

# CONDOM KNOWLEDGE, ATTITUDES AND USE AMONG PATIENTS ATTENDING THE PUBLIC STD CLINIC IN SINGAPORE

R K W Chan, W K Cheong, J Y Lim

## ABSTRACT

Three hundred patients (255 males and 45 females) attending the public STD clinic in Singapore were interviewed regarding their frequency of condom use, attitudes towards condoms, problems related to condom use and places of purchase of the condoms. Among respondents with regular partners, 55.2% of males and 48.8% of females never used condoms, only 12.4% of males and 16.3% of females used condoms consistently. Among respondents with non-regular partners, only 2.2% of males used condoms consistently. The commonest reasons why male respondents did not use condoms consistently were that condoms decreased sensation, condoms made sex mechanical, the use of other forms of contraception, no condoms were available, and the perception that there was no risk of contracting STD/AIDS. Condoms were most commonly obtained from sex partners, supermarkets, roadside sundry shops and the Maternal & Child Health Clinics (MCHCs). About 8% of both males and females had experienced some problems with condoms before. Greater efforts to promote the practice of protected intercourse among the STD patient population as well as in the general population are required in order to control the spread of STD and AIDS in Singapore.

**Keywords:** STD, HIV, Condoms, Knowledge, Attitudes, Beliefs and Practices (KABP).

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## INTRODUCTION

The number of recognised sexually transmitted diseases (STDs) now stands at over 25. New diseases including chlamydial infections, herpes simplex infections, human papillomavirus infections, hepatitis B and C viruses and more recently human immunodeficiency virus infection have been added to the traditional venereal diseases of syphilis, gonorrhoea, lymphogranuloma venereum, chancroid and granuloma inguinale. These new infections are generally characterised by greater difficulties in diagnosis and treatment and have severe long term complications with high morbidity and mortality. In the industrialized countries the proportion of STDs caused by these 'new' pathogens is far in excess of those caused by the traditional pathogens. In Singapore we are presently witnessing a transition from the 'third world' pattern of STDs where bacterial pathogens predominate to the industrialised pattern.

With the emergence of these chronic and difficult to treat diseases comes the need for greater emphasis on preventive behaviour and behaviour change rather than reliance on antimicrobial drugs in the prevention and control of STDs. Among the accepted and desirable forms of behavioural modification are having only one sex partner, the avoidance of

casual sexual exposures, especially with commercial sex workers, and the use of condoms.

Patients with STDs can be considered to be a measure of failure of STD control in the community. They represent only a fraction of all the persons at risk of contracting STDs as there are probably many more people with high-risk activities who are infected but asymptomatic and have not sought medical attention, and others with high risk activities who may yet contract infections. Furthermore STD patients constitute an important core group for the propagation and spread of STDs in the general population. It is with these factors in mind that we sought to study certain aspects of their knowledge, attitudes and behaviour with respect to condoms as a preventive measure against STDs.

## OBJECTIVES

1. To study the pattern of condom usage among STD clinic attendees.
2. To study the reasons for the use or non-use of condoms in the study population.
3. To study the sources of condoms and problems associated with condom use in the study population.
4. To propose recommendations to increase the use of condoms.

## METHODS

Three hundred patients attending the public STD clinic in Kelantan Lane were recruited. They were selected on the basis of a current or suspected STD diagnosis and after verbal informed consent was obtained. The patients did not include any known sex workers. The study was conducted between September and November 1990.

The patients were interviewed by either of two contact tracers with the Epidemiology Department (ED) of the Ministry of Health who had prior experience in counselling and contact tracing activities in STDs. An average of 5 patients were interviewed every day. The questionnaire was developed by the authors in consultation with the Department of Psychological Medicine, NUS. This study forms part of a larger study on the knowledge of STD/AIDS, attitudes and sexual behaviour of STD patients in Singapore.

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National Skin Centre  
1 Mandalay Road  
Singapore 1130

R K W Chan, MBBS, MRCP(UK)  
Consultant

W K Cheong, MBBS, MRCP(UK)  
Consultant

Ministry of Health  
College of Medicine Building  
16 College Road  
Singapore 0316

J Y Lim, MBBS, MSc(PH)  
Medical Officer (Specialist)

Correspondence to: Dr R K W Chan

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For purpose of consistency we defined 'regular partners' to be those with whom the respondents had penetrative sexual intercourse at least 3 times in the last three months. Questions relating to condom use had as their time reference a twelve-month period to minimise recall bias.

Fisher's exact test was used to analyse the frequencies of condom use according to race, educational group and age group.

## RESULTS

Two hundred and fifty-five males and forty-five females were interviewed.

The distribution of respondents by age group, sex and race is shown in Table I.

**Table I – Distribution of respondents by Sex, Age Group and Race**

| Age Gp/Race | Male | Female | Total |
|-------------|------|--------|-------|
| ≤20 yrs     | C    | 34     | 37    |
|             | M    | 3      | 3     |
|             | I    | 2      | 2     |
|             | E    |        |       |
|             | O    |        |       |
| Subtotal    | 39   | 3      | 42    |
| 20-29       | C    | 106    | 117   |
|             | M    | 17     | 18    |
|             | I    | 19     | 24    |
|             | E    | 2      | 3     |
|             | O    | 5      | 6     |
| Subtotal    | 149  | 19     | 168   |
| 30-39       | C    | 26     | 36    |
|             | M    | 4      | 8     |
|             | I    | 7      | 8     |
|             | E    |        |       |
|             | O    | 1      | 1     |
| Subtotal    | 3    | 15     | 53    |
| 40-49       | C    | 15     | 22    |
|             | M    | 2      | 2     |
|             | I    | 2      | 2     |
|             | E    |        |       |
|             | O    |        |       |
| Subtotal    | 19   | 7      | 26    |
| ≥50 yrs     | C    | 9      | 9     |
|             | M    | 1      | 1     |
|             | I    |        | 1     |
|             | E    |        |       |
|             | O    |        |       |
| Subtotal    | 10   | 1      | 11    |
| Total       | 255  | 45     | 300   |

C = Chinese, M = Malay, I = Indian, E = Eurasian, O = Others

Over 80% of males and females were below 40 years of age. The racial, sexual and age distributions of the study population reflected those of the whole patient population at the same clinic.

The majority of male respondents were national servicemen, production workers and service personnel. Most of the female respondents were housewives, unemployed or production workers.

The distribution of respondents by sex and marital status is shown in Table II. Most were males and single. Females in

comparison were mostly married. The diagnoses of the respondents at the time of interview are shown in Table III. All but one male and all females were suffering from a STD at the time of interview. Of the 255 males, 247 reported that they were heterosexual, and 6 said they were bisexual. There were no responses from 2 patients and none said that they were exclusively homosexual. All the females in our study were heterosexual.

One hundred and five males (41.2%) and 43 females (95.6%) had regular partners. There was no response from 2 males. Table IV lists the frequency of condom use with regular partners. Of these, 13 (12.4%) males and 7 (16.3%) females reported using condoms all the time with their regular partners over the last 12 months. Ten males said the reason for use was for contraception and 3 said the reason was for STD prevention. About half of both males and females who had regular partners did not use condoms at all. The remainder used condoms only some of the time.

**Table II– Marital Status By Sex**

|                    | Males | Females |
|--------------------|-------|---------|
| Single             | 199   | 11      |
| Married            | 49    | 32      |
| Separated/Divorced | 6     | 1       |
| Widowed            | 1     | 1       |
| Total              | 255   | 45      |

**Table III – Present STDs**

|                                         | Males | Females |
|-----------------------------------------|-------|---------|
| Gonorrhoea                              | 100   | 4       |
| Non-specific urethritis/<br>cervicitis  | 83    | 13      |
| Primary syphilis                        | 15    | 4       |
| Secondary syphilis                      | 4     |         |
| Latent syphilis                         | 9     | 7       |
| Late syphilis                           | 5     | 2       |
| Chancroid                               | 1     | 1       |
| Genital herpes                          | 7     | 2       |
| Genital ulcer disease<br>(type unknown) | 2     | –       |
| Genital warts                           | 22    | 9       |
| Others                                  | 6     | 3       |
| STD check                               | 1     | –       |
| Total                                   | 255   | 45      |

**Table IV – Condom Use with Regular Partners in last 12 months**

|           | Male |      | Female |      |
|-----------|------|------|--------|------|
|           | No.  | %    | No.    | %    |
| 1) Never  | 58   | 55.2 | 21     | 48.8 |
| 2) <50%   | 7    | 6.7  | 7      | 16.3 |
| 3) ≥50%   | 27   | 25.7 | 8      | 18.6 |
| 4) Always | 13*  | 12.4 | 7+     | 16.3 |
| Total     | 105  | 100  | 43     | 100  |

Note: \* 10 for contraception, 3 for STD prevention  
+ 6 for contraception, 1 for premature ejaculation

Table V shows the frequency of condom use among Chinese male respondents compared to that of other races. There was a statistically significant difference between the two groups, with Chinese males showing more frequent consistent use of condoms. There was no difference for female respondents when compared by races.

**Table V – Condom use with Regular Partners in past 12 months by Race**

| Condom Use | Race    |        | Total |
|------------|---------|--------|-------|
|            | Chinese | Others |       |
| Yes        | 40      | 7      | 47    |
| No         | 40      | 18     | 58    |
| Total      | 80      | 25     | 105   |

p = 4.312x10<sup>-2</sup>

We analysed the use of condoms by educational level, grouping those with primary education or less together and those with secondary education and above. There was no statistically significant difference between the two groups.

We also analysed condom use according to age group to see if there was any demonstrable difference between those below 30 years and those 30 years of age and above. Once again there was no statistical difference between the two groups.

As regards reasons for the non-consistent use of condoms with regular partners, the most common responses by males were that condoms reduced sensation (43%), other contraceptive methods were used (31%) and that they did not perceive any risk of contracting STD/AIDS (24%) (Table VI). Over half of females with regular partners did not always use condoms with their regular partners because other contraceptive methods were used (Table VII). Decreased sensation with condoms was the other frequently quoted reason (30%).

Two hundred and twenty-eight males (88.4%) reported having non-regular partners, whereas only 3 of the 45 females (6.7%) had non-regular partners. Twenty-five males and 42 females claimed to have no non-regular partners. There was no response from 2 males. Table VIII lists the frequency of condom use among respondents with non-regular partners. Among these males, only 5 or 2.2% used condoms all the time

**Table VI – Condom Use with Regular Partners – Males – reasons for not using – \***

| Male (n = 91)                 |                   |      |
|-------------------------------|-------------------|------|
| Reason                        | No. of Responses* | %    |
| Reduced sensation             | 30                | 42.9 |
| Other contraception used      | 28                | 30.8 |
| No perceived risk of STD/AIDS | 22                | 24.2 |
| Not aware of usefulness       | 13                | 14.3 |
| Makes sex mechanical          | 12                | 13.2 |
| No condoms available          | 5                 | 5.5  |
| Partners objection            | 5                 | 5.5  |
| Embarrassed to buy            | 4                 | 4.4  |
| Feel guilty                   | 3                 | 3.3  |
| Troublesome                   | 3                 | 3.3  |
| Suspicion on respondent       | 2                 | 2.2  |
| Suspicion on partner          | 1                 | 1.1  |
| Religious reasons             | 1                 | 1.1  |
| Painful to use                | 1                 | 1.1  |
| Others                        | 5                 | 5.5  |
| Total No. of Responses        | 144               |      |

Note: \* More than 1 response allowed

**Table VII – Condom Use with Regular Partners – Females – reasons for not using – \***

| Female (n = 36)          |                   |      |
|--------------------------|-------------------|------|
| Reason                   | No. of Responses* | %    |
| Other contraception used | 23                | 63.9 |
| Reduced sensation        | 11                | 30.6 |
| Makes sex mechanical     | 4                 | 11.1 |
| Not aware of usefulness  | 2                 | 5.6  |
| Feels guilty             | 1                 | 2.8  |
| No condoms available     | 1                 | 2.8  |
| Partners objection       | 1                 | 2.8  |
| Painful to use           | 1                 | 2.8  |
| Others                   | 2                 | 5.6  |
| Total No. of Responses   | 46                |      |

Note: \* More than 1 response allowed

with their non-regular partners. One hundred and twenty-three males (53.9%) never used condoms at all with non-regular partners. The remainder (43.9%) only used condoms some of the time. One of the females, an administrative officer, never used condoms with her non-regular partners; another, a clerical officer, used condoms more than 50% of the time for STD/AIDS prevention and contraception. The third female who had non-regular partners was a masseuse, she used condoms all of the time for the prevention of STD/AIDS.

**Table VIII – Condom Use with Non-Regular Partners in last 12 months**

|           | Male |      | Female |      |
|-----------|------|------|--------|------|
|           | No.  | %    | No.    | %    |
| 1) Never  | 123  | 53.9 | 1      | 33.3 |
| 2) <50%   | 48   | 21.1 |        |      |
| 3) ≥50%   | 52   | 22.8 | 1      | 33.3 |
| 4) Always | 5*   | 2.2  | 1      | 33.3 |
| Total     | 228  | 100  | 3      | 100  |

Note: \* all for STD prevention

Comparison of condom use with non-regular partners between Chinese male respondents and males of other races showed a statistically significant difference, with Chinese males using condoms more often than other races (Table IX).

**Table IX – Condom Use with Non-Regular Partners in past 12 months by Race**

| Condom Use | Race    |        | Total |
|------------|---------|--------|-------|
|            | Chinese | Others |       |
| Yes        | 85      | 20     | 105   |
| No         | 85      | 38     | 123   |
| Total      | 170     | 58     | 228   |

$p = 2.844 \times 10^{-2}$

Comparison of condom use with non-regular partners by educational level and age-group did not show any statistically significant difference.

Among the male respondents with non-regular partners, the most common reasons given for not using condoms all the time were that condoms reduced sensation (56%), that condoms made sex mechanical (24%), that no condoms were available (22%), that there was no perceived risk of contracting STD/AIDS (19%), and that they were not aware of the usefulness of condoms in preventing STD/AIDS (13%) (Table X). When we analysed the answers to another question in the survey asking if respondents were aware that one of the useful ways of preventing STD/AIDS was the use of condoms, all but 4 of the 228 males who had non-regular partners replied positively. All the 3 females with non-regular partners claimed to be unaware of the usefulness of condoms in preventing STD/AIDS (Table XI). Other reasons stated for non-consistent use were that condoms reduced sensation and that other forms of contraception were used.

Among the 83 male respondents who had both regular and non-regular partners, those who used condoms with regular partners were more likely to use them with non-regular partners as well. Similarly, respondents who did not use condoms with regular partners were more likely not to use them with non-regular partners (Table XII).

**Table X – Condom Use with Non-Regular Partners – Males – reasons for not using – \***

| Male (n = 225)                |                   |      |
|-------------------------------|-------------------|------|
| Reason                        | No. of Responses* | %    |
| Reduced sensation             | 125               | 55.6 |
| Makes sex mechanical          | 53                | 23.6 |
| No condoms were available     | 49                | 21.8 |
| No perceived risk of STD/AIDS | 43                | 19.1 |
| Not aware of usefulness       | 29                | 12.9 |
| Embarrassed to buy            | 13                | 5.8  |
| Troublesome                   | 13                | 5.8  |
| Too drunk                     | 11                | 4.9  |
| Paid service                  | 6                 | 2.7  |
| Suspicion on partners         | 2                 | 0.8  |
| Feel guilty                   | 1                 | 0.4  |
| Suspicion on respondents      | 1                 | 0.4  |
| Others                        | 41                | 18.2 |
| Total No. of Responses        | 387               |      |

Note: \* More than 1 response allowed

**Table XI – Condom Use with Non-Regular Partners – Females – reasons for not using – \***

| Female (n = 3)          |                   |       |
|-------------------------|-------------------|-------|
| Reason                  | No. of Responses* | %     |
| Not aware of usefulness | 3                 | 100.0 |
| Reduced sensation       | 1                 | 33.3  |
| On other contraception  | 1                 | 33.3  |
| Others                  | 1                 | 33.3  |
| Total No. of Responses  | 6                 |       |

Note: \* More than 1 response allowed

**Table XII – Condom Use among Male Respondents who had both Regular Partners and Non-Regular Partners in past 12 Months**

|                           | With Regular Partners |    | Total |
|---------------------------|-----------------------|----|-------|
|                           | Yes                   | No |       |
| With Non Regular Partners |                       |    |       |
| Yes                       | 23                    | 17 | 40    |
| No                        | 12                    | 31 | 43    |
| Total                     | 35                    | 48 | 83    |

There were 174 answers from male respondents to the question on where the condoms were obtained (Table XIII). Sixty-eight (39%) reported that they obtained condoms from their sexual partners. Other favoured sources were 7-Elevens/supermarkets and roadside sundry shops. There were 28 female respondents to the question, ten (36%) said they obtained their condoms from Maternal and Child Health Clinics.

**Table XIII – Where Condoms Were Obtained**

|                                  | Male | Female |
|----------------------------------|------|--------|
| Sex partner                      | 68   | 8      |
| 7-Eleven/Supermarket             | 42   | 5      |
| Roadside sundry shop             | 35   |        |
| Maternal and Child Health Clinic | 9    | 10     |
| Pharmacy                         | 8    | 5      |
| SAF                              | 8    |        |
| Friends                          | 3    |        |
| Chinese Medical Shop             | 1    |        |
| Total                            | 174  | 28     |

Eleven out of 135 (8%) males who had used condoms before encountered problems, 8 had tears during vaginal sex, the condom slipped off during vaginal sex in 2, and one had a tear during anal sex. Two females reported tears during vaginal sex.

## DISCUSSION

Condoms provide a mechanical barrier to infectious agents and semen. The wearer is thus protected from contact with infectious vaginal, cervical, vulval or rectal secretions or lesions. The partner is similarly protected from infectious urethral discharges, penile lesions and semen. Contact of skin outside the covered area is however not avoided and infections may be transmitted from lesions in these areas. Numerous laboratory studies have conclusively demonstrated the effectiveness of latex condoms as a mechanical barrier to infectious agents. These include neisseria gonorrhoeae<sup>(1)</sup>, chlamydia trachomatis<sup>(2)</sup>, herpes simplex virus<sup>(2)</sup>, cytomegalovirus<sup>(3)</sup>, human immunodeficiency virus<sup>(2, 4)</sup> and hepatitis B virus<sup>(5)</sup>. In this respect natural condoms made from the intestines of sheep are not reliable.

The spermicide nonoxynol-9 has been shown to be effective in inactivating treponema pallidum<sup>(6)</sup>, neisseria gonorrhoeae<sup>(6)</sup>, chlamydia trachomatis<sup>(2)</sup>, herpes simplex virus<sup>(2)</sup> and human immunodeficiency virus<sup>(2)</sup>.

The combined use of latex condoms and nonoxynol-9 has been shown in vitro to confer greater protection against HIV infection<sup>(2,7)</sup> than if either was used alone. The vaginal application of the spermicide is likely to give greater protection than the use of the spermicide in the condom because a larger volume would be in place in case of condom breakage.

The effectiveness of condoms in reducing the risks of STDs has been amply demonstrated in many in-vivo studies. Condom users and their partners have been shown to have a lower risk of acquiring gonorrhoea, ureaplasma infection, pelvic inflammatory disease and cervical cancer than persons who do not use condoms<sup>(8)</sup>. The consistent use of condoms was associated with seronegativity during the one to three year follow-up period in a study on HIV antibody negative heterosexual spouses of patients with AIDS<sup>(9)</sup>.

A study of condom use among prostitutes in Zaire has also suggested a protective association between a history of condom use and HIV infection<sup>(10)</sup>. Other studies have also revealed this association<sup>(11-14)</sup>.

In our study among the male as well as female respondents who had regular partners, the large majority did not use condoms on every occasion. For those who did, the main reason was for contraception. Among the main reasons for non-use of condoms were claims that condoms reduced sensation and that there was no risk of STD/AIDS. There was, however, a high level of knowledge that condoms could prevent STD/AIDS. These responses therefore showed a prevalent negative impression of condoms and a failure to perceive personal STD/AIDS risk.

The results for respondents who had non-regular partners is even more unsettling. Only a tiny proportion used condoms consistently, and all were for STD/AIDS prevention. The large majority (88.4%) of our male study population reported having at least one non-regular partner in the study period. Out of this group only a tiny fraction (2.2%) used condoms all the time. The majority (54%) did not use condoms at all. The reasons given for their non-consistent use again reflected the negative impression of condoms and the failure to accept risk in our study population. Furthermore 22% reported that there were no condoms when they needed one. This is a sizeable proportion and may reflect the availability (or lack) of condoms in places where high risk sexual liaisons are made. In a recent Knowledge, Attitudes, Beliefs and Practices (KABP) study<sup>(15)</sup> on a randomly selected sample of Singaporeans, it was found that 6% of married/partnered men and 13.3% of unmarried/unpartnered men had non-regular partners in the previous 12 months. The availability of condoms at places of contact will need to be addressed.

It is interesting to note that persons who used condoms all the time with their regular partners were more likely to do likewise with non-regular partners, and vice-versa for those who did not use condoms. Familiarity with the product at home may encourage its use in external situations.

The survey shows that many males obtained condoms from their partners, many of whom may have been commercial sex workers. This is a fairly satisfactory result but more has to be done to ensure that condom use becomes universal in such places. There were no replies stating that condoms were obtained from doctors or medical establishments other than from Maternal and Child Health Clinics.

The fact that condoms are not foolproof is demonstrated by the 8% of respondents who reported tearing or slippage of condoms during sexual intercourse. The actual frequency of such problems is probably lower than 8% when the total lifetime episodes of condom use is taken as the denominator.

In the context of family planning, the often quoted rate of contraception failure is between 10 to 15%. Experts agree that this is due more to 'user failure' than to 'product failure'. Among the reasons for user failure are failure to use a condom with each and every act of sexual intercourse, failure to put the condom on before any genital contact occurs, failure to completely unroll the condom, inadequate lubrication, the use of oil-based lubricants that weaken the latex and inadequate space left at the tip of the condom. Therefore it is imperative that instructions on the proper use of condoms be provided in addition to promoting the use of condoms<sup>(16)</sup>. Among the reasons for product failure are poor manufacturing quality and the deterioration due to poor post-manufacturing storage conditions. This underlines the necessity to promote the use of reliable brands, the labelling of expiry dates on condom packaging, advice on the correct storage of condoms and other quality assurance measures.

## CONCLUSIONS

1. Greater efforts to personalise the messages of STD/AIDS prevention are urgently needed. Among these messages are the avoidance of multiple partners, especially commercial sex workers, the practice of 'safer sex' and the use of condoms when the safety of a sexual contact cannot be assured. Public health education efforts must therefore be intensified, with emphasis on making messages relevant and accessible to the audience. It must be complemented by programmes targeted at specific audiences.
2. Condoms should be promoted as an effective method to prevent the spread of STD/AIDS. They are already a major method of contraception in Singapore<sup>(5)</sup> and have been advertised for this purpose. Condom advertisements should be allowed for purposes of disease control. There is a concern that this would mean the promotion of promiscuity. This need not be the case. However, failure to adequately promote condom use may result in more disease transmission, as persons who are prone to such behaviour will not be encouraged to use condoms. One other factor that needs attention is the still widespread negative attitude towards condoms. Many of our respondents reported that condoms would interfere with their sexual activity. Efforts to change these views must accompany condom promotion campaigns.
3. The variety of condom sales and distribution outlets should be increased. At present condoms are available mainly through brothels, supermarkets, pharmacies, roadside sundry shops and MCHCs. Other than brothels these are places where it is highly unlikely that sexual liaisons are made. Furthermore some persons may find it embarrassing and difficult to buy condoms openly from a salesperson and will therefore not use condoms. The promotion of condom use should not only include print and other media but also increase the availability of condoms where and when they are most needed. One way to address this is to have condom vending machines at specified places such as public toilets, bars and night-clubs, and near brothels. Medical personnel should also take an active part in imparting information on 'safer sex' and the use of condoms.
4. The use of condoms in known places of commercial sexual activity should be actively encouraged. STD/HIV testing of known prostitutes at regular intervals is only a second best measure. The safety margin of a negative test result is dependent upon the 'window period' before seroconversion, the date of the last test and the number of sexual partners

since that date. These factors are seldom understood or realised by the lay public. Awareness of such testing may have a negative effect on the use of condoms, as it gives people a false sense of security.

5. Approved standards should be necessary for all brands of condoms before they can be put on sale in Singapore. Information on the correct storage of condoms should also be disseminated.

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