study among the Chinese population in Hong Kong found that people who were STD clinic attendees, never married with a low self efficacy, or those who reported having had sex with strangers were less likely to use condoms consistently
- Periodic monitoring of condom use behaviours should be an integral part of HIV/AIDS surveillance activity in Hong Kong with encouragement for innovative condom social marketing campaigns

could be used for any targeted interventions among the non-Chinese in Hong Kong.

People who participated in the study may differ as a group from those who did not participate. Owing to the anonymous nature of the study we were unable to compare the characteristics of non-participants. However, comparability with findings of other international studies supports the findings of the present study.

Those who reported sex with strangers were also significantly most likely to be inconsistent condom users. There is evidence to suggest that concern about HIV transmission appears to have decreased and risky sexual behaviours have increased among some high risk groups in the United States.^{6, 19} Renewed and ongoing condom and safe sex promotion may be essential to maintain the low levels of HIV/STD in Hong Kong and to continually educate new sexually active people to be condom users. Future interventions should explore and dispel the common myths among the Chinese population such as requests to use condoms representing mistrust, personal guilt, married couples should not use condoms, and social desirability of not asking husband to use condoms. Continued measurement of condoms use and other preventive behaviours in the general population and specific population groups are needed to monitor and direct HIV/STD prevention efforts.

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Conflict of interests: None

CONTRIBUTORS

ASMA was involved in planning the study and was responsible for overall project implementation. He was responsible for guiding interviewers and research assistants and wrote the paper after consultation with SHE and then distributed the paper to all the others for comments. He was responsible for reanalysis of data and revise the paper as and when required; RF and AJH was involved in planning the study and were responsible for overall supervision of the project. Both of them contributed significantly to all drafts of the paper; SHE commented on the data analysis and helped in developing the draft paper; YKL carried out the initial statistical analysis.

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