
Perceived Versus Actual Condom Skills Among Clients at Sexually Transmitted Disease Clinics

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Synopsis

The primary aim of this study was to investigate whether individual self-reports of perceived ability to use a condom correctly correlated with the actual ability to do so. Participants in the study were 3,059 clients of a sexually transmitted disease clinic.

The findings revealed that the participants' perceived self-efficacy with regard to using a condom effectively was a poor indicator of their clinically

demonstrated skills using a penile model as scored on the 6-point Condom Skills Index. Condom skills, in general, were found to be at a moderate level only. Even though 89 percent of the sample were persons who said they were somewhat or very sure that they could put a condom on and take it off correctly, the sample mean score on the Condom Skills Index was only 3.6, or 60 percent correct. Perceived versus demonstrated condom skills showed poor correlations for both the relatively lower-risk group ($r = .09$; $P < .001$) and the pooled higher risk groups ($r = .12$; $P < .001$). Although men were significantly more likely than women to believe they had adequate condom skills, no significant differences were found between the clinically demonstrated condom skills of males and females.

Although condom promotion has included issues of product quality and consistent use, little attention has focused on correct use. Hence, when interventions aimed at reducing risk for HIV focus on developing communication-negotiation skills regarding the consistent use of condoms, attention also should be directed toward developing skills for using condoms effectively.

EFFORTS TO PREVENT the transmission of the human immunodeficiency virus (HIV) have largely focused on education and behavior change. A primary goal of most educational interventions has been to influence those who are sexually active to lower their risk for HIV through the regular use of condoms (1-4). The principal criteria for evaluating the effectiveness of such interventions have been the reported post-intervention measures of self-efficacy and intention to use condoms and the post-intervention rate of condom use (5-7).

Currently, latex condoms are being promoted as the most effective barrier method of protection from HIV infection. Advances in the manufacture of condoms have resulted in a product capable of preventing transmission of several viral pathogens (8-14). Nevertheless, the use of condoms as a method of preventing HIV and other sexually transmitted diseases does have an associated failure rate (15,16).

Product failure, improper storage, inconsistent use, slippage, and improper use have been cited as factors contributing to condom failure (12,16-22). In Fischl's study of heterosexual transmission of HIV, of the 10 seronegative spouses who continued vaginal intercourse with seropositive spouses for 12 to 36 months, 1 person (10 percent) became infected even though condoms were reportedly used (23). An investigation of the efficacy of condoms in preventing pregnancy, although only somewhat comparable to that for HIV, has revealed an efficacy rate ranging from 86 to 98 percent (18). Research has shown, however, that condom effectiveness as a contraceptive increases with experience (24).

Although HIV-STD intervention efforts have promoted the use of condoms, few have included a demonstration of the proper method of using a condom or an evaluation of condom use skills. Instructions for proper use are often printed on the

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inside of the box and may be inconspicuous to one who is focused on the contents of the package. Also, a person who intends to use the box for storing unused condoms may be unwilling to disassemble the box in order to read the instructions. Some leading brands of condoms do include instructional flyers. Since condom wrappers do not include instructions, however, improper use may result when condoms are distributed unboxed in public health departments, in vending machines, or by STD-AIDS prevention groups.

Specific information about condom failure from such causes as improper timing of the application or removal of the condom, or both, other than breakage or slippage has not been reported in the scientific literature. Thus, researchers can only speculate about whether those who report using condoms to protect themselves from being infected with HIV and who have confidence in their condom skills are actually using condoms effectively.

The primary aim of our study was to investigate whether individual self-reports of perceived ability to use a condom correctly correlated with a measure of behavioral skills using a penile model and a lubricated condom. Furthermore, this study focused on whether condom skills were differentially distributed by HIV-related risk behavior or by sex groups. This information could be used to plan risk behavior group-specific interventions that would target particular deficiencies in condom skills.

Methods

Overview. We used data from a Centers for Disease Control and Prevention funded multisite survey of knowledge, attitudes, and behaviors of clients of sexually transmitted disease (STD) clinics in public health departments in the United States. The data were collected during the months of August through November 1991 in clinics in Philadelphia, San Diego, CA, and Tampa, FL, and during the summer and fall of 1992 in clinics in Orlando, FL, Chicago, and Los Angeles.

Sample. The sample consisted of 3,059 persons from six STD clinics—794 from Philadelphia, 503 from San Diego, 404 from Tampa, 496 from Orlando, 597 from Chicago, and 265 from Los Angeles. Participants were chosen for the study if they checked any of the following boxes on the screening form: they had sex with multiple partners in the past 3 months (women, 2 or more, men, 3 or more); in the past year, they had sex with a partner who injects drugs; in the past year, they had sex with a man who uses rock or crack cocaine; in the past year, they received money or drugs to have sex; they used injecting drugs; they used rock or crack cocaine.

The demographic characteristics of the sample are shown in table 1. Blacks accounted for more than 66 percent of the sample; non-Hispanic whites about 20 percent; Hispanics, 8 percent; and 4.5 percent were of other racial-ethnic backgrounds. Nearly 66 percent of the study participants were male. The mean age of the participants was 28.1 years; 71 percent of the sample had never been married, and about 11 percent reported being divorced. More than 25 percent of the participants had not completed high school; 39 percent had completed high school or the equivalent; and more than 20 percent had completed some college or technical school.

When the sample was grouped according to a set of relatively high-risk behaviors for HIV, more than 75 percent of the participants were classified into these groups. The largest of these high-risk behavior groups were men who had had three or more sex partners within the past 3 months (17.3 percent), men who used crack (13.7 percent), men who paid for sex (7.6 percent), women who had had two or more sex partners in the past 3 months (13.1 percent), and women who used crack (9.0 percent). The remaining five high-risk groups (men and women who were injecting drug users (IDUs) or were partners of IDUs and women who received money or drugs for sex) accounted for less than 16 percent of the sample.

Trained interviewers explained the objectives of the study to potential participants and, after obtaining their consent, conducted a face-to-face interview that lasted about 45 minutes. Persons were eligible for the study if they were ages 12 or older and had not received HIV counseling before being interviewed. The overall refusal rate was 11.5 percent. When participants were compared with nonparticipants, no sex or racial-ethnic group was disproportionately represented among the refusals. The refusal rate for the condom demonstration was 1.0 percent.

Interview schedule. The interview schedule was designed to obtain information in a variety of areas

related to HIV and other STDs. Data were gathered regarding the participant's history of sexual activity and substance use, various aspects of the clinic experience, condom attitudes and behaviors, and perceived condom skills. A condom demonstration using a penile model constituted part of the interview.

Measures. A single Likert-type question was used to measure the participants' *perceived condom skills*. Participants were asked, "If you wanted to use a condom, how sure are you that you could put it on or take it off [your partner] correctly." The responses ranged from 1 (very sure I couldn't) to 5 (very sure I could). *Demonstrated condom skills* were measured by the Condom Skills Index (CSI), a 6-item index that scored participants on the following aspects of putting a condom on a transparent acrylic penile model: (a) how they tore open the package (that is, carefully, roughly, or with their teeth); (b) whether they unrolled the condom before putting it on the model (items b-f were coded either yes or no); (c) whether the participants put the condom on the model with the ring side out (an important step in avoiding condom failure because failing to put the ring side out may result in condom breakage); (d) whether the participants pinched the tip of the condom before sliding it down the penile model; (e) whether the participants continued holding the tip until the condom was fully unrolled; and (f) whether the participants unrolled the condom all the way down to the base of the penile model. Participants were not scored on their ability to remove the condom from the model because it was judged that this procedure did not approximate closely a real-life situation.

The CSI includes items from unpublished condom demonstration protocols and guidelines for education and from health educators from STD clinics and related fields. The construct validity was established by STD experts in public health who reviewed the items and verified that they represented the range of relevant skills important for an assessment of correct condom use. Interviewers received extensive training on coding the condom demonstration. By the end of the training, an adequate (more than 70 percent) inter-rater agreement was achieved on all of the items.

Analysis. We performed Pearson correlation analyses to determine whether perceived ability and demonstrated ability to put a condom on correctly were significantly correlated. Using ANOVAs and chi square analyses, we compared HIV risk-related behavior groups with regard to their mean scores on the CSI and with regard to individual components of

Table 1. Demographic characteristics of the sexually transmitted disease clinic sample

Characteristic	Sample	
	Number	Percent
Sex:		
Male.....	1,886	61.7
Female.....	1,172	38.3
Race-ethnicity:		
Non-Hispanic white.....	588	19.3
Non-Hispanic black.....	2,082	68.5
Hispanic.....	231	7.6
American Indian or Alaska Native.....	47	1.5
Asian or Pacific Islander.....	40	1.3
Other.....	51	1.7
Mean age (years).....		28.1
Mean education level (years of school) ¹		3.0
Marital status:		
Married.....	198	6.5
Divorced.....	348	11.4
Separated.....	296	9.7
Never married.....	2,184	71.4
Higher risk behavior groups—men:		
Paid for sex in last year.....	231	7.6
Sex partner in last year a crack user.....	80	2.6
Ever used crack.....	419	13.7
Ever used IV drugs.....	181	5.9
Higher risk behavior groups—women:		
Received money for sex in last year..	17	0.6
Sex partner in last year a crack user.....	68	2.2
Ever used crack.....	276	9.0
Ever used IV drugs.....	107	3.5

¹Educational level: 1 = less than 8th grade; 2 = some high school, but less than high school graduation; 3 = high school diploma or GED; 4 = some college or technical school; 5 = college graduation (4-year bachelor's degree).

NOTE: Totals differ because of incomplete data on participants' race and marital status.

the index. Because of the large sample size, a correlation as small as .035 would be statistically significant at the $P = .05$ level. Thus, we set the significance level at $P = .01$ to reduce our chances of a type 1 error.

Results

Correlation of perceived with demonstrated condom skills. Although nearly 89 percent of the participants reported that they were either very sure or somewhat sure they could put a condom on or take it off correctly, the sample mean score on the 6-point index was only 3.6 (60 percent correct). Individual participants' perception of their condom skills was poorly correlated with their demonstrated condom skills ($r = .10$; $P < .001$). The results of correlation analyses of perceived versus demonstrated condom skills showed poor correlations for both the *lower-risk* group ($r = .09$; $P = < .001$) and the pooled *higher-risk* groups ($r = .12$; $P < .001$). In other words, for all groups the reports of self-efficacy of condom use were not good indicators of demonstrated

Table 2. Comparison of mean scores for perceived versus actual condom skills for both low- and high-risk behavior groups

Measure	Higher risk behavior groups	Lower risk behavior groups
Condom skills index ¹	3.7	3.6
Self-reported perceived self-efficacy of condom skills ²	4.5	4.5

¹ Significance: $P = .01$; Was package torn? Was condom unrolled before putting it on the penile model? Was the condom placed ring side out on top of the penile model? Was the reservoir tip pinched before sliding the condom down? Did the client continue to pinch the reservoir tip until the condom was fully unrolled? Was the condom unrolled to the base of the penis?

² A single Likert-type item that ranged from 1 = "very sure I couldn't" to 5 = "very sure I could."

NOTE: Higher risk behavior groups include males paying for sex; male and female crack users; male and female injecting drug users (IDUs); male and female partners of IDUs; and females receiving money or drugs for sex. Lower risk behavior group represents persons who do not engage in any of the behaviors listed for the higher risk behavior groups.

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skills (table 2). The results of additional analyses that were performed for males and females separately within higher risk groups showed no significant differences in demonstrated condom skills.

Although males were significantly more likely than females to believe they had adequate condom skills (mean: males 4.7; females 4.2; $F = 211.35$; $P < .001$), no significant differences were found between the clinically demonstrated condom skills of males and females. Despite the poor correlation between the overall CSI and perceived self-efficacy overall, a few specific CSI items did show some significant correlation.

A comparison of perceived self-efficacy with demonstrated condom skills showed that men and women who were less sure of their condom skills were less likely to put the ring side of the condom out ($r = .06$; $P = .001$). Women who were less sure of their condom skills were less likely to pinch the tip while unrolling the condom and to continue holding on to the tip until the condom was fully unrolled to the base of the model ($r = .09$; $P = .003$). When the condom tip is not pinched while the condom is being unrolled, air bubbles are trapped

under the condom, and these bubbles may increase the chance of condom breakage during intercourse.

Discussion

The most important finding of this study is that the participants' perceived self-efficacy with regard to putting a condom on effectively was a weak correlate of their demonstrated condom skills using a penile model as measured by the CSI. This finding suggests that self-reports of their condom skills by clients of STD clinics may be a poor indicator of the clients' ability to demonstrate many of the behavioral skills (or mechanical techniques) important for correct condom use. Even though 89 percent of the sample were persons who reported being somewhat or very sure they could put a condom on or take it off correctly, approximately 40 percent of the skills measured were not adequately performed. These findings emphasize the need for condom skills development in populations at risk for HIV or STD and for researchers conducting studies using self-reported condom use as a variable to include multiple measures of condom skills and abilities.

It should be noted that the single-item measure of perceived ability that was used in this study might be considered a limitation. The correlation between that measure and the CSI might have been higher if a multi-item measure was used for perceived ability also. Further, the criterion-related or predictive validity of the CSI has not yet been established. A moderate-to-low score on the CSI may not predict absolute failure with regard to preventing infection with HIV. Until predictive validity has been verified by further research, it would be advisable to proceed with caution in using the CSI as a means of predicting real-life condom use. We suggest, however, that as part of the instruction on proper condom use, clients be given the opportunity to demonstrate and practice their condom skills using a penile model and that the CSI be used as a teaching tool in evaluating these skills.

Interventions targeted at reducing the spread of HIV should, in addition to promoting the consistent use of condoms to prevent HIV infection, include instruction on the effective use of condoms. Also, condom wrappers should include clear instructions on the proper use of condoms as well as what constitutes improper use and the consequences.

The effective use of condoms is but one of many facets that need to be considered in an attempt to reduce risk (25). Interventions aimed at reducing the risk of HIV infection by promoting the use of condoms must also consider the psychosocial and

situational barriers associated with this method of protection (25).

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