

Problems with condoms may be reduced for men taking ample time to apply them

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Abstract. *Background:* One potentially important antecedent of experiencing problems with condom use during penile-vaginal sex is the amount of time that men (and perhaps women) allow for condom application. To examine whether men reporting that ample time was available to apply a male condom (the last time a condom was used for penile-vaginal sex) were also less likely to report problems with condom use such as breakage, slippage and erection difficulties during that sexual event. *Methods:* A convenience sample of men ($n = 440$) was recruited via advertisements in newspapers (two urban and one small town) and a blog on the website of a condom sales company. Men completed a questionnaire posted on the website of The Kinsey Institute for Research in Sex, Gender, and Reproduction. Inclusion criteria were that participants were: at least 18 years old; used condoms for penile-vaginal intercourse in the past 3 months; and able to read English. *Results:* In controlled, event-specific analyses, men reporting that they did not have sufficient time for condom application were ~three times more likely to report breakage and ~2.4 times more likely to report slippage. In addition, men who reported that they lacked time for condom application were ~2.4 times more likely to experience any of nine sexual problems, 3.4 times more likely to report difficulty with erection, 2.1 times more likely to report reduced sexual pleasure, 2.2 times more likely to report reduced sexual pleasure of their female partner and 2.6 times more likely to report that the condom irritated their partner's vagina. *Conclusions:* This is the first study using an event-specific analysis to examine the effect of not having enough time for condom application on condom breakage, slippage and several outcomes related to sexual pleasure. Sexually transmissible infections and pregnancy prevention messages should include recommendations to men to take their time applying condoms.

Additional keywords: erection, men, sexual pleasure, STI risk.

Introduction

A rapidly expanding body of literature has explored male condom use errors and problems experienced during penile-vaginal sex.^{1–17} Although much of this research has been descriptive, few studies have identified likely causes of these problems.^{5,7,8,14} For example, allowing condoms to contact sharp objects, reporting problems with 'fit-and-feel' condoms and having low self-efficacy to use condoms correctly may predispose men to experience condom breakage.⁸ Loss of erection and inadequate lubrication have been associated with slippage.¹⁸ Breakage and slippage are particularly important problems as these can result in condom failure and thereby lessen the value of condom use.^{2,9,12,13} However, other types of problems also warrant further investigation designed to identify

likely causes. One important but neglected set of problems pertains to altered sexual sensations associated with condom use; e.g. loss of pleasure, difficulty reaching orgasm, genital irritation, erection loss and drying of the vagina. To date, with the exception of erection loss,^{6,19,20} research documenting the prevalence of these problems and the correlates to condom use has been scant.

One potentially important antecedent of experiencing problems with condom use during penile-vaginal sex is the amount of time that men (and perhaps women) allow for the application of condoms. Clearly, those who rush to apply condoms may not apply them correctly, thereby predisposing them for subsequent condom-use errors and problems. The potential utility of this hypothesised antecedent is strong

because intervention programs can easily emphasise the value of taking ample time when applying condoms. Accordingly, the purpose of this study was to examine whether men who reported that ample time was available to apply a condom the last time they used a condom for penile-vaginal sex also reported fewer instances of breakage, slippage and sexual problems.

Methods

Study sample

A convenience sample ($n=440$) was recruited via advertisements in newspapers (two urban and one small town) and a blog on the website of a condom sales company that directed men to the questionnaire, which was posted on the website of The Kinsey Institute for Research in Sex, Gender, and Reproduction. The advertisement and blog informed potential volunteers that the study was about sexual health and condom use behaviour. Inclusion criteria for participants were: male, at least 18 years old, used condoms for penile-vaginal intercourse (PVI) at least once in the past three 3 months and had the ability to read English. Approval for the study was obtained from the Indiana University Institutional Review Board.

Measures

All assessments focussed on the last condom-use event for PVI. The key variable for this study was assessed by the following item. 'Thinking about the last time you used a condom for penile-vaginal sex (PVI), was enough time available to apply the condom without being rushed?' Men were provided with a 'yes or no' response format. The 11 study outcomes were assessed with two questions directly relevant to condom failure ('Did the condom slip off during PVI?' and 'Did the condom break during PVI?') and nine questions related to diminished sexual pleasure or discomfort during the last occasion of condom use. These items appeared under a stem question that read: 'Thinking about the last time you used a condom for penile-vaginal sex (PVI), did you or your partner have any problems with the way it felt?' Men were presented with the nine options (no problems, interfered with erection, reduced my pleasure, made it difficult for me to orgasm ('come'), irritated my penis, dried out her vagina, reduced her pleasure, made it difficult for her to orgasm and irritated her vagina) and instructed to 'check all that apply'.

Identification of covariates

In addition to age, two covariates were identified. First, we hypothesised that lubricated condoms will reduce problems such as genital irritation, vaginal dryness and even breakage.¹ Thus, one item asked men: 'Thinking about the last time you used a condom for penile-vaginal sex (PVI), was the condom lubricated?' Second, the use of phosphodiesterase type 5 inhibitors (PDE-5) inhibitors (Viagra, Cialis and Levitra) during the last time a condom was used for PVI was also included as a covariate for the remaining outcomes.

Data analysis

Bivariate associations between the key variable (i.e. time available for condom application) and each of the 11 outcomes were assessed by contingency table analyses

employing prevalence ratios, 95% confidence intervals and respective P -values. Next, a hierarchical multiple logistic regression model to calculate adjusted odds ratios (AOR), 95% confidence intervals and respective P -values was tested. The first block used a direct entry procedure to control for men's age, whether the condom was lubricated and their use of PED-5 inhibitors. The second block contained only the key variable (i.e. was enough time available). The model was first used with condom breakage as the outcome variable. It was then used with slippage as the outcome followed, sequentially, by each of the nine outcomes related to sexual pleasure.

Results

Characteristics of the sample

The average age of participants was 29.6 years (s.d. = 10.1). The majority of participants identified themselves as white (84.3%) while others identified themselves as black/African American (5.2%), Asian (4.3%) and the remainder identifying as members of other races. Nearly three-quarters (73.9%) lived in the USA; however, a proportion resided in the UK (7.5%) and Canada (3.4%), with the remainder living in 25 different countries. Just over one-quarter of the men (27.3%) indicated having sex with two or more women in the past 30 days. Nearly one-third (30.7%) were married; marital status was significantly associated with the key variable, with those who were not married being more likely to report not having enough time to apply condoms ($P=0.009$). However, marital status was only associated with one of the 11 outcomes and thus, this variable did not meet criteria for a statistical covariate. Nearly one in five men (19.8%) reported that the condom used during the last condom-protected sexual event was not lubricated and nearly one in 10 men (9.5%) reported using a PDE-5 inhibitor the last time a condom was used for PVI. Thirteen percent of the men responded 'no' to the question asking if they had enough time available to apply the condom. Table 1 shows descriptive information relative to each of the 11 outcome measures.

Bivariate associations

Table 1 shows findings from the contingency table analyses conducted for each of the 11 outcomes. As shown descriptively, the observed frequency of the two forms of condom failure (breakage and slippage) was substantial given the recall period was a single event. For eight of the 11 outcomes, this frequency was significantly greater among men reporting that not enough time was available to apply condoms. For example, 77% of those who did not have enough time reported one or more sexual problems with condom use compared with 57% of those reporting enough application time. The largest prevalence ratio was obtained for the outcome of condom breakage, with those who did have enough time being about three times more likely to report this form of condom failure. Other outcomes with substantially high prevalence ratios (greater than 2.0) were slippage and three sexual problems (interfered with erection, irritated penis and difficulty for the female partner to orgasm). The three outcomes that did not differ as a function of time available for condom application were difficulty for the male to orgasm, vaginal dryness and vaginal irritation.

Table 1. Associations between having enough time to apply condoms and selected problems experienced during condom use among 440 men^A

Selected problem	Was there enough time to apply condom?		Prevalence ratio	95% confidence interval	P-value
	No (57)	Yes (383)			
	% (n)	% (n)			
Condom breakage	14.0 (8)	4.7 (18)	2.99	1.36–6.55	0.005
Condom slippage	15.8 (9)	7.0 (27)	2.24	1.11–4.51	0.025
One or more sexual problems reported	77.2 (44)	56.7 (217)	1.36	1.15–1.61	0.003
Interfered with erection	40.4 (23)	15.9 (61)	2.53	1.71–3.74	0.001
Reduced my pleasure	66.7 (38)	47.5 (182)	1.40	1.13–1.73	0.007
Difficult for me to orgasm	35.1 (20)	25.6 (98)	1.37	0.93–2.03	0.13
Irritated my penis	12.3 (7)	4.7 (18)	2.61	1.14–5.98	0.02
Dried the vagina	19.3 (11)	12.0 (46)	1.60	0.88–2.92	0.13
Reduced her pleasure	38.6 (22)	22.5 (86)	1.71	1.18–2.51	0.008
Difficult for her to orgasm	26.3 (15)	11.5 (44)	2.30	1.37–5.15	0.006
Irritated her vagina	14.0 (8)	7.8 (30)	1.79	0.86–3.71	0.12

^AReported for the last time a condom was used during penile-vaginal sex.

Multivariate associations

Table 2 shows the results from the logistic regression models controlling for age, whether condoms were lubricated and men's use of PDE-5 inhibitors. As shown, the presence of these covariates in the models did little to change the significant bivariate relationships shown in Table 1. Of note, the covariates were largely non-significant in the models. One exception was that PDE-5 inhibitor use was associated with breakage (AOR = 3.40; 95% CI = 1.03–11.17; $P = 0.04$), independently from whether men had enough time to apply condoms. One other exception was that younger age was protective against condoms causing vaginal dryness (AOR = 0.96; 95% CI = 0.93–0.99; $P = 0.024$), and younger age was protective against reporting that condoms made it difficult for female partners to orgasm (AOR = 0.96; 95% CI = 0.92–0.99; $P = 0.014$).

Discussion

To the best of our knowledge, this is the first study using an event-specific analysis to examine the effect of not having

enough time for condom application on condom breakage, slippage and problems with sexual function. An event-specific analysis was a strength of the study because all of the variables were assessed for the same sexual encounter thus providing suggestive evidence of a causal relationship between the key variable (i.e. was enough time available to apply a condom) and the eight outcome variables that were significant at the bivariate and multivariate level. It seems plausible that being rushed to apply condoms would increase the risk of application errors that may predispose the condom to breakage, slippage and problems related to sexual function. From a practical perspective, the current findings are valuable because the implications for STI and pregnancy prevention are straightforward: men should be encouraged to take their time in applying condoms (a phrase such as 'take it slow – put condoms on carefully for better pleasure' may be used in media messages, for example).

Several of the findings warrant comment. In particular, it is important to note the relatively high rate of breakage and slippage among a sample that may be somewhat biased, as suggested by the fact that participants responded to either a newspaper advertisement or website blog in order to voluntarily complete a survey about sex using the Kinsey Institute website. The overall breakage rate of 5.9% (data not shown) exceeds national estimates for the USA of 3–4%²¹ and approximates or exceeds rates (ranging from 2.3% to 7.3%) reported from clinic-based samples.^{12,22,23} Clearly, condom breakage is a public health problem and thus, it is important to develop effective prevention programs aimed at reducing these rates. The observation that breakage was three times more likely among men lacking time for condom application is therefore quite meaningful. The same observation applies to slippage, with men lacking application time being more than twice as likely to report this form of condom failure.

The fact that more than three in four men reported one or more sexual problems relevant to condom use is also an important finding. Problems with erection, penile irritation, reduced pleasure (for both partners) and failure of the female partner to orgasm were observed more frequently among men reporting a lack of time for condom application. It is quite possible that the misapplication of condoms rather than condoms

Table 2. Adjusted^A associations between having enough time to apply condoms and selected problems experienced during condom use among 440 men^B

Selected problem	Adjusted odds ratio	95% confidence interval	P-value
Condom breakage	3.00	1.21–7.44	0.013
Condom slippage	2.36	1.04–5.39	0.04
One or more sexual problems reported	2.40	1.25–4.64	0.009
Interfered with erection	3.42	1.87–6.27	0.001
Reduced my pleasure	2.08	1.15–3.76	0.015
Difficult for me to orgasm	1.45	0.80–2.63	0.22
Irritated my penis	2.62	1.03–6.68	0.04
Dried the vagina	1.63	0.76–3.41	0.13
Reduced her pleasure	2.16	1.20–3.90	0.01
Difficult for her to orgasm	2.60	1.31–5.15	0.006
Irritated her vagina	1.84	0.79–4.27	0.16

^AAdjusted for men's age, whether condoms were lubricated and use of erection enhancing drugs.

^BReported for the last time a condom was used during penile-vaginal sex.

per se was a critical antecedent of these problems. Because each of these five experiences may appreciably diminish sexual enjoyment, it is tempting to speculate that condom use may be less valued and perhaps abandoned. Interestingly, vaginal irritation and vaginal dryness were two sexual pleasure outcomes that were not significantly related to time required for the condom application. It is plausible, however, that men may not have accurate perceptions regarding these two measures of women's sexual experiences. The third non-significant sexual pleasure outcome was men's orgasm – apparently men's ability to experience orgasm is less compromised in situations involving rushed application of condoms. This finding is consistent with research demonstrating greater orgasmic 'consistency' in men compared with women.²³

Limitations

As is true for most research on sexual behaviour, findings are limited by the validity of retrospective self-report. In particular, the ability of men to accurately recall condom-specific events is critical to the validity of the study findings. Also, the use of a convenience sample means that our findings cannot be generalised. We acknowledge the possibility that men perceiving condom application and use as problematic may have also been those allowing the least time to apply condoms, thus confounding the results. It should be noted that recall bias may be problematic given the possibility that men experiencing problems may have retrospectively attributed the problem(s) to a lack of time for condom application. In addition, directionality regarding the association between ample time and reporting one or more sexual problems cannot be established; clearly, the reverse situation may be true in that men experiencing sexual problems may not allow ample time for condom application. Finally, it is interesting to speculate why men may feel there is insufficient time available to apply condoms. Conceivably, accelerated arousal may have led to greater urgency for penetration thereby necessitating the quickened application of condoms. It is also conceivable that some men may have hurried through condom application to avoid disrupting foreplay and the associated mood states that may precede penetrative sex. Qualitative research is needed to understand why men may not take the time they need to correctly apply condoms.

Conclusions

A primary issue in public health research involves how readily empirical findings can be translated into practice.^{24,25} The implication of the findings from this study is one that can be readily translated into practice, either by clinician-delivered messages to men or through media and other health communication campaigns (perhaps via their female sex partners) that urge men to take ample time to apply condoms. It should be recognised that sexual scripts that reflect socially prescribed norms for sexual intercourse may neglect condoms use entirely or allow very little time for their correct application. When sexual scripts²³ suggest that sex is spontaneous and even impulsive, it may be very difficult for couples to 'slow down' to properly apply condoms. One qualitative study suggested that men may be concerned that the interruption caused by putting on

a condom may lead their female partner to change their minds about having sex.²⁶ Thus, prevention messages that urge more time for condom application may also need to encourage men and their female sex partners to adopt new sexual scripts based on the potential benefits to sexual pleasure. Specifically, men and women can be informed that 'slowing down' may enhance sexual pleasure by increasing sensation for both partners, promoting female orgasm and reducing problems with erection and penile irritation. These positive benefits may be more attractive reasons to change a sexual script compared with an emphasis on negative consequences of rushed condom application such as breakage and slippage.

Conflicts of interest

None declared.

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