CHRU Community Health Research Unit

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A CRITICAL AND COMPARATIVE EXAMINATION OF THREE THEORIES OF HEALTH BEHAVIOUR CHANGE APPLIED TO HIV PREVENTIVE BEHAVIOUR

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ABSTRACT

Research into HIV preventive behaviours, such as condom use, is becoming grounded in theory relevant to health behaviour change. Simply increasing knowledge about HIV, AIDS and condoms is not sufficient to create significant increases in condom use. In this study, a non-probability sample of 435 males and 443 females between the ages of 15 and 29, recruited from a regional Health Department Healthy Sexuality Programme and the Health Service Centres of local universities and colleges, responded to a structured interview survey which assessed the nature, frequency and determinants of the use of the male condom for HIV prevention.

The study measurement model included demographics, condom use for vaginal intercourse with long-term, short-term, casual and exchange partners, and factors derived from three theories relevant to health behaviour change: the Transtheoretical Model (TTM), the Theory of Reasoned Action (TRA), and the Health Belief Model (HBM). The study had the following objectives: 1) to identify the patterns of psychosocial and behavioural variables that distinguish people at different stages of readiness to use condoms, 2) to test the explanatory power of the TTM, TRA and HBM as they relate to condom use, 3) to evaluate the integration of the TTM with the other two models in explaining condom use, and 4) to determine whether gender differences exist in the determinants of condom use. Results of this study revealed a higher prevalence of unprotected vaginal intercourse (i.e., never or almost never using condoms) with long-term (46%) as opposed to short-term (10%) partners.

Comparing those with long-term versus short-term partners according to the stages identified by the Transtheoretical Model revealed a significantly higher proportion of respondents with short-term partners to be in the action and maintenance stages. Regarding factors which distinguish stage (level of readiness), each of the models tested identified between-stage differences for both long- and short-term partner types. Regression analysis revealed that, beyond the variance in condom use explained by partner type, the TTM accounted for 50% of the variance while the HBM and TRA accounted for 13% and 24% respectively. Finally, when controlling for partner type, gender did not have a significant impact on condom use.

This study has generated data that may well prove useful in planning, implementing and evaluating public health interventions aimed at increasing the prevalence of condom use. These data support the perspective that intervention strategies should be tailored to the needs of subgroups that are distinguished according to their degree of readiness to use condoms.

DISCLAIMERS

The opinions expressed in this publication are those of the authors. Publication does not imply any endorsement of these views by either of the participating partners of the CHRU, the Ontario Ministry of Health, nor by Health Canada.

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PART ONE: INTRODUCTION

1.1 Study Rationale

Studies of condom use [1] to prevent HIV infection have, until recently, lacked a theoretical basis specific to the determinants of condom use. Consequently, much of the data available to guide public health interventions which concern condom use do not specify variables that could be targets for intervention. The aim of this study was to identify the determinants of condom use among heterosexually active males and females between 15 and 29 years of age. In addition to demographic variables, the survey assessed the extent to which variables derived from the Transtheoretical Model (TTM), from the Theory of Reasoned Action (TRA) and from the Health Belief Model (HBM) explained condom use with long-term, short-term, casual and exchange partners. We believed that the results of this study would prove helpful to understanding the intervention needs of subgroups defined according to their degree of readiness to use condoms, thus enabling the development and evaluation of tailored intervention strategies to increase the prevalence of condom use.

1.2 Summary of Activities

Eight hundred and seventy eight heterosexually active youth (435 males and 443 females), aged 15-29 were surveyed over an 18 month period between September 1994 and March 1996. This non-probability sample was recruited from the Ottawa-Carleton Health Department's Healthy Sexuality Programme and the Health Service Centres of the local universities and colleges. Potential respondents were recruited by distinctive posters displayed in these locations and by business cards advertising the study that were distributed by clinic staff. In addition, respondents were given a supply of cards to distribute to friends. The posters and cards asked potential respondents to call the project director to obtain more information about the study and to arrange an interview. At this time a screening procedure was implemented to ensure that participants met the study eligibility criteria.

Respondents participated in a personal, structured interview of approximately one hour duration, which was followed by a debriefing protocol. The questionnaire included demographic, sexual history and substance use items, as well as items measuring condom use, and the constructs of the TTM, TRA and HBM. For the purposes of this study we also developed and validated a measure of relationship factors that could mediate condom use.

The interview protocol was the result of an extensive process of item generation and refinement undertaken through a multi-stage process which included: a review of existing measures of the model constructs; key informant interviews with a sample of 10 males and 10 females representing the target population; pretesting of this draft instrument and a pilot study to enable psychometric testing on a sample of 128 participants representing the target population. The psychometric assessment of the questionnaire addressed internal consistency and test-retest reliability as well as factorial validity.

[1] Throughout this report, the term ***condom*** refers to the use of the ***male condom***.

The interviews were conducted by a team of highly trained interviewers who were either social workers, public health nurses or youth counsellors. They were rigorously trained in the use of the interview protocol and received ongoing supervision over the course of the study. A detailed interviewer's manual and handbook were prepared for this study to help ensure consistency in administration and in debriefing. Participants were given a choice of location, timing and language for the interview, as well as gender of the interviewer. Participants were compensated $20 for their time.

PART TWO: LITERATURE REVIEW

2.1 Current Context

A key strategy to prevent the sexual transmission of human immunodeficiency virus (HIV) infection has focused on increasing condom use among people likely to be at risk for contracting or spreading the virus. Data from LCDC (January 1993, Division of HIV/AIDS Epidemiology) indicate that, in Canada, heterosexual activity with a person at risk accounted for 35% of all cases of AIDS among women and is the most important risk factor for Canadian women. Across studies, the lifetime prevalence of condom use ranges between 15% and 82% with point-prevalence estimates of between 13% and 65%. These rates vary according to such variables as number of sexual partners, age, sexual experience, and relative primacy of the sexual relationship.

Traditionally, attempts to identify correlates of condom use have tended to measure static demographic variables (e.g., race, age, socioeconomic status, education, sexual history, and drug use history[1 2 3 4 5 6 7 8 9 10 11 12 13 14]). While such knowledge can help identify risk groups, it contributes little to the actual content of interventions. Since the mid-1980's, knowledge, attitudes and beliefs concerning AIDS and sexuality have been investigated as determinants of condom use. Reasons for non-use of condoms include: embarrassment about using condoms, difficulty in discussing condom use with partners, beliefs that condoms interfere with sexual pleasure, insufficient HIV knowledge, and several beliefs reflecting that 1) condoms are immoral or associated with extra-marital sex or prostitution, 2) that they inhibit spontaneity, 3) that their use implies lack of trust in partner, 4) that they do not work and 5) that contracting HIV is up to fate[15] . Lack of control over sexual decision-making appears to be a factor for some groups and not others[16], while for others fear of pregnancy, rather than STD prevention, appears to be a main motivator of condom use[17].

Morrill et al sampled 189 heterosexual women in a longitudinal design to identify factors predicting initiation and maintenance of condom use. Maintenance of condom use was predicted by higher levels of outcome efficacy, higher level of internal health locus of control, higher levels of depression, lower levels of dislike of condoms and being in a less committed relationship predicted maintenance. [18]

Gomez and VanOss Marin found that condom use among women was predicted by positive attitudes toward condoms, an apparent reliance on condoms for contraception, stronger social

norms favouring condom use, higher levels of self-efficacy, more perceived power in sexual decision-making, higher levels of HIV concern and a greater number of recent sexual partners. [19]

Educational interventions addressing condom use have demonstrated an appreciable degree of effectiveness in some important risk groups for example among gay and bisexual men. However, they have generally not proven effective among heterosexual adults[20] with evaluations of such interventions yielding inconsistent, often disappointing results [21 22 23].

While brief educational interventions can increase knowledge between 6% & 21% [24]; it is clear that knowledge is a necessary but insufficient determinant of change[25 26 27 28 29]. That is, behavioural changes are not consistently produced by increased knowledge. A more precise understanding of the determinants of condom use is required if public health interventions are to appreciably increase the prevalence of condom use[30 31 32 33 34 35].

Approaches to understanding the determinants of condom use which are grounded in theories of how people change may hold promise for the development of more effective interventions to the extent that they can identify variables amenable to intervention.

Theory-Based Findings

Theory-driven studies have tended to draw upon constructs from three conceptual frameworks: the Health Belief Model (HBM), the Theory of Reasoned Action (TRA), and Cognitive Social Learning Theory (CSL) in which self-efficacy is a central construct. More recently, investigators have been applying the Transtheoretical (stages of change) Model (TTM) to understanding condom use. While theories relevant to the health behaviour of individuals have proven valuable, not surprisingly, no model adequately explains condom use. This may be due to the inherent assumption in the models that people are rational decision-makers having the capability to deliberate upon, decide and control their behaviour. Additionally, the models demonstrate relative weaknesses in addressing relationship, cultural and social-context factors unique to specific target populations.

With these foregoing limitations in mind, studies using constructs from these models can make substantial contributions to population health through more accurately identifying intervention targets among different population groups and suggesting ways in which to tailor interventions more effectively where the determinants of risk are at the individual level[36 37]. Current health promotion models may need to be blended with measures of relationship and contextual factors in order to achieve a more complete and sophisticated understanding of condom use[38].

The Health Belief Model

Studies using the HBM to study condom use for HIV prevention have assessed the following five variables: perceived susceptibility to HIV infection; perceived severity of contracting HIV; factors facilitating and inhibiting condom use and cues to action. Knowledge, demographic and other situational factors are usually added. The HBM is often supplemented by variables from Cognitive Social Learning Theory, which includes self-efficacy (confidence in one's ability to implement the behaviour) and outcome expectancy (perceived effectiveness of the preventive behaviour).

With respect to these variables, although people strongly endorse condom use, frequency of use is low suggesting a low degree of perceived personal susceptibility[39]. There is some evidence that women lag behind men in acceptance of AIDS preventive practices, despite their having higher levels of health motivation[40]. Taken together, higher perceived susceptibility, severity and strong beliefs about the protective efficacy of condoms have predicted condom use[41]. Condom use has also been predicted by perceived cost/benefits around such factors as pregnancy prevention, AIDS prevention, partner approval, embarrassment and pleasure reduction[42]. Non-use of condoms has been related to low self-efficacy and negative outcome expectancies associated with their use (e.g., condoms will reduce pleasure)[43].

Studies that measure only HBM variables generally produce evidence supporting the model. However, in studies that include variables from other models, HBM variables may not have primary explanatory power. For example, in a multivariate model including the five HBM variables, self-efficacy, norms and values, only self-efficacy, norms and values significantly predicted protective sexual behaviour[44].

The Theory of Reasoned Action

The Theory of Reasoned Action (TRA) views intention as the most proximal determinant of behaviour. Intention is determined by attitudes towards the behaviour (beliefs about the consequences and evaluation of the consequences), normative beliefs (perception of what important others think), personal normative beliefs and motivation to comply with those beliefs.

While intentions to use condoms are the strongest predictors of behaviour, their importance can be increased when supported by positive attitudes regarding sexual enjoyment and when normative beliefs against condom use are weaker[45]. Beliefs that condom use would not interfere with sexual pleasure and that using them would make one's partner appreciative can also strengthen intentions[46]. There is also some evidence that intentions interact with sexual experience[47].

Intention to use condoms is influenced by a variety of factors in addition to those specified by the theory. Following an intervention (involving videotapes, games, role-playing, and skills-building for HIV prevention), increased self-efficacy and favorable attitudes regarding partner support were related to stronger intention to use condoms.[48]. Of note, AIDS knowledge and outcome expectancies were unrelated to intentions and these findings replicated those of an earlier cross-sectional study[49]. Intentions to use condoms can also be influenced by attitudes towards male responsibility and perceived costs and benefits of using condoms which interact with degree of sexual experience.

Other factors that have been related to intention include: perceived susceptibility to AIDS, religiosity, traditional attitudes towards the male role, interference with pleasure or embarrassment in using condoms, and partner support[50 51]. Furthermore, emotions and intentions can be interdependent predictors of sexual protective behaviour. Not being in a steady relationship and having a new partner predicted current condom use and future intentions.

Condom non-users have been discriminated from users by negative attitudes toward condoms, feelings of embarrassment about condoms and believing that condoms precluded good sex[52].

Positive attitudes towards condoms may not be predictive of use, even those with high perceived susceptibility were not more likely to use condoms unless they also had high levels of knowledge and self-efficacy[53].

A recent test of the TRA[54] found that attitudes and norms about condom use were significant strong predictors of intentions to use condoms for both steady and casual partners. In this study, attitude appeared a stronger predictor for steady partners, while norms were more important for casual partners.

Intentions were significantly related to condom use for both partners types. When gender and self-efficacy were added to the TRA, it was evident that, for steady relationships, normative beliefs had a stronger impact on females' intentions and attitudes had a stronger impact for males. For casual relationships, the effect of norms was again stronger for women. Self-efficacy contributed significantly to intentions for steady, but not for casual, partners. Overall, for both partner types, intentions had the strongest effect on condom use and neither self-efficacy nor gender contributed a significant degree of variance beyond this.

In a study which extended the TRA,[55] White and colleagues also found that attitudes and norms were strong predictors of intention and that self-efficacy and planning to use condoms also entered the model. Regarding condom use, self-efficacy, planning and perceived behavioural control did not explain a significant amount of the variance beyond that explained by intentions. However, the effects of intentions on behaviour were stronger among those with higher levels of self-efficacy.

The Transtheoretical Model

The HBM and TRA do not address the issue of how people actually adopt new health behaviours. Recently, the Transtheoretical Model (TTM) has received considerable attention in health promotion given its focus on the manner in which people modify health relevant behaviours. [56] There are four elements in the model: stages of change; processes of change; decisional balance and self-efficacy.

Stages of Change: The model proposes that changes in health behaviour are not discrete events. Rather, people progress through five stages: Precontemplation (not thinking of adopting the behaviour within the foreseeable future); Contemplation (considering adopting the behaviour within the foreseeable future); Preparation (intending to adopt the behaviour imminently); Action (implementing the new behaviour) and finally Maintenance (consolidating the change and using strategies to prevent slips and relapses). Relapse is considered to be a normative event, and those who relapse return to a previous stage and engage in the process again. Several attempts to change a habitual behaviour may be required.

Processes of Change: the model suggests that particular types of change strategies (the ten processes of change) are relatively specific to the different stages and so, therefore, are the types of interventions required in different stages. The number of processes of change used typically increases from Precontemplation through Action and then declines with successful Maintenance. However, for behaviours certain processes may continue to be needed in Maintenance and this is likely to be the case for condom use.

Decisional balance: involves the pros (advantages) and cons (disadvantages) of adopting the new behaviour, and the level of pros and cons also varies by stage. In Precontemplation, pros and cons are both low (i.e. not salient) with cons outweighing pros. Their salience increases in Contemplation and Preparation with pros eventually outweighing cons, and during Action and Maintenance their salience decreases.

Self-efficacy: relates to a person's confidence in their ability to engage in a specific behaviour. It increases as one progresses from Precontemplation to Maintenance and remains high as the behaviour is sustained.

Redding et al [57] have validated 11 processes of stage for condom use and discriminated stages by process use on a small (n=286) sample of college students. These investigators observed that process use peaked in the Action stage, and processes were used least in Precontemplation. In a later study, Redding et al,[58] found that self-efficacy mediated the relationship between attitudes and behaviour. Furthermore, pros, cons and self-efficacy accounted for almost 25% of the variance in condom use behaviour. In a further study, Redding et al,[59] compared the TTM and HBM in their relative ability to predict HIV risk. Alone, the HBM variables accounted for 12% of the variance, while the TTM variables generated two functions accounting for 22% and 13% of the variance in HIV risk. By combining the best predictors from both models, almost 50% of the variance was explained. Grimley et al, [60] found that the TTM constructs discriminated among stages for both primary and secondary partners. Those in Precontemplation had higher scores on cons of condom use than on pros, and the reverse was true for those in Maintenance. In addition, self-efficacy was lowest for individuals in Precontemplation and increased significantly for those at progressively higher stages.

The TTM constructs appear to contribute to a more comprehensive understanding of the determinants of condom use. Taken together, the earlier findings cited above that have emerged from the TTM, TRA and HBM, in spite of their inherent limitations, indicate that individual behavioural models addressing condom use can identify population subgroups which have unique needs for differential interventions and also provide guidance on the nature of those interventions.

PART THREE: RESEARCH ACTIVITY SUMMARY

3.1 Research Goals and Objectives

Research Goals

The ultimate goal of our research agenda was to develop public health interventions that increase the HIV protective nature of the sexual behaviour of youth and young adults by effectively increasing the prevalence of consistent condom use.

The goal of this study was to develop a better understanding of the gender specific determinants of readiness to use condoms among heterosexually active youth and young adults. This approach will yield data which will drive the development of gendered interventions to increase condom use specific to the client's stage or readiness to adopt this protective behaviour.

Research Objectives
Based on the above general and study specific goals, the four objectives of this study were:

- To identify the unique patterns of psychosocial and behavioural variables that characterise different degrees of readiness to use condoms.
- To test the explanatory power and model-based predictions of the Health Belief Model (HBM), the Theory of Reasoned Action (TRA) and the Transtheoretical Model (TTM) as they relate to condom use.
- To evaluate an integration of the TTM central constructs with the other models in explaining condom use.
- To determine if the determinants of condom use differ by gender, by testing the models for men and women independently.

Objective One
The research hypothesis related to objective one was that each stage of change would be characterised by unique response patterns on the study constructs.

Objective Two and Three
The research questions related to objectives two and three are presented as path diagrams in Figures 1 - 6. One path model has been specified for each theoretical framework (TRA, HBM, TTM), and two expanded models representing the TTM with each of the TRA and HBM were also tested.

Objective Four
The use of the male condom is a behaviour for men, while theoretically, it can only be an intention for women. Therefore, it was hypothesised that determinants of the use of condoms would vary by gender.

3.2 Methods

In order to meet the study objectives detailed above, personal structured interviews with eligible heterosexually active youth and young adults were carried out.

3.2.1 The Interview: Recruitment

3.2.1.1 Criteria for Inclusion in the Study

To be eligible for inclusion in the study, potential respondents had to meet the following five criteria:

- to be between the ages of 15 and 29;
- to currently be in a sexual relationship with someone of the opposite sex;

- to be capable of giving informed consent;

and, in order to maximise the likelihood of condom use being relevant to the sample,

- respondents or their partners could not be pregnant;
- or to have been trying to conceive within the past 6 months or intending to within the next six months.

3.2.1.2 Recruitment Strategies

A non-probability sample of heterosexually active youth and young adults aged 15 - 29 was recruited by three different methods. Recruitment efforts were focussed on those locales likely to be frequented by sexually active people in the required age range.

A distinctive poster, in both English and French languages, was consistently and prominently displayed in the waiting and washroom areas of the Ottawa-Carleton Health Department's Sexual Health Centre, of the Health Service Centres at the University of Ottawa, Carleton University and Algonquin College.

The poster was reproduced in the form of business cards. These cards were available at the Health Centres and were also distributed as appropriate on an individual basis by Health Centre staff.

In addition, at the completion of the interview, participants were given a supply of cards to distribute to their friends. Participants were also encouraged to suggest to their friends that they call for an interview.

3.2.1.3 Recruitment Process

The poster and cards encouraged potential participants to call a direct recruitment line to the project director to arrange a completely confidential interview, lasting a little over an hour. The project director screened for inclusion using questions based on the eligibility criteria. The screening questions integrated common sexual jargon and technical terms and were developed in conjunction with respondents with characteristics representative of the sample. The use of these questions acted as a first stage screening for inclusion in the sample frame. Active sexual status and ability to give informed consent were later confirmed by the interviewers using similar questions.

Eligibility established, the parameters of the study were outlined, emphasizing the confidential and voluntary nature of the interview, the time involved, the sensitive nature of the questions and the subsequent use of the data.

Participants were afforded maximum choice in arranging the location, timing and language of the interview and the gender of the interviewer. Participants were offered the choice of an interview at any of the participating Health Centres thus maximizing choice of anonymity over convenience. Appointments for interviews were available either during the day or throughout

the evening both on weekdays and over the weekend. Participants were given the choice of gender for the interviewer and the choice of official language for the interview.

All participants were helped to design their own unique personal code to identify themselves to the interviewer. The institution of such codes proved extremely useful in tracking duplicate requests for interviews and for giving extra attention and support to people requesting an interview who had already missed previous appointments.

3.2.2 The Interview: Structure

3.2.2.1 The Interviewers

The interviews were conducted by a team of highly trained interviewers selected for their non judgmental attitude, ease and experience of working with people on sensitive subject matter and their knowledge of sexual health and HIV-related risk behaviours. All were either social workers, youth counsellors or public health nurses. In addition to extensive training, the interviewers received ongoing group and individual consultation for the duration of the project. An interviewer's manual and handbook were produced in order to ensure accuracy and uniformity in administering the questionnaire and in conducting the debriefing.

3.2.2.2 Process

A consent form was read out to participants at the beginning of the interview emphasizing the confidential nature of the interview, the fact that participants could choose not to answer questions, could terminate the interview at any time and equally as important, that their right to services or treatment would not be affected by their decision to participate in the interview. The interviewers recorded the participant's verbal consent on the consent form.

3.2.2.3 Debriefing

Debriefing after the interview was conducted to correct misinformation on HIV-related risk behaviours, to counsel on safer sexual and drug injecting practices whenever appropriate and to answer the participants' questions. Immediate referral to a clinic nurse was available where appropriate. Information on sexual health services and schedules of operating hours; condoms and lubricant with instructions for their use and safer sex pamphlets were routinely offered to all participants and in all cases were accepted. Participants were also compensated $20 to cover for their time spent in completing the interview.

3.2.3 The Research Instrument

3.2.3.1 Instrument Development

Individual focus interviews with 10 men and 10 women with characteristics representative of the sample were conducted to derive additional items and to modify a potential pool of items for the newly developed relationship scales. In addition, selected item order and wording of measures from the other models were discussed. Options regarding open ended versus closed options responses were also tested.