

Identifying and understanding barriers to sexually transmissible infection testing among young people

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Identifying and understanding barriers to STI testing among young people

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Abridged title: STI testing among young people

Identifying and understanding barriers to STI testing among young people

Abstract

Background: To counter the disproportionate impact of STIs among young people and encourage higher levels of STI testing, it is necessary identify factors that influence STI testing. **Methods:** A mixed methods study incorporating a cross-sectional quantitative survey and qualitative analysis of individual interviews was conducted in England. 275 university students aged 17-25 completed an online questionnaire. Interviews were conducted with a purposively-selected sample of 8 men and women. **Results:** Multivariate analysis of quantitative data revealed that injunctive norms (i.e., a desire to comply others' wishes for testing), descriptive norms (i.e., perceptions of others' behaviour), and shame related to STIs predicted past testing behaviour. Intention to undergo testing was predicted by greater perceived susceptibility, past testing, stronger injunctive norms, and greater willingness to disclose sexual histories. Qualitative analysis of interview data confirmed the importance of perceived susceptibility, normative beliefs, stigma/shame and perceived ease of testing. **Conclusions:** To increase STI testing among young people, there is a need to promote pro-testing norms, address low perceived susceptibility, and make testing easier.

Identifying and understanding barriers to STI testing among young people

Introduction

Sexually transmitted infections (STIs) are a considerable problem in the UK, with diagnoses increasing every year.^[1] A disproportionate number of STI diagnoses occur among 15-25 year olds.^[1] To reduce the impact of STIs among young people, a greater proportion need to be tested, and treated if they are infected. It is therefore important to identify correlates of STI testing and intentions to test.

Previous research based on the Theory of Planned Behaviour (TPB) has shown that intentions are good predictors of health behaviour.^[2,3] In relation to STIs, the TPB proposes that intentions will predict testing behaviour, and that intentions will themselves be predicted by more favourable attitudes towards STI testing, stronger injunctive norms for testing (i.e., a desire to comply others' wishes for testing), and greater perceived behavioural control over testing.

Although there is a lack of published TPB studies of STI testing based, the model has been shown to be useful in studies of sexual health behaviours including condom use and cervical cancer screening.^[3-6] It is important to note that although the TPB focuses on injunctive norms - a desire to comply with the perceived wishes of others - young people are also sensitive to descriptive norms - perceptions of the behaviour of others.^[3,7] There may therefore be a need to add descriptive norm measures to the TPB to increase its utility. Other variables not specified in the TPB that may be influence STI testing include an individual's sexual history and STI testing history.^[8] Furthermore, the health belief model (HBM) suggests that it may be important to consider measures of perceived susceptibility to, and perceived severity of, STI infection in any attempts to explain STI testing behaviour.^[8,9]

Sexual behaviour is usually private and sensitive: variables that are not included in the TPB but which may exert an important influence on testing behaviour include perceived shame and stigma about STIs, and willingness to disclose sexual histories.^[10,11] In addition, greater bodily embarrassment and embarrassment about being judged for behaviour during medical consultations are related to a lower likelihood of seeking medical care.^[12]

The aim of this mixed-method study of young people was to identify important influences on STI testing behaviour. It was expected that TPB variables measured by a

cross-sectional survey would explain a significant proportion of variance in testing behaviour and intentions, but that measures of susceptibility, severity, stigma, shame, disclosure, and embarrassment would explain additional variance. Qualitative interviews were conducted to illustrate experiential aspects of significant correlates identified from analysis of the questionnaire data. Interviews were conducted with people who intended to be tested to further understand the commonly observed gap between intentions and behaviour.^[3-6]

Materials and Methods

The sample contained 275 sexually active people aged 17-25 (mean age = 20.79, s.d. = 1.68; 24% male, 76% females) living in Brighton, UK. The sample reflected the local student population with regard to ethnicity (90% white, 4% mixed ethnicity, 3% Asian, 1% Middle-Eastern, <1% black). Although 337 people aged 17-25 commenced the questionnaire, 46 were excluded because they had no sexual experience, and 16 were excluded due to not completing the questionnaire.

Questionnaire

In addition to demographics, the questionnaire collected information about: sexual experience; age of first sexual intercourse; and lifetime total number of sexual partners (i.e., “How many different people have you had sex with?”).

Attitudes were assessed in two domains: a 7-item scale of attitudes towards sexual health services (e.g., “Teenagers should be allowed to get treatment for STIs without parents’ permission”, Cronbach $\alpha = .68$),^[9] and a 9-item scale of sexual permissiveness (e.g., “Sex before marriage is acceptable”, $\alpha = .73$).^[13] Descriptive norms were measured using three items (e.g., “what proportion of your friends have ever been tested for STIs?”, $\alpha = .73$) adapted from previous scales.^[9] Injunctive norms were measured by 12 items with reference to six groups: partners, friends, peers, family, general population and health professionals. ($\alpha = .92$). Items were adapted from previous research, and assessed perceptions of others' wishes to undergo STI testing (e.g., “my sexual partners would want me to be tested for STIs”) motivation to comply with these (e.g., “If I knew that my sexual partners wanted me to be tested for STIs, I would”).^[14] Perceived Behavioural Control was assessed using 4 items adapted from previous research (e.g., “It is difficult to be tested for STIs”, $\alpha = .65$).^[9]

Six items adapted from past research assessed perceived susceptibility to infection with HIV, Chlamydia, Syphilis, Gonorrhoea, and Genital Herpes STIs (e.g., “How likely is it that your behaviour will result in you getting syphilis”, $\alpha = .96$).^[9] Six items adapted from past research assessed perceived severity of infection with the same 6 STIs (e.g., “How bad would it be if you were infected with syphilis”, $\alpha = .85$).^[9] STI knowledge was assessed with a 10-item scale (e.g., “Chlamydia can lead to sterility among women”).^[14]

STI Stigma was measured using 6 items (e.g., “If you had an STI, people would avoid you”, $\alpha = .92$).^[11] STI shame was measured using 5 items (e.g., “If you had an STI, how ashamed would you feel?”, $\alpha = .90$).^[11] Willingness to disclose sexual histories was measured using four items (e.g., “If you told a doctor/nurse that you had sex with lots of different people, how likely is it that they would think less of you?”, $\alpha = .83$).^[11] Embarrassment was assessed in two domains: embarrassment related to judgment was measured using 10 items (e.g., “I worry that doctors will scold me for the bad state of my health”, $\alpha = .77$); bodily embarrassment was measured using 10 items (e.g., “It is embarrassing for me when a doctor examines my body”, $\alpha = .90$).^[12]

Respondents indicated whether they had been tested for STIs in the last year, more than one year ago, or never. Intention for STI testing was measured using a three item scale adapted from previous research (e.g., “I intend to be tested for STIs in the next year”, $\alpha = .87$).^[9]

Interview

Semi-structured interviews were conducted with a purposively-selected sample of 5 women and 3 men to allow exploration of reasons behind intentions and behaviour, and analysis of barriers to STI testing. All interviewees gave questionnaire responses that indicated an intention to be tested. This allowed analyses to include the intention-behaviour gap in a homogeneous sample. Interviews followed a semi-structured schedule which explored attitudes and experiences related to STI testing, and explored barriers and facilitating factors. To encourage openness, a non-judgemental approach was adopted, with the interviewer not giving opinions or commenting on behaviours, and supportive language was used.^[10-12]

Procedure

Ethical approval was granted by the University of Sussex. An opportunity sample was recruited via emails sent from three University Departments, via social networking sites, and to a student participant pool. Survey participants read a description of the study before clicking a button to indicate their consent to participate. They could exit the study at any point. Upon completion they were invited to enter a draw for one of four £25 prizes. Participants whose questionnaire scores indicated intentions to undergo STI testing were invited to complete an interview. Interviewees gave written informed consent. Interviews lasting approximately 45 minutes were conducted in a quiet, private room on the University campus, and participants were reimbursed £7 (approx. USD5).

Quantitative analysis was conducted using SPSS 18.0.^[15] Bivariate analyses were conducted to identify correlates of STI testing history and intentions to be tested. These were followed by multivariate analyses in which only significant bivariate correlates were included.

Women had significantly greater bodily embarrassment ($p < .01$), and descriptive norms more supportive of testing ($p = .02$), but there were no other significant sex differences in other correlates of STI testing (all $ps > .06$), past testing ($p = .14$), or intended testing ($p = .56$). Analyses were therefore conducted for the whole sample as this provided greater statistical power. Sex was controlled for in multivariate analyses.

Interviews were transcribed verbatim, and personal identifiers were replaced with pseudonyms. Transcripts were analysed via Interpretative Phenomenological Analysis (IPA), a method that focuses on experience and meaning-making.^[16] IPA entails two phases of analysis: an initial phenomenological analysis which focuses on experiences that are important to interviewees from the interviewee's perspective is followed by an interpretative analysis in which the researcher uses her/his knowledge of a topic to better understand these experiences. Each transcript was analysed individually to identify emergent experiential themes and then the broader conceptual categories into which these fit. This was repeated for each participant, and cross-case analysis was then conducted to identify convergence and divergence around themes. Each quote below includes the interviewee pseudonym as well as an indication of whether she/he had not been tested, had been tested only in response to symptoms, or had been tested in the absence of symptoms of infection.

Results

Questionnaire data

Correlates of testing

Three-quarters (76%) of respondents had been tested for STIs: 56% within the last year, and 20% more than one year ago. Table 1 displays associations between past testing and a range of variables in which higher χ^2 scores are more likely to represent a significant association. Testing for STIs in the last year was significantly related to a younger age at first sex, a greater number of sexual partners, less bodily embarrassment, more positive attitudes toward sexual health services, stronger descriptive norms, stronger injunctive norms, greater PBC, greater knowledge, greater perceived susceptibility, greater perceived severity, less shame, and lower concern about sexual disclosure (Table 1).

Multinomial logistic regression analysis using forward selection of variables identified three significant multivariate correlates of having been tested for STIs ($\chi^2_{(6)} = 45.74, p < .01$; Pseudo $R^2 = .178$; Table 2). Larger Wald coefficients indicate stronger associations with having been tested. Compared to people tested in the last year, all other respondents expressed greater STI shame. Injunctive and descriptive norms were significantly weaker in respondents who had never been tested than among those tested in the last year, but norms were not significantly different between people tested in the last year or more than one year ago.

Correlates of intention

The far right column of Table 1 displays correlations between intentions to be tested and a range of variables: scores closer to +1 or -1 indicate stronger associations. Stronger intentions for STI testing were held by respondents with a greater number of sexual partners over their lifetime, stronger injunctive norms, greater STI knowledge, greater perceived susceptibility and severity, and lower concern about sexual disclosure. Intentions were significantly stronger among those who had been tested in the last year than in both other groups ($F_{(2,72)} = 22.07, p < .01$)

Linear regression identified four significant multivariate predictors of STI testing intentions: greater perceived susceptibility, having been tested more recently, stronger injunctive norms, and lower concern about sexual disclosure ($F_{(5,265)} = 17.99, p < .01$; adjusted $R^2 = .239$; Table 3). Larger Beta coefficients indicate stronger associations with intentions to be tested.

Interview data

The four key themes to emerge from the qualitative analysis highlighted the influence on STI testing behaviour of perceived risk, subjective norms, stigma/shame, and ease of access. Each is described below.

Low perceived risk

Reflecting the survey data, participants who perceived a low likelihood of infection with STIs tended to have a low motivation to be tested. However, it is important to note that the low perceived risk of infection was usually based on unconfirmed assessments of low risk - reflected in terms such as “vague” - and assumptions that monogamy provides protection from infection:

I was fairly certain that I wasn't, like, I didn't have anything that would have been a concern, just because like, you sort of know your own sexual history so you have a vague idea of whether you've put yourself in the position of risk or not. (Henry – tested)

I was in what I thought was a long term monogamous relationship, um, so I was not getting regularly tested because I was assuming monogamy. (Felicity – tested)

One positive aspect of this vagueness was that interviewees' perceived inherent safety could be challenged if one of their peers who did not appear to be at risk were to be diagnosed with an STI:

If I had a friend who had gone for one without symptoms and then had had a result saying they had an STI, then I might be like, “Oh well I should go get one as that could happen to me”. (Debbie – tested when symptomatic)

Perceived norms

The suggestion that friends' behaviour could influence the likelihood of being tested was also part of a second theme reflecting the quantitative data: subjective norms influenced intended testing. The use of the words “normal” and “normalised” in the quotes below highlights the importance of descriptive norms in countering stigma to influence young people's STI testing behaviour.^[7]

If it was more of a, more of a normal thing to do, seen as a normal thing to do, that would make it easier to do (Andrew – not tested)

I think it's good to have a normalised testing, cause I was in [Nightclub] a few weeks ago and they were just handing out tests and condoms and me and my friend were like, “Oh, let's just do it”. (Gemma – tested)

If you got a group of friends that are really pro-STI testing and you're a bit more hesitant then that can be really good and definitely would, that would help me to go if I was worried about it. (Ellie – tested when symptomatic)

Participants suggested that it would be beneficial if their friends were to discuss testing, or better yet organise to get tested together. Interviewees highlighted the importance of normalisation in two senses: the first was to present testing as statistically normative (i.e., not unusual); the second was to present testing as socially normal (i.e., not abnormal or stigmatising).

Stigma / shame / embarrassment

Stigma, shame, and concerns about disclosure emerged as important influences on STI testing behaviour. Some participants described how this arose from past experiences of testing positive, which made them feel bad about themselves.

I felt like really disgusting and dirty and like, couldn't believe it when I was told and like really ashamed. (Debbie – tested when symptomatic)

Others who had not tested positive described how these negative self-evaluations affected intended or imagined experiences of going for STI testing - even if these emotions were acknowledged as being unfounded and irrational:

There's kind of an irrational fear, that there's something, there's going to be something about the way I'm walking or something about the look on my face that's going to make everyone know, even though they wouldn't at all and I know, like, my brain tells me that. (Clive – tested)

The quote above indicated that in addition to feeling ashamed and marked in some way, interviewees were concerned about being judged by others. In the quote below, Ellie indicated that when she did go to be tested, she wanted to tell other people who were also presumably waiting for testing that she did not have an STI in spite of the fact that she only attended for testing in response to symptoms:

I wanted to say to people around me in the waiting room, "I don't have, I'm not here because I think I've got a sexually transmitted infection". So I didn't like people making a judgement that I may have one. (Ellie – tested when symptomatic)

Given this concern about judgment from other people in their predicament, it was not surprising that interviewees highlighted the importance of medical professionals to present themselves as non-judgmental of young people. The quote below demonstrates how positively young people respond to non-judgmental health professionals:

[GUM clinic staff] were all very polite. Like, you didn't feel judged. You didn't feel like you'd been naughty at all. (Henry – tested)

Ease of access to testing

Interviewees identified a number of imagined or actual barriers to testing. Some reported that they had not been tested for STIs because they did not know how to go about doing so:

I don't really know what it involves, to be honest, and I think not knowing that makes it, makes you, makes me less willing anyway. (Andrew – not tested)

Interviewees were very supportive of initiatives to make STI testing more accessible, whether through self-testing, through recommendations for testing in general practice, or through outreach testing programs:

If they literally just had the test kits, in places, like in public toilets for you to take, with a little envelope, free post ... that would make it like, ten million times easier to go for testing (Clive – tested)

I would do it. I mean, er, I have received one of those letters saying I can get free, like, STI test, but like I say that's still having to go out of your way to do it. But if I was actually there and they said, "While you're here do you want to do an STI test?", I'd do that definitely. (Andrew – not tested)

However, some interviewees questioned whether there really are many serious barriers to STI testing and/or whether much effort was required to undergo testing. They noted that information about testing is available, but that people tended not to feel sufficiently at risk to justify applying the effort perceived to be needed to get tested:

I don't think they could make it any easier. Ultimately it is down to the person, whether they want to get one, and I don't think it is hard to get one. I think it's just, I mean it's only is far out there they can go, other than, you know bombarding you with, "Get an STI test! Get one!", because there are, there are posters around and, you know, you only need to look really. It's just, I don't look. (Becky – not tested)

There was therefore, an apparent link between perceived barriers to testing and both perceived susceptibility to, and severity of, STI infection.

Discussion

This study identified several correlates of increased uptake of STI testing, especially normative beliefs, perceived susceptibility to infection, shame, and willingness to disclose sexual histories.

The key findings from the quantitative study were that past testing was correlated with less STI shame and stronger subjective norms for STI testing, and that stronger intentions to get tested were predicted by greater perceived susceptibility to STI, stronger injunctive norms, and fewer concerns about disclosure of sexual histories. The qualitative data corroborated these findings by highlighting the importance of social

norms and concerns about disclosure and stigma, and also highlighted how low perceived risk interacted with perceived barriers to testing. There is evidence in other domains that addressing such variables can lead to stronger intentions.^[17,18] However, further research would need to assess how best this could be done. The data confirmed the expectation that TPB variables may explain a significant proportion of variance in testing behaviour and intentions, but that other measures explain additional variance.

Various mass media could be used to subtly change subjective norms and shame. For example, television dramas could promote more positive norms by portraying sexual health testing among popular young characters (descriptive norms) and having characters express positive attitudes toward testing (injunctive norms). Other possible avenues for interventions include public health messages for the general population, targeted campaigns, and one-to-one discussions in general practice.^[17-20]

Although intentions have been shown to predict behaviour, there is not always a direct link between the two.^[3-6] To increase rates of STI testing, it is not enough to simply strengthen intentions: people must also act on these intentions.^[21] Some researchers have highlighted the importance of implementation intentions, which involve individuals specifying when, where and how they will carry out an intended behaviour.^[21] In other behavioural domains, there is evidence that encouraging people to specify implementation intentions increases the likelihood of health behaviours such as cervical screening.^[22,23] In the context of ST testing, it may be useful to encourage young people to formulate implementation intentions that address perceived barriers to testing.

In the qualitative data, not knowing where or how to get tested emerged as a barrier to testing, and there was broad support for wider availability of testing (including self-testing). This reflects recent research with young people in the UK, which has revealed willingness to undertake STI self-testing, with general practice the most popular test collection point.^[19,20] However, there is also evidence that no one type of STI testing service is suitable to all patients: although some people identify general practitioners (GPs) as a preferred site for testing because it could reduce stigma and shame, many others prefer testing in specialist sexual health services because they appreciate the specialist expertise of staff.^[23] The survey data suggest that regardless of where STI

testing services are located, increased ease of access may increase testing rates, especially given that low perceived susceptibility results in low motivation for testing.

One strength of this study was the combination of, and concordance between, quantitative and qualitative data sets. However, the study also has some limitations. Although correlates of past testing and intended testing were examined, the study could have been strengthened by using a prospective longitudinal design to measure actual behaviour: the cross-sectional study design precluded analysis of causal associations between cognitive “predictors” and behavioural “outcomes”. A further limitation is that participants were self-selected, and were predominantly university students. This may help to explain the relatively high proportion of respondents who had been tested. First year undergraduate students have been found to differ on sexual risk behaviours, protective behaviours and sexual experience.^[24] Furthermore, data from the National Chlamydia Screening Program reveal that in the region in which the study was conducted, positive Chlamydia tests are less likely among students than the general population.^[25] Generalising studies of students sexual health to the broader population should be done with caution,^[24] and there would be value in replicating the study in a representative sample of young people. Nevertheless, within the segment of the population studied here, there appear to be some clear issues to address to encourage STI testing.

Health promotion in this domain is crucial due to high rates of STIs and low testing rates. This study has identified beliefs and attitudes which distinguish individuals who have tested in the past and those who have not, and which predict intention to test. The findings indicate that although TPB variables are important correlates of STI testing, there may be a need to expand on this model to incorporate measures of susceptibility and severity, measures of concerns about shame and disclosure, and broader measures of social norms. If these variables can be targeted then it may be possible to increase uptake of STI testing, leading to better control of STIs, and a reduction in their negative health consequences.

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Table 1 Bivariate correlates of having been tested for STIs and intending to be tested for STIs (n = 275)

Correlates	STI testing history				correlation with intention
	yes - last year (n = 153)	yes - longer ago (n = 56)	never (n = 66)		
Age	20.86 (1.61)	21.30 (1.57)	20.76 (1.80)	$F_{(2,272)} = 1.96, p = .15$	$r = -.02, p = .76$
Age at first sex	16.68 (1.82) ^a	16.27 (1.85) ^a	17.42 (1.57) ^b	$F_{(2,272)} = 6.69, p < .01$	$r = -.09, p = .13$
# partners	8.88 (14.23) ^a	6.11 (6.24) ^b	3.54 (4.17) ^b	$F_{(2,272)} = 5.40, p < .01$	$r = .23, p < .01$
Embarrassment: Judgement	2.54 (0.66) ^a	2.62 (0.64) ^b	2.61 (0.63) ^b	$F_{(2,272)} = 0.52, p = .60$	$r = .02, p = .80$
Embarrassment: body	2.75 (0.87) ^a	3.01 (0.91)	3.05 (0.81) ^b	$F_{(2,272)} = 3.76, p = .03$	$r = -.10, p = .11$
Attitudes: sexual health services	5.80 (0.69) ^a	5.89 (0.81) ^a	5.56 (0.87) ^b	$F_{(2,272)} = 3.32, p = .04$	$r = .09, p = .16$
Attitudes: permissiveness	5.50 (0.68)	5.41 (0.69)	5.37 (0.82)	$F_{(2,272)} = 0.96, p = .39$	$r = .10, p = .11$
Subjective norms: descriptive	3.52 (0.77) ^a	3.46 (0.63)	3.18 (0.72) ^b	$F_{(2,272)} = 5.08, p < .01$	$r = .11, p = .08$
Subjective norms: injunctive	4.31 (1.37) ^a	4.03 (1.34) ^a	3.23 (1.38) ^b	$F_{(2,272)} = 14.31, p < .01$	$r = .32, p < .01$
Perceived Behavioral Control	4.58 (0.46) ^a	4.50 (0.54)	4.32 (0.78) ^b	$F_{(2,272)} = 4.97, p = .02$	$r = .07, p = .25$
STI Knowledge	8.82 (1.30) ^a	8.38 (1.61)	7.98 (2.01) ^b	$F_{(2,272)} = 7.01, p < .01$	$r = .14, p = .02$
Perceived susceptibility	1.76 (0.75) ^a	1.57 (0.64)	1.45 (0.54) ^b	$F_{(2,272)} = 5.53, p < .01$	$r = .33, p < .01$
Perceived severity	4.04 (0.62) ^a	4.18 (0.59)	4.28 (0.64) ^b	$F_{(2,272)} = 3.68, p = .02$	$r = .17, p < .01$
STI stigma	3.52 (1.30)	3.69 (1.32)	3.67 (1.38)	$F_{(2,272)} = 0.47, p = .62$	$r = -.01, p = .82$
STI shame	3.16 (0.97) ^a	3.50 (1.01) ^b	3.46 (0.99)	$F_{(2,272)} = 3.70, p = .03$	$r = -.05, p = .41$
Sexual Disclosure	1.47 (0.47) ^a	1.63 (0.63) ^b	1.64 (0.64) ^b	$F_{(2,272)} = 3.05, p = .05$	$r = -.19, p < .01$

note: means with different superscripts differed significantly in post-hoc tests

Table 2 Multivariate correlates of having been tested for STIs (n = 275)

		B	S.E.	Wald	Sig.	OR (95% CI)
Shame	Tested last year	-	-	-	-	1.00
	Tested	.38	.17	5.11	p = .02	1.46 (1.05 - 2.02)
	Never tested	.39	.17	5.40	p = .02	1.47 (1.06 - 2.03)
Injunctive norm	Tested last year	-	-	-	-	1.00
	Tested	-0.17	0.12	2.08	p = .15	0.85 (0.67 - 1.06)
	Never tested	-0.60	0.12	24.12	p < .01	0.55 (0.43 - 0.70)
Descriptive norm	Tested last year	-	-	-	-	1.00
	Tested	-0.14	0.22	0.42	p = .52	0.87 (0.57 - 1.33)
	Never tested	-0.72	0.24	9.19	p < .01	0.48 (0.30 - 0.77)

Table 3 Multivariate correlates of intended STI testing (n = 275)

	B	S.E.	Beta	t	Sig.
Perceived susceptibility	.63	.13	.26	4.62	p < .01
Tested in past	.48	.11	.24	4.19	p < .01
Injunctive norm	.20	.07	.17	2.91	p < .01
Disclosure	-.46	.17	-.15	-2.77	p < .01