

The Health Belief Model and Safer Sex: Implications for Women's Health

Andréa Riesch Toepell¹
Brock University

The Health Belief Model (HBM) is a popular behaviour change model among psychology and social scientists. However, it is not generally applied in its entirety as only selected constructs are used in research. In an attempt to test its applicability for use in the 21st Century, the complete model is evaluated for its predictive quality relating to safer sex behaviour. Each of the model's original six variables were tested to predict condom use among 100 Canadian prisoners, behaviour prior to incarceration. Analyses included tests of chi-square and logistic regression. Findings indicate it is necessary to create a new factor of sexual "partner type" in order for the HBM to predict condom use. Condoms are generally used with casual and anonymous partners, but not with steady partners. These "steady" female partners are at risk for contracting HIV, STDs or Hepatitis from their partner if condoms are not used, particularly when a prisoner assumes the woman is "clean" and "won't give AIDS" to him. Such attitudes put sexual partners at risk for potential exposure to prisoners' own earlier risk behaviours. Educational development for marginalized women associated with the inmate population is explored.

Worldwide the number of men, women and children living with HIV or AIDS is estimated to be 42 million and the number continues to rise (UNAIDS, July 2002). With the current rate of over 16,000 new infections per day, there is an unprecedented number of people living with HIV/AIDS needing care and support. It is estimated that 95% of individuals with HIV/AIDS lives in developing countries (UNAIDS, July 2002). Globally, the fight against the AIDS pandemic has been predominately driven by research as well as massive education and behaviour change efforts, and harm reduction campaigns to reduce the rate of HIV infection. The prospects for developing a means for destroying the virus within the body (i.e., a vaccine) are encouraging albeit a cure remains undiscovered. Since the late 1980s, public health professionals, sociologists and psychologists have declared that the most hopeful approach to the prevention of AIDS is through the strategy of education and behaviour modification.

¹ I thank the two reviewers who provided very detailed and insightful comments on an earlier version of this paper. Send requests for prints to Andréa Toepell, Department of Community Health Sciences, Brock University, Saint Catharines, Ontario, Canada L2S 3A1. (e-mail:atoepell@arnie.pec.brocku.ca)

Education concerning AIDS prevention focuses almost exclusively on safer sex practises and safer injection drug use. Considering that condoms are an important means of preventing the transmission of HIV, STDs and Hepatitis, there exists a proliferation of studies that have investigated the determinants of condom use. Generally such studies provide valuable information for developing effective condom promotion and for assessing trends in preventive health behaviour change.

The Health Belief Model (HBM) explains health behaviour from a social psychology perspective using the theories of value-expectancy and decision-making (Becker, 1974; Kronenfeld & Glik, 1991; Maiman & Becker, 1974). The model concentrates on dimensions influencing an individual's control over a specific action and uses these same dimensions (or variables) to predict behaviour. The original six constructs of the model include perceived susceptibility, *perceived severity*, *perceived benefits*, *perceived barriers*, *cues to action* and *demographics* or psychological structures.

Generally, inmates come from environments that make them vulnerable to poor health, addictions, low education and low self-esteem. Prisoners who participate in risk behaviour either inside or outside correctional facilities put their sexual partners at risk for contracting an STD, HIV or Hepatitis. The women who are exposed to unprotected sex with former inmates are most vulnerable, as they may not be aware of the risk behaviours their male partners engaged in the past or while incarcerated. Further, female partners tend not to assert the practise of safer sex with male partners and experience awkwardness and difficulties in negotiating safer sex measures (de Guzman, 2001; Exner et al., 1997; Hogben & St. Lawrence, 2000; Mallory & Stern, 2000). This reluctance and difficulty places women at even further risk for contracting a virus or disease. If she herself commonly does not practise safer sex or use clean needles for drug use, then her chances of infecting her sexual partner (the former inmate) is also increased if condoms are not used.

As women continue to be the fastest growing group infected with HIV, the primary mode of transmission is also changing. Heterosexual transmission accounts for this increase among women in Canada and the US. Although infection through injected drugs use (IDU) remains high, this category may mask women who share their injecting equipment, but are also exposed through unprotected heterosexual contact. Traditional gender roles continue to perpetuate the males' freedom from taking responsibility for their health with the burden falling on the female partners to look after their own health. Safer sex strategies are difficult to negotiate when the woman feels subservient or powerless in her

heterosexual relationship. Health promotion approaches aimed at reducing risk for HIV and STD infection have not been especially relevant to many women, as negotiating safer sex skills within the social context of their lives has been missing from the education (Campbell, 1995).

Previous research on condom use typically formed two type of sexual partners: main/regular and other/casual. It indicated that people are twice as likely to use condoms consistently with a casual or new partner as compared to a steady one (Ellen et al., 2002; Sheeran & Taylor, 1999). Other studies have categorized partner types into main, other/casual, injection drug users, and commercial sex workers (von Haefen et al., 2000; Soler et al., 2000). The literature has started examining condom use behaviour on the basis of partner type.

Statement of the Problem

Fifty years since its inception, the HBM sustains popularity in the field of health behaviour theories. Several other such theories have since entered the field, e.g., Theory of Reasoned Action, Social Learning Theory and the Stages of Change Theory (Transtheoretical Model), but the HBM is the most longstanding among them. It was selected for this study because it was developed for the purpose of explaining avoidance of disease. Very few studies implement the HBM in its entirety when predicting health behaviour, instead most typically use only the variables of *perceived susceptibility, severity, barriers or benefits*. Reviews of such studies have shown that perceived barriers to taking actions proved to be the most powerful dimension when testing the predictive capability of the model (Janz & Becker, 1984; Kronenfeld, 1988; Kronenfeld & Glik, 1991; Rosenstock, 1966, 1974b). It is unclear whether researchers select variables based on convenience, or if they are unaware that the model is more comprehensive than appears to be understood, as so few studies present all six variables of the HBM in the literature.

The intent of the following study was three-fold: first, to determine whether or not the HBM is an appropriate model to use five decades after its creation by testing the complete model for its predictive qualities toward a contemporary health behaviour (i.e., condom use), as a means of preventing HIV infection; second, to explore and test new variables that may be introduced to the HBM in an attempt to improve the predictive power of the model concerning condom use behaviour and third, to collect information about sexual risk behaviour so that educational programming can best meet the need for effective behaviour change among female sexual partners of men in correctional facilities.

BACKGROUND

Health Belief Model

The HBM was first developed during the early 1950s in the United States. It became evident that the continent experienced widespread “failure” to convince people to accept disease preventive behaviours or screening tests for the early detection of asymptomatic diseases, such as tuberculosis (Rosenstock, 1974a). This phenomenon, whereby knowledge concerning a disease and its preventive strategies will not ensure preventive health action (or behaviour change), exists even to date.

The basic doctrine of the HBM, derived from psychological and behavioral theory, maintains that behaviour is largely a function of two factors: 1) the value placed by an individual on a specific goal (in this case health) and 2) the individual’s estimate of the likelihood that a certain behaviour or action will achieve the specific goal. When these variables are considered in the context of behaviour related to health, the associations are: 1) the desire to avoid an illness (or to become well if already ill) and 2) the belief that certain actions will prevent an illness, or make a current illness less severe (or eliminate it) (Janz & Becker, 1984). That is, the individual’s estimated threat of an illness and the likelihood of being able to reduce that threat through personal action will determine if she/he will engage in preventive behaviours.

In the mid to the late 1980s, the model’s original founders suggested augmenting the HBM to include self-efficacy (Rosenstock, 1990; Stretcher, et al., 1986) as its use had been criticized for lacking this measure. It was accepted that the presence of self-efficacy is necessary when adopting preventive behaviours. Generally, a separate dimension of self-efficacy was not readily added or used by social science researchers using the HBM, although some have used social learning theory based on the work of Bandura (1986) to integrate the concept of self-efficacy into the HBM (Rosenstock, Stretcher & Becker, 1988). Therefore, a major assumption of the HBM is that the beliefs of the individual determine behaviour to a greater extent than the objective environment (Rosenstock, 1974b). In this regard, the model concentrates on phenomenological aspects of the individual and, to a lesser degree, the history or past experiences of the person (Salazar, 1991).

Women’s Vulnerability to HIV Exposure

Social scientists have investigated and/or predicted condom use among a variety of populations, usually at the impetus of perceived risk levels for that particular group, including women (Gielen et al., 1994; Kline & VanLandingham, 1994; Mallory & Fife, 1999). The most notable,

disturbing and consistent finding of such studies is that many members engaging in acknowledged high-risk behaviours do not exercise precautions against contracting HIV or another STD. Mann and Tarantola (1998) refer to this phenomenon as “social vulnerability”, others have identified the same behaviours for women who have little power to negotiate the terms of sexual encounters with their heterosexual partners.

The concept of social vulnerability to HIV/AIDS recognizes that individuals are at risk due to their social position and not simply as a result of their sexual behaviour. It is possible to think of vulnerability as being the opposite of empowerment (Mann & Tarantola, 1998). Empowerment involves access to information, comprehension of the information, the ability to make a decision regarding behaviour change and being able to enact that decision. A person who cannot act on decisions, or even obtain information necessary for an informed decision, is less empowered or more vulnerable to risk. Although infection occurs as the proximal result of specific individual behaviours, the concept of social vulnerability highlights the social contexts that put some women and groups at higher risk for HIV infection than others (Parker, 1996).

Women’s vulnerability to HIV, STD and Hepatitis exposure is the consequence of reduced access to and ability to utilize information and services, powerlessness in sexual and economic relationships, abuse, stigma and discrimination, and poverty. Women’s individual behaviour is governed by societal and cultural norms, and individual knowledge, attitudes and beliefs cannot affect behaviour directly as they are mediated by the relationship between partners (Morris, 1997). As a consequence, a focus on empowerment recognizes the political, social and cultural constraints to health and addresses these underlying barriers, both at the individual and societal levels, that place women in a position of heightened vulnerability.

Risk Among the Prison Population

Condom use behaviour among prisoners (concerning sexual behaviours either inside or outside a correctional facility) has been better researched and documented internationally than in Canada. Internationally, some studies have examined high-risk behaviours among inmates while incarcerated, specifically unsafe sexual activities and the sharing of syringes for injecting drugs or tattooing (Carvell & Hart, 1990; Dolan, 1997; Estebanez et al., 2002; Gore et al., 1995; Koulierakis et al., 2000; Krebs, 2002; Mahon, 1996; McKee & Power, 1992; O’Mahony & Barry, 1992; Pont et al., 1994; Power et al., 1992; Rotily et al., 1994; Rotily et al., 2001; Strang et al., 2000). Due to administrative resistance in the correctional system in Canada, few studies exist concerning HIV/STD

and Hepatitis risk activities in prisons (Dufour et al., 1996; Ford, 1999; Hankins et al., 1994).

Partner Type

In previous research, “partner type” was distinguished by two criteria: 1) monogamy versus casual contact in the relationship and 2) duration of the sexual relationship. This approach introduces differences in interpreting and understanding among participants and hence the findings, particularly when studying behaviour cross-culturally or among different groups. In an effort to clarify labelling of partner types, Ahlemeyer and Ludwig (as described in Kordoutis et al., 2000) attempted to identify four types of relationships (not partners) based on communication and exchange dynamics prevailing between partners. These types include the “romantic” relationship characterized by sentiment, the “hedonistic” by passion and pleasure, the “matrimonial” by feelings of security and concern, and the “prostitutional” or utilitarian by exchange and individualistic goals (Kordoutis et al., 2000). The present study proposes to redefine partner types by categorizing them based on frequency of contact defined and explained by the researcher, in an effort to reduce misinterpretation among participants and suggest new categories for future research.

THE CURRENT STUDY

The HBM was employed to predict condom use among prisoners’ sexual behaviour prior to incarceration (as inquiry into sexual behaviour during incarceration was not permitted by the authorities of the Ministry of Correctional Services). All original components of the model were tested for their predictive value and ability to identify factors that influence condom use.

Methodology

Prisoners were randomly selected and asked to participate anonymously in a survey-style questionnaire (one-to-one interview format with the author) in a private interview room. Each participant signed an informed consent that was read out individually if the inmate was illiterate. Most survey questions were closed-ended, with a few open-ended questions. The questionnaire took 50-60 minutes to complete and none of the participants terminated the interview prematurely. The sample was taken from two provincial correctional facilities located in Toronto, Ontario in Canada. The largest city in Canada, Toronto has a

population of over three million and an approximate inmate population of 2,500 across four jails.

Participants: One hundred adult male inmates were interviewed. Fifty-five men were sampled from a provincial Detention Centre (representing 15 percent of the centre's adult male population for the dates the interviews took place) and 45 men from a provincial Correctional Centre (representing 17 percent of the centre's sentenced population for the dates the interviews took place). A total of 24 inmates declined to participate in the study.

The age range of the sample was 18 to 54 years, with a mean of 29 years and standard deviation of eight years. Sixty-eight percent of all prisoners have a self-reported education level of Grade 9-11. Twelve percent graduated from high school at the Grade 12 or 13 level, while nine percent completed some post-secondary education and one percent graduated from college. Six percent received only grade-school education, while four percent had no formal schooling.

Eighty-six percent of the sample identified English as their first language. Twenty-four prisoners speak a second language besides English as either their first language or as a second, learned language. Fifteen percent speak a West European language as well as English; three percent a Native Canadian language; two speak an Afro/Tribe language and an additional two percent an East European language. Given that only one individual was from Québec, it is not surprising that only three inmates spoke French as well as English. A low sampling of Francophones is typical for a correctional facility in Toronto, but not for institutions throughout the province of Ontario.

Results

A total of seven hypotheses were tested in the study. Each of these inquiries (with the exception of the first) attempted to predict condom use by testing one construct of the HBM. Collectively, hypotheses 2-7 pertain to all of the model's original variables (i.e., *demographics, perceived benefits, perceived barriers, perceived susceptibility, perceived severity and cues to action*).

Also, because each hypothesis was used to predict condom use, all had one common factor that was examined against the selected variable: "using or not using condoms". A new factor of "partner type" was created for the present study prior to interviewing. Partner types included: 1) a steady partner (e.g., a spouse, long-term partner, girlfriend), 2) a repeated but not steady partner (a person not in a steady, long-term relationship), 3) a casual partner, with whom the participant had intercourse occasionally or every once-in-a-while and 4) an anonymous partner

(casual, one-time sexual contact). Every participant was asked if he had one or more of the above-type sexual partners over the past two years and whether he used condoms with each partner type. Answers given to the condom use questions were “yes”, “no” or “sometimes”. The number of partners per sexual partner type was not requested, due to the difficulties in recalling this information and the potential bias of over or under-reporting.

TESTS OF THE HEALTH BELIEF MODEL'S CONSTRUCTS

Hypothesis 1: Condom Use Will be Associated with Partner Type

Among the prisoners, 31% had one steady sexual partner only, while 64% had one or more varied types of partners, four percent were sexually inactive for two years prior to the study period and one percent had anonymous sexual partners only.

Fifty-six percent used condoms with their partners, while 44% did not. It was noted that of the men with steady partners only, 25% use condoms while 75% do not. Table I outlines the distribution of the sample's type of sexual partner(s) and condom use with selected partner(s).

Table I: Sexual Partner Type and Condom Use

	Steady partner	Repeated partner	Casual partner	Anonymous partner
Prisoners who have this type of partner(s): N* =	84	38	47	45
Use condoms with this partner(s)?				
Yes	17 (20%)	16 (42%)	25 (53%)	31 (69%)
Sometimes	4 (5%)	6 (16%)	4 (9%)	5 (11%)
No	63 (75%)	16 (42%)	18 (38%)	9 (20%)
Total*	84	38	47	45

* participants were permitted to identify more than one type of sexual partner

The data were further divided into two groups: 1) those who have a single, steady partner only and 2) those who have multiple types of sexual partners (including steady partners if applicable). Using a chi-square test ($\chi^2=14.883$, $df=2$, $p < .01$), the results demonstrated that prisoners who have varied types of sexual partners are more likely to use condoms than prisoners who have a single, steady sexual partner.

The "type" of sexual partner was further analyzed to determine if it influenced condom use behaviour. The chi-square test ($\chi^2=11.337$, $df=1$, $p < .01$) demonstrated that sexual partner type strongly influenced condom use. For this hypothesis, the participants who had sexual relations with partners to whom they felt less committed, or who they knew less well, were more likely to use condoms with these partners.

Hypothesis 2: Condom Use Will be Associated with Perceived Benefit Variable

Of the participants, 92% identified that condoms protect from contracting HIV during sex, however, 44% did not use condoms, while 56% used or sometimes used condoms. This initial analysis showed no fixed pattern between acknowledging the benefits of condoms and condom use behaviour.

Interestingly, however, when the same inquiry was investigated using the two factors of condom use and partner type together, a significant interaction was found ($\chi^2=11.720$, $df=1$, $p < .01$). That is, depending on the type of sexual partner(s), prisoners who understood that condoms are a benefit in preventing HIV infection were more likely to use condoms. In this example, men who 1) believe condoms are a benefit and 2) have multiple types of partners, use condoms significantly more often than men who also believe condoms are a benefit but have steady (single) partner(s).

Hypothesis 3: Condom Use Will be Associated with Perceived Barrier Variable

Not communicating with their sexual partner(s) about HIV and AIDS was inferred as a barrier to using condoms. Of the participants, 68% did not speak with their sexual partner(s) about HIV and AIDS, while 28% did and four percent did not have sexual partners with whom to communicate about the subject.

This lack of HIV prevention communication did not appear to influence condom use behaviour until the factor of partner type was introduced ($\chi^2=9.457$, $df=1$, $p < .05$). Unexpectedly, it appears that prisoners who do not communicate with their partners about HIV and AIDS were more likely to use condoms depending on the type of sexual partner. There is a significant interaction between condom use and communication only for individuals who do not communicate and who have multiple types of

partners. Likewise, individuals with steady partners only and who do not communicate are not more likely to use condoms than individuals who do communicate with their steady partners.

Hypothesis 4: Condom Use Will Be Associated with a Demographic Variable: Knowledge

Level of knowledge was determined by using factual questions to which the answers were explicitly “yes, no or don’t know”. Each correctly answered question was given a score of one, with a total count of 22 as the highest knowledge score possible. Most of the prisoners scored in the range of 18 to 21 correct answers, demonstrating a generally high level of awareness.

An analysis of variance was applied to test the knowledge variable. Due to the high knowledge scores, no significant variances among groups were detected. For the current study, knowledge was not a variable influencing condom use behaviour.

Hypothesis 5: Condom Use Will Be Associated with Cues to Action Variable

It was surmised that knowing someone with HIV or AIDS can be interpreted as a trigger to use condoms (especially with new sexual partners). Of the participants, 32 percent knew someone who is infected with HIV or living with AIDS, of which half knew of someone who died of AIDS. Only nine percent of the sample ever spoke with this person about HIV and AIDS.

The chi-square test did not initially provide evidence to support this inquiry, however when partner type was tested as a factor together with condom use, this hypothesis was supported only for participants who do not know someone infected with HIV ($\chi^2=9.662$, $df=1$, $p<.05$). That is, surprisingly, prisoners with multiple types of partners who do not know someone with the virus were significantly more likely to use condoms than prisoners with multiple type partners who personally did know someone who is infected with HIV.

Hypothesis 6: Condom Use Will Be Associated with Perceived Severity Variable

Severity of the disease was measured by agreement to the question, “Can one die from AIDS?”. The question was asked assuming that if a participant acknowledged this disease to be fatal, then he must believe contracting HIV to be a severe circumstance. Also, the question “Is there a cure for AIDS?” was asked to confirm that the participants understood AIDS to be a serious disease.

Initially a chi-square analysis did not provide significant results, however it was found to be a predictor of condom use when partner type

was included in the analysis. That is, participants who acknowledged that one can die from AIDS were more likely to use condoms with multiple type partners, than those with steady partners only. The chi-square was strongly significant at $p < .01$ ($\chi^2=11.603$, $df=1$).

After further investigation of the data, it was noted that 98% of the sample agreed that one can die from AIDS, of which 56% used condoms while 44% did not. Having a personal acquaintance who is infected with the virus or who died of AIDS did not show a significant influence on condom use behaviour.

Hypothesis 7: Condom Use Will Be Associated with Perceived Susceptibility Variable

The answer to the question, "Are you concerned about getting AIDS through sex?", was used to measure the perceived susceptibility variable. Sixty-one percent reported not being concerned about contracting the virus, while 39% admitted to being concerned. Again, only after the factor of partner type was introduced into the analysis did the chi-square test lead to a strong and significant effect of perceived susceptibility, but solely for participants who did not feel susceptible. Unexpectedly, prisoners who were not concerned about contracting HIV were more likely to use condoms with multiple partners than prisoners who were concerned ($\chi^2=11.994$, $df=1$, $p < .01$). The act of using condoms likely reduced perceived susceptibility to contracting HIV. Table II provides a summary for all the chi-square analyses performed.

Table II: Summary Table of All Chi-Square Analyses

	χ^2	df	p
Factor:			
type of sexual partner	14.883	2	< .01
Health Belief Model's tested variable:			
benefit	11.720	1	< .01
barrier	9.457	1	< .05
cue to action	9.662	1	< .05
severity	11.603	1	< .01
susceptibility	11.994	1	< .01

Logistic Regression Analysis

The variables investigated in the above hypotheses were also examined through using logistic regression analyses. Five separate logistic regression analyses were performed, referred to as Models 1 through 5 but only the first Model proved to be of statistical interest. Table III provides a summary of the regression results from the analysis of the data generated by Model 1.

Table III: Logistic Regression Results of Variables Tested in Model 1

	<i>R</i>	<i>p</i>
Tested Variables		
benefit	.0000	.4323
barrier	.0000	.8730
demographic	.0000	.8608
cue to action 1	.0000	.7176
cue to action 2	.0000	.4335
severity	.0000	.2127
susceptibility	.1476	.0276
partner type	.2724	.0006

For Model 1, all of the HBM's variables were collectively examined, including the new factor of partner type. The variable of perceived susceptibility proved to be significant ($R = .1476, p < .03$), while the factor of partner type was strongly significant ($R = .2724, p < .001$). What makes these results interesting is that the HBM components as operationalized in this study were effective in predicting condom use under only one circumstance: when studied with partner type.

DISCUSSION

The Health Belief Model

The HBM was partially able to predict condom use in this study. Not all variables tested were useful in predicting condom use and only after this behaviour was linked with a new factor "sexual partner type" and then re-analyzed, did the model perform as expected.

In the context of this study, the model's variables do not influence condom use when analyzed in isolation. They do, however, influence condom use when all variables are analyzed in combination with each other. A separate and unmeasured factor has a direct impact on condom

use behaviour, which, when tested in association with the behaviour, can be influenced by isolated variables from the model. Because partner type is strongly influential in the model's ability to predict condom use, it will be referred to as a "factor".

It is possible that this "sexual partner type" factor contains several components which make it instrumental in predicting condom use. Although outside the scope of the present study, one such component was discovered: "knowing the partner". This component is identified as the most common reason for discontinuing the use of condoms for participants with either steady or multiple type partners and for initiating the use of condoms with casual or anonymous partners. This finding implies that not knowing the partner will initiate condom use. Participants with multiple partners are more likely to use condoms than participants with a single steady partner only. However, prisoners stop using condoms with partners after an average of four weeks, assuming enough time has past to assess their own potential level of risk for HIV exposure due to their female partners' past behaviours: "She's clean, it's OK".

It can be argued that not "knowing the partner" is more an element of the model's cues to action variable than a component of a separate and distinct variable because it acts as a prompt or trigger to use condoms. If this element is truly a function of a cue, then its intensity should be measurable against the differing levels of perceived susceptibility and severity. The cue must be sufficient enough to provoke a behaviour depending on the degree of the susceptibility and severity of HIV and those degrees will determine if the cue is strong enough to prompt a behaviour. Yet, as acknowledged by Rosenstock (1974b), obtaining an adequate measure of the role of cues is difficult for most social science research utilizing the HBM.

The constructs belonging to the HBM were generally effective in predicting condom use behaviour. The variable of cues to action and susceptibility both predicted condom use, however in an unexpected direction. That is, not knowing someone infected with HIV and not being concerned about contracting HIV during intercourse significantly predict condom use dependent on partner type (specifically for men with multiple partners). Again, these findings imply that factors external to perceived susceptibility and cues to action are likely interacting with condom use for individuals who do not have an HIV-infected acquaintance or who have low perceived self-risk. Although external to the model's original constructs, measures of self-efficacy or social norms may be of influence here.

Impact on Women

Prisoners in this research study do not consult with their partners concerning safer sex practises and they make decisions whether to use condoms based on how well and long they have known their female partner. This attitude is based on their subjective assessment of whether the woman is an IDU who does not share needles, or if she has multiple partners, i.e., the risk that she might put him at considering her past/present risk behaviours. If she practises neither of these activities, the man feels safe not to use condoms. But where does that leave a woman in terms of the risks he exposes to her?

When considering the prisoners' attitudes, the findings from this study, coupled with the social vulnerability of women and their powerlessness in heterosexual relationships, it is clear that female partners of prisoners with HIV are at risk for contracting the virus and associated STDs or Hepatitis. The role that social vulnerability plays in HIV prevention is also evident when considering the majority of the world's women. Their choices are often limited by unequal gender relations, earning power, abuse, and low social status. In many cultures traditional gender roles consider it inappropriate for women to discuss sex, suggestion to use condoms may imply infidelity and unequal power in sexual relationships may hinder women's ability to protect themselves or at least hinder discussing past risk behaviours of their male partners (Ehrhardt, et al., 1991; Simbulan, et al., 2001). The female script makes introducing and negotiating condom use a difficult task as it requires women to deviate from social-political expectations (Cabral et al., 1998).

It has been noted that a large number of HIV-infected women's only risk factor was their husband's or their single sexual male partner's unsafe sexual behaviour (Henry, 1998). Women's risk of becoming infected with STDs or Hepatitis is closely associated with their economic and social status (Mann & Tarantola, 1998). Women are often economically dependent on men and this imbalance makes it difficult for women to change their behaviour, control their risk, or negotiate and assert for safer practises (Campbell, 1995; Morris, 1997). Further, men who abuse their partners will likely not be challenged by the woman to practise safer sex, even if she felt her health is jeopardized by not using condoms, especially if such discussion raises painful issues of infidelity and distrust.

Women partners associated with inmates are particularly vulnerable to HIV/AIDS. They often come from impoverished backgrounds, lack education, have a history of violence and abuse, little resources and support, thereby increasing their isolation and limiting their access to information and support (Toepell & Greaves, 2000). All these factors

contribute to a lack of bargaining power to convince her partner to use a condom and thus limit their ability to protect each other from infection. In addition, the significant amounts of stigma and discrimination as experienced due to her relationship with a prisoner further reduces the woman's access to health care, thereby increasing social vulnerability to HIV, STDs and Hepatitis even further.

Most women vulnerable to contracting the virus are those marginalized by poverty or drug use or who engage in the sex trade. In particular, women who resort to trading sex for survival requirements such as food, shelter, drugs and money risk exposure to disease. Research concerning the attitudes and behaviour of women who increase their vulnerability to HIV infection is scarce (Mallory & Stern, 2000). Risk reduction programs directed specifically at marginalized women is also minimal (Mallory & Fife, 1999), especially education addressing the socio-cultural context of their inability to make sex safer for themselves.

Preventive Efforts for Women

The application of the HBM in this study has uncovered the way in which prisoners make decisions concerning making safe sex for themselves. This insight revealed the degree of risk women who associate with inmates are exposed to. The need for outreach and educational programs for marginalized women is evident. In a review of 47 HIV prevention interventions, Exner, Seal and Ehrhardt (1997) demonstrated that such programs can be effective in reducing risky sexual behaviour if the interventions target women directly, focus on cognitive-behavioural skills and involve multiple, sustained contacts with women. The cognitive-behavioural skills should focus on relationship issues. The importance of tailoring prevention messages to incorporate women's gender and cultural issues also emerged as important findings (Exner et al., 1997).

Traditional gender roles identify men as the initiators and decision makers of sexual activities and women as passive gatekeepers. Since women have little say over their partner's sexual behaviour outside of marriage, their lack of control over the sexual encounter within marriage is even more problematic (Heise & Elias, 1995). Therefore, prevention initiatives need to focus on negotiation and refusal skills, as well as support women's choices rather than only present the basics of HIV transmission and how to lower risk exposure. The barriers to safer sex are integral to women's relationships with men, hence safer sex education needs to offer more than acquiring knowledge and condoms.

CONCLUSIONS

Overall, the original HBM was effective in predicting condom use specific to partner type among the sampled prison population. The most valuable finding of the current study is the impact that partner type has on predicting condom use and the repercussions this has on women's health. When the HBM is applied to predict condom use, its success is dependent on an external factor not measured by the model. This revelation suggests the following:

1. The model, on its own, is not a vigorous test of predicting condom use behaviour
2. The model, in the case of predicting condom use, is dependent on strongly influential factors unrelated to its own measured variables and
3. The model needs to be continuously adapted to reflect changing attitudes and beliefs concerning health and health promotion behaviour as they change over the decades.

Although the literature pronounces the HBM most successful when applied to retrospective studies, the model is not immune to the error and bias found in collected data. Self-reported condom use could be biased (increased) as such behaviour is considered socially desirable, especially when preventing the spread of HIV and STDs through sexual behaviour. Also, there is no accounting in the model for a possible over-reported bias in, for example, the assessment of *perceived susceptibility* (risk), or under-reported bias, as in *perceived barriers*. Generalizing the results found in the current study should only be done with caution, given the limitations to the HBM and the relatively small sample studied.

The model lacks a function of intention, that is, predicting *behavioral intention* (as opposed to predicting actual behaviour). Several factors may impede enacting on intention, which the HBM could identify and measure (*perceived barriers*). However, when behavioral intention is measured and correlated with actual behaviour it could provide unusual data when analyzing different behaviours (especially when the correlation is high and positive).

For example, if the HBM included a measure of intention, it might have been possible to determine whether the intent to use condoms among prisoners is higher for those with multiple partners than for those with steady partners only. This information might have explained why, for example, prisoners who do *not* talk with their partners about HIV and AIDS are more likely to use condoms than those who talk with their partners. Also, it might have provided additional information about the

relationship between condom use and partner type, that is, what makes this relationship so powerful over all the model's variables. It is feasible that intention alone could predict condom use behaviour, were it accounted for in the model.

As the model is a psychosocial one, it can only account for variance in behaviours which can be explained by attitudes and beliefs (which are components of the model). Therefore, several factors involved in the decision-making process (such as environmental, intrapersonal and cultural factors) are neither measured nor identified. The model simply does not recognize nor account for these factors. These omissions weaken the applicability of the HBM, especially when these factors impact decisions influencing behaviour and do not reflect changing attitudes and beliefs over the decades.

The HBM needs to have greater applicability to a range of social classes. Literature indicates that social classes differ in the type of beliefs held and that lower social classes are not as prone to accept health beliefs of the kind prescribed by members of the higher classes (Rosenstock, 1974b). Presumably, all social classes believe that exposure to HIV/AIDS is to be avoided, however, purchasing condoms might be considered a luxury for lower class members and may not be a priority. In such a situation, condoms might not be regularly purchased, risk behaviours continued and health beliefs compromised. The HBM is not sophisticated enough to account for such complex cognitive processes or psychosocial factors that keep women from raising the topic of condom use with a partner.

More work is also needed to specify and measure factors which should be added to the HBM, thereby increasing the model's predictive power. The examples of self-efficacy, intention of behaviour environmental and cultural variables are measures that would improve the explanation and prediction of health prevention behaviours. Future studies in condom use behaviour should incorporate the factor of partner type, or establish it as a separate and distinct variable. Old measures of health concepts need to be replaced with new measures. As behavioural change happens in an environment made up any number of influential factors and persons, all factors cannot be identified and accounted for in a single research model.

When developing HIV intervention programming for women marginalized by poverty, association with prisoners, poor education and/or health, abuse, the sex trade or addictions, it must consider the woman's individual behaviours and circumstances in which risky behaviours are most likely to occur. Negotiating skills training and social problem-solving skills which will enable women to identify personal, social and cultural consequences of their actions and utilize the most appropriate strategy for approaching their partner(s) and managing their

partner's response must be offered. However, prevention strategies for women have often emphasized the importance of communication and negotiation with male partners with the goal to have men change their behaviour. Campbell (1995) cautions this emphasis is misplaced as it works through women encouraging men to change their behaviour and relies too heavily on individual control without acknowledging the socio-cultural constraints under which women operate.

An introduction to acceptable alternative risk reduction methods for women is also important (including the female condom, diaphragm, cervical cap, spermicides), as is assisting women in developing innovative methods by which they can empower themselves and thereby increase the likelihood of safer sex practises. Skills training may also increase employment choices and thus make marginalized women less likely to become homeless or sexually exploited (Leonard & Muia, 1998). Such changes may also reduce women's social vulnerability to HIV/AIDS and other STDs exposure.

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