Factors Associated with Maintenance of Regular Condom Use Among Single Heterosexual Adults

A Longitudinal Study

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ABSTRACT

Objective: The aims of this study were to describe behavioural and psychosocial characteristics of single heterosexuals towards regular condom use, and to identify factors associated with the maintenance of this behaviour over time.

Method: A cohort of 179 single heterosexual adults (83 men and 96 women, mean age: 32 years) was followed over a period of 2 years. The data were collected, by phone interviews, at baseline and 1 and 2 years later. The phone numbers were generated using a random digit strategy.

Results: The following changes were observed: over time fewer people were sexually active, but those who were, reported more often having had more than one sexual partner. No significant change was observed regarding condom use. The psychosocial variables remained stable during the study period. To have a favourable intention was the main factor associated with maintenance of condom use. Having had a STD, personal normative beliefs and positive attitude were also associated with regular condom use.

Discussion: Promotion strategies should highlight the importance of acting as a responsible person, reinforce the advantages of using condoms, and select strategies that favour the *implementation of intention* of using condoms.

La traduction du résumé se trouve à la fin de l'article.

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Preventing the transmission of human immunodeficiency virus (HIV) and other sexually transmitted diseases (STDs) is one of the main priorities in public health.¹⁻⁴ In Canada, HIV infection is currently increasing among heterosexuals.⁵ Even though the number of cases of chlamydial diseases and gonorrhea decreased between 1990 and 1997, this declining trend seems to have stopped.⁶ Also, even though it is difficult to determine the incidence of certain viral STDs, such as the herpes simplex and the human papilloma virus (HPV), they currently seem to occur frequently.^{7,8} In short, studies show that genital herpes is a cofactor in the transmission of HIV and other STDs,⁹ and that the presence of STDs facilitates HIV transmission.⁷

Condom use during each risky sexual intercourse currently proves to be the only efficient way to prevent the spread of HIV and most STDs.^{10,11} However, its systematic use is not yet widespread among heterosexuals.¹²⁻¹⁶ In fact, several studies have indicated that heterosexuals' behaviour carries a high risk of STD and HIV transmission.^{9,12-18}

It follows then that promoting regular condom use as a prevention strategy should become a priority among heterosexuals,¹⁹ but for it to be efficient, its promotion should take into account the factors which determine or influence the adoption and maintenance of this behaviour among this group. Therefore it is necessary to apply a theoretical framework to clearly identify the influencing factors of regular condom use among adult heterosexuals.¹¹

This study aimed first to describe behavioural and psychosocial characteristics of single heterosexuals with respect to regular condom use, and second, to identify factors associated with the persistence of this behaviour over time.

Theoretical framework

Several theories, most of which are borrowed from social psychology, attempt to explain health-related behaviours. The basis of this study's theoretical framework was the Theory of Planned Behaviour developed by Ajzen,²⁰ since it attempts to predict and understand social behaviours, and uses most of the aspects from other theories. According to Ajzen and Fishbein,^{21,22} the immediate determinant

of behaviour is the intention (INT) to adopt or not adopt a given action. Three fundamental concepts can influence the intention: attitude (AACT); subjective social norm (SN); and perceived behavioural control (PBC). First, attitude (AACT) designates the more or less favourable evaluation of adopting a behaviour. The social norm (SN) corresponds to the individual's perception of what behaviour people, or groups of people important to him or her, approve or disapprove of. The perceived behavioural control (PBC) is defined as the degree of ease or difficulty perceived towards adopting a given behaviour. In this theoretical framework, each of the three main determinants is supported by its own set of beliefs; they are behavioural beliefs (b), normative beliefs (nb), and control beliefs. This latter variable is comparable to the self-efficacy (se) construct of Bandura's Social-Cognitive Theory.²³

Role beliefs (RB) and personal normative beliefs (PNB) can also help explain a health-related behaviour,²⁴⁻²⁶ as suggested by Triandis' Theory of Interpersonal Behaviour.²⁷ According to Ajzen and Fishbein,^{21,22} the variables linked to social, institutional and historical contexts as well as to sociodemographic characteristics affect behaviours by means of their influence on beliefs and other determinants of the theory. In this study, these external factors referred to sociodemographic (gender and age), behavioural variables (number of partners and condom use during the previous 12 months) and epidemiological variables (having had a STD, HIV screening test, HIV positive test). Figure 1 illustrates the theoretical framework used.

METHOD

Sample

The targeted population was composed of men and women in the Quebec City metropolitan area between 18 and 49 years of age who considered themselves as heterosexuals and who were single, that is, without a regular sexual partner for at least the previous three months. In order to establish a base sample as well as a follow-up group, data were collected in three phases. The first data collection (time-0) was carried out in the spring of 1998. The cohort was established in conjunction with two other

Figure 1. Theoretical framework

collections in the spring of 1999 (time-1) and in the spring of 2000 (time-2).

In summary, a total of 580 respondents were recruited at baseline. Among these, 193 were still living alone at the second year follow-up. The others were either lost at one of the two follow-up survey periods (164 at time-1; 57 at time-2) or excluded from the study (111 at time-1; 55 at time-2) because they were living with a regular partner. Of these 193 single individuals, 179 completed the three interviews satisfactorily. The analyses were performed on this sample of 179 respondents who were not living with a regular partner at each of the measurement periods.

Data collection

The data were collected by telephone interviewers of a survey company using a random digit number strategy. The interview questionnaire was developed according to the development and validation procedure recommended by Godin, Kok²⁸ and Middlestadt et al.²⁹ Each psychosocial variable was measured using a four-point Likert-type scale. For each construct where multiple items were measured, a composite score was calculated to obtain an average for the items as a whole. To measure certain data of the behavioural and epidemiological history, an instrument developed within the framework of a Canadian

inquiry was used; it proved to be very reliable.²⁶ Since the data were collected every 12 months, condom use and each psychosocial variable were assessed in reference to this time period. Test-retest reliability of the questionnaire yielded an 83.2% average of exact agreement for the items related to behavioural and epidemiological history, and 71.7% for psychosocial items. Table I shows Cronbach's alpha coefficients for the psychosocial variables of the theoretical model when multiple items were used to measure the constructs.

This study was approved by the Laval University Ethics Committee.

Analysis

In order to observe the changes in behavioural and psychosocial characteristics, and to identify the factors of persistence of regular condom use across time, the *Generalized estimating equations* (GEE) method was applied.³⁰ This technique has been reported to be reliable for statistical analysis of longitudinal data in the field of health.³¹ For a multivariate analysis, the theoretical variables were first entered in the model. Then, the backward procedure was applied, that is, the variables which did not reach the significant level of $p < 0.05$ were eliminated one by one. The influence of other variables was tested subsequently. Finally, the interaction with time was verified.

TABLE I**Internal Consistency of the Theoretical Framework Constructs**

Measured Variables	Number of Items	Cronbach's Alpha
Intention (INT)	3	0.86
Attitude (AACT)	6	0.75
Behavioural Beliefs (b)	5	0.50
Normative Beliefs (nb)	6	0.75
Perceived Behavioural Control (PBC)	3	0.57
Self-efficacy (se)	7	0.78
Personal Normative Beliefs (PNB)	3	0.60

TABLE II**Respondents' Behavioural Characteristics at Each Measurement Period (N=179)**

Variables	1998 N (%)	1999 N (%)	2000 N (%)
Sexually active during the past year†	127 (70.9)	108 (60.3)	118 (65.9)
Have more than one partner‡	39 (30.7)	73 (67.6)	78 (66.1)
Do not always use condoms	53 (41.7)	37 (34.3)	46 (39.0)

Applied test: logistic regression analysis with repeated measures.

† Difference between 1998 and 1999 $p < 0.001$

‡ Difference between 1998 and 2000 $p < 0.001$

TABLE III**Means for the Psychosocial Variables at Each Measurement Period (n=179)**

Psychosocial Variables	1998		1999		2000	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Intention (INT)	3.54	0.61	3.61	0.58	3.54	0.67
Attitude (AACT)	3.35	0.52	3.40	0.58	3.40	0.53
Behavioural Beliefs (b)	3.25	0.52	3.32	0.54	3.30	0.50
Social Norm (SN)‡	1.74	1.01	1.68	0.95	1.55	0.84
Normative Beliefs (nb)†	1.47	0.53	1.37	0.41	1.41	0.48
Perceived Behavioural Control (PBC)§	3.51	0.54	3.55	0.49	3.45	0.57
Self-efficacy (se)	3.39	0.58	3.37	0.57	3.34	0.60
Role Belief (RB)	3.95	0.27	3.92	0.39	3.96	0.21
Personal Normative Beliefs (PNB)	3.47	0.62	3.46	0.62	3.42	0.68

Applied test: Analysis of variance with repeated measures.

† Difference between 1998 and 1999 $p \leq 0.01$

‡ Difference between 1998 and 2000 $p \leq 0.01$

§ Difference between 1999 and 2000 $p \leq 0.01$

TABLE IV**Estimated Regression Coefficients from GEE, Predicting Maintenance of Regular Condom Use Among Single Heterosexuals Across Time (N=179)**

Variables	Parameter Estimate	Stand. error	OR	CI _{95%}	p
Intention	1.62	0.27	5.04	2.97-8.56	<0.0001
Have had a STD	0.93	0.32	2.53	1.35-4.73	0.01
Personal Normative Belief	0.65	0.25	1.92	1.18-3.12	0.02
Attitude	0.64	0.30	1.90	1.05-3.44	0.04

OR : Odds Ratio; CI_{95%} : 95% Confidence Interval

RESULTS

The group was composed of 179 individuals: 83 men (46.4%) and 96 women (53.6%). When data were first collected, 29.1% of the respondents were between 18 and 24 years of age, 25.7% were between 25 and 34 years of age, and 45.3% were 35 years of age or older.

In 1998, 12.3% of the 179 respondents reported they had already had a STD. One person reported having had a STD in 1999 and two people reported the same for

2000. A total of 32.6% of the respondents had already taken an HIV screening test in 1998, 15% had taken one in 1999 and 14% had taken one in 2000. Finally, two people reported testing HIV positive in 1998 and one person tested positive in 1999.

A few significant variations should be pointed out concerning behavioural characteristics. First of all, in 1998, the proportion of sexually active respondents in the last year (70.9%) was significantly higher than for 1999 (60.3%). However, in 1999

and 2000, they were twice as likely to have had more than one partner (see Table II). No significant difference was found regarding condom use.

As illustrated in Table III, the psychosocial characteristics of the sample stayed relatively stable over time. Thus, the averages observed were not significantly different from one year to the next for seven of the ten psychosocial variables. Slight decreases in the averages were noted for the perceived social norm between 1998 and 2000 ($p \leq 0.01$), for the normative beliefs between 1998 and 1999 ($p \leq 0.01$), and for the perceived behavioural control between 1999 and 2000 ($p \leq 0.01$).

The behavioural measures retained for analyzing prediction consisted in having used a condom during each sexual intercourse over the previous 12 months, as reported at each time of measurement. Four psychosocial variables helped predict maintenance in regular condom use. Intention was the most important factor (see Table IV). The respondents who had already had a STD were more likely to use a condom during each sexual intercourse. In addition, personal normative beliefs and a positive attitude towards condom use were associated with its regular use. Finally, no interaction between time and the theoretical variables was observed.

DISCUSSION

Heterosexuals who remained single over a period of three years did not necessarily adopt safer behaviours. These people seem to have difficulty in adopting safe behaviours in a constant and sustained manner. The proportion of respondents reporting having more than one partner per year increased over the study period; however, these respondents did not report increased condom use. According to the theoretical model, intention is seen as one of the most important predictors of behaviour. This was clearly supported in the present study. However, other factors also contributed to this prediction.

It is interesting to note the stability of psychosocial variables over time. The passage of time (aging) and the addition of new experiences do not seem, except for a few exceptions, to modify psychosocial variables. This stability could result from the absence of communication strategies

transmitting clear messages of HIV prevention for single heterosexuals. Indeed, since the onset of the AIDS epidemic, heterosexuals have been excluded from national AIDS strategies and, apart from preventive actions aimed at adolescents, have been left to themselves.

According to the Theory of Planned Behaviour, the role of intention as an important behavioural determinant is supported. This result indicates that it would be pertinent to consider *implementation of intention*, as suggested by the work of Gollwitzer,³² as a prime objective in preventive intervention among single heterosexuals.

One must also note that the past experience of a STD, helps predict condom use. This means that a negative experience can stimulate an action. This corroborates data from Santé Québec,³³ which suggested that being treated for a STD positively influenced condom use frequency. Moreover, people who had already had a STD were possibly more in contact with STD and AIDS information sources.

Personal normative beliefs toward regular condom use is also a factor influencing single heterosexuals to maintain this behaviour and should also be considered as an objective in programs made for them. Thus, messages highlighting the importance of acting as a responsible person should be promoted.

Finally, people who perceive greater benefits from using condoms have a higher probability of usage. Therefore, there is reason to set up programs which will promote the advantages of using condoms for single heterosexuals. These results support the findings of other researchers who showed that a more positive attitude was an important determinant for regular condom use.^{17,26,34-37}

Limitations

There are, however, some limitations to this study that need to be addressed. The first limitation concerns the representativeness of study respondents. Indeed, according to certain authors,³⁸ participants in sexual behaviour studies are more liberal and permissive, demonstrate less sexual guilt, are less inhibited, are more sexually curious, and have a more favourable attitude towards their sexuality and sexual behaviour studies. Conversely, people with high-

risk sexual practices who do not perceive these activities as problematic tend to be non-participants. Therefore, the results of this study could underestimate risky sexual behaviours in the population studied.

Refusal to participate in a study is an inevitable phenomenon in research on human behaviour and can lead to a participation bias. Because of the intimate nature of the behaviour studied, a questionnaire is the most culturally acceptable and appropriate instrument to collect data.³⁸ Certain authors^{17,38} mentioned that collecting methods that do not involve visual contact with the interviewer, such as a telephone inquiry, give respondents the feeling their anonymity is better protected. Nevertheless, in view of these limits, generalizations should be avoided until other studies corroborate these observations.

Up to now, little effort has been invested in reaching single heterosexual adults within the STD and AIDS prevention strategies. Results of this study suggest that it is important to consider this population and their psychosocial characteristics in developing health promotion strategies to encourage regular condom use. Particular attention should be given to the content of the messages transmitted. Such messages should be based on the determinants of the behaviour of these people with respect to the prevention of STDs and AIDS.

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RÉSUMÉ

Objectifs : Cette étude vise dans un premier temps à décrire les caractéristiques comportementales et psychosociales des adultes hétérosexuels et célibataires au regard de l'usage régulier du condom, et dans un deuxième temps à définir les facteurs associés au maintien de son usage dans le temps.

Méthode : Une cohorte de 179 adultes hétérosexuels et célibataires (83 hommes et 96 femmes, âge moyen : 32 ans) a été suivie sur une période de deux ans. Les données ont été recueillies, par le biais d'entrevues téléphoniques, à l'entrée dans l'étude et un et deux ans plus tard. Les numéros de téléphone ont été générés à partir d'une liste aléatoire de chiffres.

Résultats : Les changements suivants sont observés dans le temps : bien que moins nombreux à être actifs sexuellement, ceux qui l'ont été déclarent plus souvent avoir plus d'un partenaire sexuel. Aucun changement significatif n'est observé au regard de l'usage du condom. Les caractéristiques psychosociales sont demeurées stables dans le temps. Avoir une intention favorable est le principal facteur associé au maintien de l'usage régulier du condom. Avoir déjà eu une MTS, les convictions personnelles et une attitude positive y sont aussi associés.

Discussion : Les approches de promotion de l'usage du condom devraient rappeler l'importance d'agir de manière responsable et les avantages d'utiliser un condom. On sélectionnera aussi des stratégies qui favorisent la mise à exécution des intentions.

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