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Sexual health-related knowledge, attitudes and practices of young people in Australia

Results from the 2018 Debrief Survey among heterosexual and non-heterosexual participants

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Glossary

AOR	adjusted odds ratio
CSRH	Centre for Social Research in Health
GP	general practitioner
HIV	human immunodeficiency virus
IYLL	It's Your Love Life; the periodic survey on sexual health among young people in NSW
M	mean
OR	odds ratio
SD	standard deviation
STI	sexually transmissible infection

Statistics

The report uses advanced statistical methodology. For further details of these methods, we recommend the following online resource: http://statistics.berkeley.edu/~stark/SticiGui/Text/gloss.htm

Report symbols

The following symbol is used throughout the report to indicate a section summary: 

Executive summary

The Centre for Social Research in Health was funded by the Australian Government Department of Health to establish the basis for a national behavioural survey on sexual health among young people aged 15–29 years in Australia. This report presents an overview of the data collected from heterosexual and non-heterosexual respondents as part of the 2017 Debrief cross-sectional survey. This includes results on 18 indicator variables relating to STI-related knowledge, attitudes and practices as well as exposure to and appreciation of sexual health promotion messages.

Between December 2017 and April 2018, Facebook and Instagram advertisements were used to recruit 2,303 respondents, aged 15–29 years old, and living in Australia. All states and territories were represented with most respondents originating from New South Wales (30.3%), Victoria (26.8%), Queensland (18.5%) and Western Australia (10.2%). On average, respondents were 21.8 years old and more than half (56.5%) were students. Of the respondents, 54.2% were female (including 4 trans women), 45.7% were male (including 11 trans men), and 0.1% self-classified as intersex. Most respondents (70.1%) self-identified as heterosexual and 29.9% reported a non-heterosexual sexual orientation, including bisexual, lesbian, gay, and queer. Most respondents (81.5%) reported to have had oral, vaginal or anal sex, including 76.5% in the past 12 months. Of the sexually active respondents, 31% reported a lifetime number of sex partners of 10 and more.

The analyses consisted of calculating indicator estimates of STI knowledge, sexual health-related attitudes and practices, as well as exposure to and appreciation of sexual health promotion campaigns among young people in Australia. Univariate and multivariate analyses were used to assess associations between each of the 18 indicator variables and a range of potential correlates. The socio-demographic and lifestyle correlates investigated included age, gender, sexual orientation, and number of sex partners. The analyses conducted to assess the factors that shape condom use or testing for STIs, also assessed the potential associations with knowledge of STIs, perceived severity of STIs, perceived risk of contracting an STI, social norms regarding the behaviour as well as access-related facilitators and barriers. Some analyses were conducted on the full sample while others were restricted to respondents who ever had sex or who had been sexually active in the past 12 months.

On average, respondents provided correct answers to 3.9 of the 5 questions on STI knowledge (SD = 1.08, range: 0–5). While knowledge of STIs was satisfactory for most topics covered by the survey, 31.2% of the respondents did not know that STIs often have no symptoms. Older respondents, females, and people with higher number of lifetime sex partners were generally more knowledgeable about STIs compared to other respondents.

Perceived severity of STIs was high among respondents (M = 4.36, SD = 0.73, range: 1–5) with 92.2% of them agreeing that contracting an STI could seriously affect their health. Perceived risk of contracting an STI was moderately low (M = 2.73, SD = 1.06, range: 1–5) with 66.4% of respondents agreeing that they felt they were unlikely to contract an STI. After controlling for potential socio-demographic confounders, perceived risk was found to be lower among older respondents and higher among both non-heterosexual respondents and people with higher lifetime numbers of sex partners compared to other respondents.

An assessment of additional factors that can influence condom use found moderately strong supportive social norms regarding the use of condoms among respondents (M = 4.02, SD = 0.74, range: 1-5). While most (92.9%) considered that people their age should use condoms with any new partner, a lower percentage of respondents (61.7%) believed that their best friends would expect them to use condoms. Supportive social norms regarding the use of condoms were more pronounced among younger respondents, females, as well as people with lower number of lifetime sex partners, including those who never had sex.

Potential access-related facilitators of and barriers to using condoms were also investigated, including knowing where to get condoms and perceiving condoms as expensive. Almost all respondents (94.7%) indicated that they knew where to access condoms and condoms were seen as expensive by a third (33.4%) of respondents. Perceiving condoms as expensive was more frequent among younger respondents and females compared to other respondents.

Respondents who had been sexually active in the past 12 months were asked about their overall use of condoms during sexual intercourse with any partner as well as their condom usage with regular partner/s and with casual partner/s. Of the respondents who had sex in the past 12 months, 75.1% engaged at least once in sexual intercourse without condoms in that time, including 69.3% with regular partner/s and 24.1% with casual partner/s. Reporting condomless sexual intercourse in the past 12 months was strongly associated with numbers of partners. Of the respondents with 5 and more sex partners in that past 12 months, 88.0% reported to have engaged in condomless sexual intercourse with regular partner/s and 65.5% reported to have engaged in condomless sexual intercourse with casual partner/s in that time. The respondents who had condomless sexual intercourse in the past 12 months were also generally older and they perceived less social support norms regarding the use of condoms. They were also more knowledgeable about STIs and perceived themselves at higher risk of contracting an STI and they knew more often than other respondents where to access condoms. No association was observed between engaging in condomless sexual intercourse and perceiving condoms as expensive.

An assessment of the factors that can influence testing for STIs found that moderate supportive social norms regarding STI testing among respondents (M = 3.64, SD = 0.80, range: 1–5). While most (93.2%) considered that people their age should test for STIs, only 36.5% believed that their best friends would expect them to test for STIs. Supportive social norms regarding STI testing were more pronounced among older respondents, females, as well as people with higher numbers of lifetime sex partners.

In terms of potential access-related facilitators of and barriers to testing for STIs, we found that 73.9% of all respondents knew where to test and that 16.9% of them perceived testing for STIs as expensive. Not knowing where to test was more frequent among younger respondents, females, and people with lower lifetime numbers of sex partners, including respondents who had never had sex. Similarly, perceiving STI testing as expensive was more frequent among younger respondents, females, and people with lower lifetime numbers of sex partners.

Of the respondents who ever had oral, vaginal or anal sex, 58.0% had ever tested for STIs and/or HIV, including 36.0% who had tested in the past 12 months. Among respondents who ever had sex, having ever tested for STIs and/or HIV was found to be more frequent in older than in younger respondents (74.2% versus 36.7%, $p<.001$), in female than in male respondents (62.6% versus 51.3%, $p<.001$), in non-heterosexual than in heterosexual respondents (65.5% versus 54.9%, $p<.001$) and the proportion of respondents ever tested increased significantly with lifetime numbers of sex partners to reach 88% among respondents with 10 and more partners. The association between having ever tested and being non-heterosexual, however, disappeared after control for other variables, including lifetime numbers of sex partners, which appeared to be a strong correlate of having ever tested for STIs and/or HIV.

Analyses were replicated to identify the correlates of having tested for STIs and/or HIV in the past 12 months. Among respondents who ever had sex, having tested for STIs and/or HIV in the past 12 months was found to be higher in female than male respondents (39.7% versus 30.7%, $p<.001$), in non-heterosexual than in heterosexual respondents (48.1% versus 31.1%, $p<.001$) and the percentage of young people tested in the past 12 months increased significantly with lifetime numbers of sex partners to reach 57.5% among respondents with 10 and more lifetime partners. In multivariate analyses, gender, sexual orientation and numbers of sex partners remained independently associated with having tested for STIs and/or HIV in the past 12 months.

Looking at the characteristics of respondents who ever had a sexual check-up, we found that half (53.8%) of them were last tested for both STIs and HIV. Males, non-heterosexuals, and respondents with higher numbers of sex partners in the past 12 months were more often comprehensively tested for both STIs and HIV, compared to other respondents. Of the respondents who had ever tested, 7.8% reported that they were

diagnosed with an STI or HIV at their last test, including 7.4% who were diagnosed with an STI only and 0.4% who were diagnosed with HIV. No participant was diagnosed with both an STI and HIV at their last test.

The survey also contributed to estimating the extent of exposure to sexual health promotion campaigns among young people in Australia. The percentage of respondents who had at least once in the past 12 months noticed sexual health promotion messages for people their age was high (88.7%). Three quarters (73.8%) of respondents had noticed messages encouraging talking about sexual health and STIs; 79.3% had noticed messages promoting condom use and 68.9% had noticed messages promoting testing for STIs or HIV. The frequency of exposure to sexual health promotion messages in the past 12 months was higher among younger respondents, non-heterosexuals, and people with higher lifetime numbers of sex partners. However, most of the time and among all sub-groups of respondents, sexual health promotion messages had been noticed only rarely or occasionally and the level of appreciation of sexual health promotion messages remained limited. Results indicate that only 40.9% of the respondents who had seen sexual health promotion messages in the past 12 months considered these messages as relevant to them; 32.0% considered the messages as contributing to an increase in their knowledge about sexual health and 24.1% as contributing to an increase in their confidence. While younger respondents, non-heterosexuals, and people with higher lifetime numbers of sex partners were more appreciative of the sexual health promotion messages they had seen compared to other respondents, levels of appreciation appeared limited in all subgroups.

The study presented limitations. Self-reported data can be affected by declaration bias and the sample recruited cannot be considered as representative of the population of young people who use social media nor of the population of young people aged 15–29 years old living in Australia.

Despite these limitations, the survey findings contribute to expanding the current knowledge on the STI-prevention needs of young people in Australia. The study offers new national estimates of STI-knowledge, attitudes and practices among young people aged 15–29 years old in Australia and contributes to better documenting the needs of various sub-groups of young people defined by age groups, gender, sexual orientation, and numbers of sex partners. The survey confirms previous findings on the existence of a 'gender gap' in sexual health, with younger men scoring less favourably than young women on a range of indicators. The analyses of the influence of sexual orientation presented in this report are unique. Differences according to sexual orientation were observed but heterosexual and non-heterosexual young people were not as systematically different as generally assumed. Beyond sexual orientation, number of sex partners was a major correlate independently associated with 16 of the 18 indicator variables investigated. While lifetime numbers of sex partners were on average relatively limited among young people, suggesting that most of them were at relatively low risk of contracting an STI, the survey provided new insights into subgroups of respondents who are most sexually active, including those who had a lifetime number of sex partners of 10 and more. While these young people with higher numbers of sex partners reported more frequent engagement in condomless sexual intercourse, they were more knowledgeable about STIs and they had most of the time tested at least once for STIs and/or HIV. The extent of testing for STIs and/or HIV in the past 12 months was, however, limited among heterosexual young people with higher numbers of sex partners.

The survey findings provide guidance for the strengthening and tailoring of sexual health promotion campaigns and other initiatives conducted among young people in Australia. Further promoting sexual health among young people necessitates strengthening supportive norms around condom use and STI testing; alleviating access-related barriers; reducing the 'gender gap' in sexual health-related knowledge, attitudes and practices; promoting regular comprehensive testing for both STIs and HIV among people with the highest numbers of sex partners, regardless of their sexual orientation; and ensuring more frequent exposure to sexual health promotion messages that can be perceived as relevant and beneficial by a larger proportion of adolescents and young adults.

Introduction

Young people aged 15–29 years in Australia are at a higher risk of contracting sexually transmissible infections (STIs) compared to adults above 29 years, and large numbers of young people are each year diagnosed with an STI (Kirby Institute, 2018). While an evidence base is needed to guide the strengthening of programs aimed at reducing the prevalence of STIs, there has to date been no integrated national behavioural surveillance system that could assess the STI prevention needs of young people in Australia and monitor potential evolutions over time in their sexual health-related knowledge, attitudes and practices.

The Centre for Social Research in Health was funded by the Australian Department of Health to establish the basis for a national behavioural surveillance survey on sexual health among young people aged 15–29 years in Australia. The project builds on the cumulative research and surveillance framework developed as part of a series of previous online surveys on sexual health among young people in New South Wales (NSW). This includes the *Getting Down to It* survey conducted in 2009 (Adam et al., 2011), *Project1626* that established the feasibility of a periodic survey (Adam et al., 2014) and the ongoing annual NSW periodic survey *It's Your Love Life* (IYLL) initiated in 2016 (Adam et al., 2017 & 2018).

Findings from previous studies, including the last two editions of IYLL, suggested that knowledge of STIs was generally fair among young people in NSW but gaps remained, including the fact that a minority of young people did not know that STIs often have no symptoms. While the perception of the severity of STIs was high among young people, most did not see themselves at risk of contracting an STI. Condom use remained infrequent with regular partners and of the minority of young people who had casual sex partners in the past 12 months, half had engaged in condomless sexual intercourse with these partners. A substantial proportion of condomless acts occur between partners who have never or not recently tested for STIs. Only about half of young people in NSW have ever tested for STIs or HIV and out of those, only half tested more than once. Differences in knowledge, attitudes, and practices were noted according to age and gender. Compared to young women, young men were found to score lower on a range of sexual health-related indicators, including STI knowledge and testing for STIs and/or HIV. Lastly, the frequency of exposure to sexual health messages was found to be moderate and only a minority of young people perceived the messages targeting them as relevant and contributing to increasing their sexual health-related knowledge.

A major limitation of the assessment of the STI prevention needs of young people conducted through IYLL is that it was focused on heterosexual young people living in NSW. In addition, while most of our previous studies compared non-sexually active and sexually active young people in terms of STI-related knowledge, attitudes, and practices, no differentiation was made among sexually active respondents according to their lifetime or annual number of sex partners, number of partners being a major indicator of potential risk of STI and/or HIV transmission. This suggests that despite the large body of data and knowledge generated by previous surveys, it remained unclear whether our description of the STI prevention needs of young people applied to all of them nationally, whether they were differences according to sexual orientation, and what the needs of young people with higher numbers of partners were, irrespective of their sexual orientation. Assessing the needs of young people who are the most susceptible to STI and/or HIV due to their higher sexual activity is at the centre of the present study.

The main objective of the Debrief Survey is to establish national indicators of STI-related knowledge, attitudes and practices that are essential for the development and evaluation of sexual health programs conducted in Australia. More precisely, the Debrief Survey aims to:

- assess current levels of STI-related knowledge, perceived severity of STIs and perceived risk of

contracting an STI among young people aged 15–29 years old and living in Australia

- explore social norms regarding condom use and testing for STIs and/or HIV, and whether access-related barriers exist that can affect condom use and testing
- establish national estimates of condom use and testing for STIs and/or HIV
- assess young people's level of exposure to and appreciation of sexual health promotion messages.

In addition to establishing overall national indicators of STI-related knowledge, attitudes and practices, and sexual health promotion coverage among young people aged 15–29 years old, we explore differences in needs according to age groups, gender, sexual orientation, and lifetime numbers of sex partners. This provides valuable information for the tailoring of sexual health promotion campaigns and other activities to the specific needs of various segments of the population of young people. Another line of analysis presented in this report assesses the contribution of a range of individual, social and access-related factors to condom use and testing for STIs and/or HIV using an eclectic theorizing approach developed in previous surveys.

It is anticipated that the findings presented in this report may provide guidance for priority actions regarding the STI response for heterosexual and non-heterosexual adolescents and young people in Australia, in particular with respect to the strengthening of STI prevention and testing among individuals who are the most susceptible to STIs and/or HIV.

Methods

Design

Debrief is an online cross-sectional survey that is intended to be repeated over time. Data for the first edition of the survey were collected between 12 December 2017 and 25 April 2018. The self-completed survey was hosted through a dedicated website and respondents were recruited from targeted advertisements on Facebook and Instagram.

Sample

The sample consisted of 2,303 respondents, aged 15–29 years and living in Australian, whose characteristics are detailed in Table 1. On average, respondents were 21.8 years old and more than half (56.5%) reported to be students. Of the respondents, 1,198 (54.2%) were female (including 4 trans women), 1,009 (45.7%) were male (including 11 trans men), and 2 (0.1%) self-classified as intersex. Most respondents (70.1%) self-identified as heterosexual and 29.9% reported other sexual orientations, including bisexual, lesbian, gay, and queer. The latter respondents will be referred to as non-heterosexual in this report.

All states and territories were represented with most respondents originating from New South Wales (30.3%), Victoria (26.8%), Queensland (18.5%) and Western Australia (10.2%). A majority of respondents (64.4%) resided in a capital city, 13.6% in major regional centres or cities, 15.2% in smaller cities or towns and 6.8% in rural areas. Most respondents (84.9%) were born in Australia and 2.6% identified as Aboriginal or Torres Strait Islanders.

Most respondents (81.5%) reported to have had oral, vaginal or anal sex, including 76.5% in the past 12 months, and these respondents are referred to as ever sexually active or sexually active in the past 12 months. A quarter (25.3%) of all respondents had a lifetime number of sex partners of 10 and more and this percentage reached 31% when calculated among respondents who ever had sex.

Table 1 Sample characteristics

Age (continuous)	
Mean	21.8
Median	21.0
Standard deviation	3.96
Range	15-29
Age groups	
15–21 years	1,208 (52.5%)
22–29 years	1,095 (47.5%)
Gender	
Male	1,009 (45.7%)
Female	1,198 (54.2%)
Intersex	2 (0.1%)

Currently a student	
Yes	1,259 (56.5%)
No	969 (43.5%)
State/territory	
Australian Capital Territory	79 (3.5%)
Queensland	413 (18.5%)
New South Wales	675 (30.3%)
Northern Territory	9 (0.4%)
South Australia	165 (7.4%)
Tasmania	62 (2.8%)
Victoria	598 (26.8%)
Western Australia	227 (10.2%)
Area of residence	
Capital city	1,435 (64.4%)
Major regional centre or city	303 (13.6%)
Smaller city or town	338 (15.2%)
Rural area	152 (6.8%)
Born in Australia	
Yes	1,891 (84.9%)
No	337 (15.1%)
Aboriginal or Torres Strait Islander origin	
Yes	58 (2.6%)
No	2,170 (97.4%)
Sexual orientation	
Heterosexual	1,543 (70.1%)
Non-heterosexual	657 (29.9%)
Sexual activity	
Never had oral, vaginal or anal sex	397 (18.4%)
Ever had oral, vaginal or anal sex but not in the past 12 months	107 (5.0%)
Had oral, vaginal or anal sex in the past 12 months	1,646 (76.5%)
Prefer not to report on this information	3 (0.1%)
Lifetime number of sex partners	
0	397 (18.2%)
1	444 (20.4%)
2 to 4	480 (22.0%)
5 to 9	307 (14.1%)
10 and more	552 (25.3%)

Measures

The survey instrument consisted of questions and scales extracted from previous surveys on sexual health among young people (Adam et al., 2011, 2014, 2017 and 2018).

STI knowledge

Respondents were asked five STI knowledge questions relating to the prevalence of STIs among young people ('*STIs are rare among young people*' and '*Chlamydia is the most common STI among young people*'), symptoms ('*STIs often have no symptoms*'), transmission ('*STIs can affect anyone who is sexually active*'), and health consequences of STIs ('*If left untreated, STIs can affect your health*'). For each question, respondents could answer '*true*', '*false*', or '*unsure*'. To calculate an overall count of correct answers, each correct answer was scored 1 while unsure or incorrect answers were scored 0. The overall score ranged from 0–5 with a higher count indicating a higher level of STI knowledge.

Perceived severity of STIs

Perceived severity was measured using two statements ('*Contracting an STI could seriously affect my health*' and '*Getting an STI is no big deal*'). Answers to both questions were provided on a 5-point scale (from 1 - *Totally disagree* to 5 - *Totally agree*) and item scores were averaged after reversing the score of the second item. The overall score of perceived severity ranged from 1–5 with a higher score indicating a higher level of perceived severity.

Perceived risk of contracting an STI

Perceived risk was measured using two statements ('*I believe I could contract an STI*' and '*I feel that I'm unlikely to get an STI*'). Answers to both questions were provided on a 5-point scale (from 1 - *Totally disagree* to 5 - *Totally agree*) and item scores were averaged after reversing the score of the second item. The overall score of perceived risk ranged from 1–5 with a higher score indicating a higher level of perceived risk.

Social norms regarding the use of condoms

These social norms were measured by three statements ('*People my age should use condoms with any new partner*', '*My best friends believe I should use condoms*' and '*Using condoms with new partners is common among people my age*') relating respectively to perceived social norms, injunctive social norms and descriptive social norms in relation to peer practices. Answers to all questions were provided on a 5-point scale (from 1 - *Totally disagree* to 5 - *Totally agree*) and item scores were averaged. The overall score ranged from 1-5 with a higher score indicating stronger supportive social norms regarding the use of condoms.

Access-related facilitators of and barriers to using condoms

These dimensions were assessed using two statements ('*I know where to get condoms*' and '*Condoms are expensive*'). Respondents provided their answers to each question on a 5-point scale (from 1 - *Totally disagree* to 5 - *Totally agree*) and responses to each question were analysed individually.

Condom use

Respondents who reported one or more sex partners in the past 12 months were asked how often condoms were used during sexual intercourse with any sex partner in that time. Respondents who had one or more regular sex partners in the past 12 months were asked how often they had used condom during sexual intercourse with regular sex partner/s in that time. Respondents who reported casual sex partner/s in the past 12 months were asked how often they had used condoms during sexual intercourse with casual sex partner/s in that time. Four response options were provided for all three questions: 1) '*I never used condoms during sexual intercourse in the past 12 months*', 2) '*I used condoms some of the time*', 3) '*I always used condoms*', and 4) '*I did not have sexual intercourse in the past 12 months*'. Respondents who reported using condoms '*sometimes*' or '*never*' were categorised as having had condomless sexual intercourse in the past 12 months.

Social norms regarding testing for STIs

These norms were measured using three statements ('*People my age should test for STIs*', '*My best friends believe I should get tested*' and '*Testing for STIs is common among people my age*') relating respectively to perceived social norms, injunctive social norms and descriptive social norms in relation to peer practices. Answers to all questions were provided on a 5-point scale (from 1 - *Totally disagree* to 5 - *Totally agree*) and item scores were averaged. The overall score ranged from 1–5 with a higher score indicating stronger supportive social norms regarding STI testing.

Access-related facilitators of and barriers to testing for STIs

These dimensions were assessed by two statements ('*I know where to go if I want to get tested for STIs*' and '*STI testing is expensive*'). Respondents provided their answers to each question on a 5-point scale (from 1 - *Totally disagree* to 5 - *Totally agree*) and responses to each question were analysed individually.

Testing for STIs and/or HIV

Respondents who ever had sex, either oral, vaginal or anal, were asked whether they had ever tested for STIs and/or HIV, when they were last tested, who provided the test, and whether their last check-up included testing for STIs only, for HIV only or for both STIs and HIV. Respondents also reported whether they had been diagnosed with an STI or HIV at their last test.

Exposure to sexual health promotion messages

Respondents were asked whether they had in the 12 months prior to the survey noticed a) messages promoting talking about sexual health and STIs, b) messages promoting condom use or c) messages promoting testing for STIs among people their age. Frequency of exposure was reported on a 4-point scale with options ranging from 1 - *Never* to 4 - *Often*. Responses provided to the three questions were averaged to estimate the overall frequency of exposure to sexual health promotion messaging. The overall score of exposure ranged from 1–4, with a higher score indicating a higher frequency of exposure to sexual health promotion messaging.

Perceived relevance of sexual health promotion messaging

Respondents who had noticed sexual health promotion messages in the past 12 months were asked whether these messages a) were relevant to them, b) increased their knowledge or c) increased their confidence. Answers to all questions were provided on a 5-point scale (from 1 - *Totally disagree* to 5 - *Totally agree*) with a higher score indicating higher perceived relevance or perceived contribution to increased knowledge or confidence.

Statistical analyses

Descriptive analyses (frequency, mean scores and standard deviation) were used to calculate indicator estimates of STI knowledge, sexual health-related attitudes and practices, as well as engagement with and appreciation of sexual health promotion initiatives. The indicator variables investigated include:

a. knowledge of STIs

b. perceived severity of STIs

c. perceived risk of contracting an STI

d. social norms regarding using condoms

e. access-related facilitators of and barriers to using condoms

f. condomless sexual intercourse with any partner in the past 12 months

g. condomless sexual intercourse with regular partner/s in the past 12 months

h. condomless sexual intercourse with casual partner/s in the past 12 months

i. social norms regarding testing for STIs

j. access-related facilitators of and barriers to testing for STIs

k. having ever tested for STIs and/or HIV

l. having tested for STIs and/or HIV in the past 12 months

m. having received comprehensive testing for both STIs and HIV at last check-up

n. STI or HIV diagnosis at last test

o. exposure to sexual health promotion messages

p. appreciation of sexual health promotion messages.

For indicators a, b, c, d, e, i, j, o and p, univariate and multivariate regression analyses were conducted among the full sample of sexually active and non-sexually active respondents to assess associations between each indicator variable investigated and four potential correlates: age (15–21 years/22–29 years), current gender (male/female), sexual orientation (heterosexual/non-heterosexual) and lifetime number of sex partners (0/1/2–4/5–9/10 and more).

The analyses aimed at identifying the correlates of indicator f were restricted to respondents who had had any sex partners in the past 12 months. The socio-demographic and lifestyle correlates investigated included age, gender, sexual orientation, and number of sex partners in the past 12 months (1–4/5 and more). The potential individual, social and access-related correlates of condomless sexual intercourse investigated included knowledge of STIs, perceived severity of STIs, perceived risk of contracting an STI, supportive social norms regarding using condoms and access-related facilitators of and barriers to using condoms. Analyses of the same order were conducted to investigate the correlates of indicators g and h.

The analyses aimed at identifying the correlates of indicators k and l were restricted to respondents who ever had oral, vaginal or anal sex. The potential socio-demographic and lifestyle correlates of testing investigated included age, gender, sexual orientation, and lifetime number of sex partners (0/1/2–4/5–9/10 and more). The potential risk-related correlates investigated were having ever had symptoms evocative of STIs or HIV (Yes/No) and having had condomless sexual intercourse in the past 12 months (Yes/No). The potential individual, social and access related correlates investigated included knowledge of STIs, perceived severity of STIs, perceived risk of contracting an STI, supportive social norms regarding testing for STIs and access-related facilitators of and barriers to testing.

Nagelkerke R square and adjusted R square were calculated to estimate the percentage of variance explained by each multivariate model.

Results

Knowledge of STIs

Extent of STI knowledge

On average, respondents provided correct answers to 3.9 of the 5 questions on STI knowledge (SD = 1.08, range: 0–5) (Table 2). Almost all respondents knew that STIs can affect anyone who is sexually active (96.9%) and that STIs can affect people's health if left untreated (97.8%). Most respondents (73.6%) knew that STIs are common among young people and that STIs often have no symptoms (68.8%). Half of the respondents (51.7%) knew that Chlamydia is the most frequent (bacterial) STI among young people.

Table 2 Proportion of respondents holding correct knowledge of STIs[§]

	Answers provided by respondents		
	True	False	Don't know
STIs can affect anyone who is sexually active (True)	1,554 (96.9%)	30 (1.9%)	19 (1.2%)
STIs are rare among young people (False)	64 (4.0%)	1,180 (73.6%)	359 (22.4%)
Chlamydia is the most common STI among young people (True)	828 (51.7%)	61 (3.8%)	714 (44.5%)
STIs often have no symptoms (True)	1.103 (68.8%)	301 (18.8%)	199 (12.4%)
If left untreated, STIs can affect your health (True)	1,568 (97.8%)	5 (0.2%)	30 (1.9%)

Note: [§]Among sexually active and non-sexually active respondents.

Correlates of STI knowledge

In univariate analyses, holding correct knowledge about STIs was associated with being 22–29 years old, female, and reporting higher lifetime numbers of sex partners (Table 3). No association was found with sexual orientation. In multivariate analyses, older age, female gender and higher numbers of sex partners remained independently associated and jointly explained 15% of the variance in STI knowledge.

Table 3 Correlates of holding correct knowledge about STIs§

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	3.66 (1.08)	Ref.	Ref.
22–29	4.12 (1.03)	.212***	.091**
Gender			
Male	3.63 (1.13)	Ref.	Ref.
Female	4.07 (1.00)	.200***	.218***
Sexual orientation			
Heterosexual	3.87 (1.08)	Ref.	Ref.
Non-heterosexual	3.94 (1.07)	.032‡	.020‡
Lifetime number of sex partners		(.305***)	(.270***)
0	3.30 (1.06)	Ref.	Ref.
1	3.70 (1.09)	.149***	.149***
2 to 4	4.02 (1.00)	.275***	.262***
5 to 9	4.09 (1.02)	.254***	.224***
10 and more	4.27 (0.97)	.384***	.342***

Note: §Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡p = non-significant. Adjusted R square = .149.

In summary, while knowledge of STIs was satisfactory for most topics, 31.2% of the respondents did not know that STIs often have no symptoms. Knowledge of STIs was higher among older respondents, females, and people with higher lifetime numbers of sex partners, compared to other respondents.

Perceived severity

Levels of perceived severity

Perceived severity of STIs was high among respondents (M = 4.36, SD = 0.73, range: 1–5). Most respondents (92.2%) agreed that contracting an STI could seriously affect their health and only a minority (9.0%) believed that contracting an STI is 'not a big deal' (Table 4).

Table 4 Respondents' perception of the severity of STIs§

	Strongly disagree	Somewhat disagree	Not disagree, not agree	Somewhat agree	Strongly agree
Getting an STI could seriously affect my health	28 (1.8%)	32 (2.0%)	63 (4.0%)	443 (28.1%)	1,011 (64.1%)
Getting an STI is no big deal	794 (50.3%)	469 (29.7%)	172 (10.9%)	126 (8.0%)	16 (1.0%)

Note: §Among sexually active and non-sexually active respondents.

Correlates of perceived severity

In univariate analyses, perceiving STIs as severe was negatively associated with being 22–29 years old, being non-heterosexual, and reporting higher lifetime numbers of sex partners (Table 5). No association was found with gender. In multivariate analyses, age, sexual orientation and lifetime number of sex partners remained significantly negatively associated and jointly explained 3% of the variance in perceived severity.

Table 5 Correlates of perceived severity of STIs§

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	4.45 (0.69)	Ref.	Ref.
22–29	4.26 (0.76)	-.132***	-.078**
Gender			
Male	4.33 (0.75)	Ref.	Ref.
Female	4.37 (0.71)	.032‡	.023‡
Sexual orientation			
Heterosexual	4.39 (0.70)	Ref.	Ref.
Non-heterosexual	4.28 (0.78)	-.070**	-.066**
Lifetime number of sex partners		(-.149***)	(-.102**)
0	4.50 (0.64)	Ref.	Ref.
1	4.43 (0.69)	-.034‡	-.032‡
2 to 4	4.38 (0.72)	-.066*	-.048‡
5 to 9	4.29 (0.75)	-.096**	-.068*
10 and more	4.19 (0.79)	-.178***	-.126**

Note: §Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡p = non-significant. Adjusted R square = .027.

In summary, most respondents perceived STIs as a severe condition. Perceived risk was found to be lower among older respondents, non-heterosexuals, and people reporting higher lifetime numbers of sex partners, compared to other respondents.

Perceived risk

Levels of perceived risk

Perceived risk of contracting an STI was moderately low among respondents (M = 2.73, SD = 1.06, range: 1–5).

Two thirds of respondents (66.4%) agreed that they felt they were unlikely to get an STI while over half of respondents (52.1%) agreed that they could get an STI (Table 6).

Table 6 Respondents' perception of their own risk of contracting an STI§

	Strongly disagree	Somewhat disagree	Not disagree, not agree	Somewhat agree	Strongly agree
I feel that I'm unlikely to get an STI	93 (5.9%)	163 (10.3%)	274 (17.4%)	526 (33.4%)	521 (33.0%)
I believe I could get an STI	225 (14.3%)	258 (16.4%)	273 (17.3%)	550 (34.9%)	271 (17.2%)

Note: §Among sexually active and non-sexually active respondents.

Correlates of perceived risk

In univariate analyses, perceiving oneself at higher risk of contracting an STI was associated with being non-heterosexual and reporting higher lifetime numbers of sex partners, and there was also a marginal association with being 22–29 years old (Table 7). No association was found with gender. In multivariate analyses, being non-heterosexual, reporting higher lifetime numbers of sex partners remained independently associated with higher perceived risk while being aged 22–29 years old appeared associated with lower perceived risk. Overall, 9% of the variance in perceived risk was explained by the variables included in the multivariate model.

Table 7 Correlates of perceived risk of contracting an STI[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	2.68 (0.98)	Ref.	Ref.
22–29	2.79 (1.13)	.049[†]	-.116***
Gender			
Male	2.74 (1.04)	Ref.	Ref.
Female	2.73 (1.07)	-.002[‡]	.008[‡]
Sexual orientation			
Heterosexual	2.66 (1.08)	Ref.	Ref.
Non-heterosexual	2.90 (0.99)	.102***	.061*
Lifetime number of sex partners		(.254***)	(.303***)
0	2.52 (0.96)	Ref.	Ref.
1	2.44 (0.97)	-.032[‡]	-.010[‡]
2 to 4	2.62 (1.02)	.037[‡]	.064*
5 to 9	2.76 (0.99)	.078**	.122***
10 and more	3.23 (1.10)	.288***	.356***

Note: [§]Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, [†] p< .1, [‡] p = non-significant. Adjusted R square = .090.

In summary, most respondents had a low perception of their own risk of contracting an STI. After controlling for potential confounders, perceived risk was found to be lower among older respondents and higher among non-heterosexual respondents, and people with higher lifetime numbers of sex partners.

Social norms regarding the use of condoms

Extent of supportive social norms regarding the use of condoms

Most respondents (92.9%) considered that people their age should use condoms with any new partner. A strong majority of respondents (61.7%) believed that their friends would support their condom use and a similar proportion (64.3%) considered that using condoms is common among people their age. As a result, the overall score indicative of the extent of supportive social norms regarding the use of condoms was moderately high (Mean = 4.02, SD = 0.74, range: 1–5).

Table 8 Social norms regarding the use of condoms[§]

	Strongly disagree	Somewhat disagree	Not disagree, not agree	Somewhat agree	Strongly agree
People my age should use condoms with any new partner	42 (2.2%)	23 (1.2%)	70 (3.7%)	272 (14.3%)	1,499 (78.6%)
My best friends believe I should use condoms	130 (6.8%)	127 (6.7%)	473 (24.8%)	383 (20.1%)	793 (41.6%)
Using condoms with new partners is common among people my age	58 (3.0%)	230 (12.1%)	393 (20.6%)	783 (41.1%)	442 (23.2%)

Note: [§]Among sexually active and non-sexually active respondents.

Correlates of supportive social norms regarding the use of condoms

In univariate analyses, supportive social norms regarding the use of condoms were positively associated with being female and negatively associated with being aged 22–29 years old, and reporting higher lifetime numbers of sex partners (Table 9). No association was found with sexual orientation. In multivariate analyses, age, gender and lifetime numbers of sex partners remained significantly independently associated and jointly explained 3% of the variance in supportive social norms regarding the use of condoms.

Table 9 Correlates of supportive social norms regarding the use of condoms[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	4.17 (0.73)	Ref.	Ref.
22–29	3.94 (0.73)	-.154***	-.106***
Gender			
Male	4.02 (0.77)	Ref.	Ref.
Female	4.10 (0.71)	.053*	.047*
Sexual orientation			
Heterosexual	4.07 (0.73)	Ref.	Ref.
Non-heterosexual	4.03 (0.75)	-.028[‡]	-.029[‡]
Lifetime number of sex partners		(-.155***)	(-.098***)
0	4.24 (0.67)	Ref.	Ref.
1	4.11 (0.71)	-.072 *	-.064 *
2 to 4	4.06 (0.74)	-.105 ***	-.082 **
5 to 9	3.99 (0.67)	-.119 ***	-.083 **
10 and more	3.91 (0.79)	-.194 ***	-.128***

Note: [§]Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, [†] p< .1, [‡]p = non-significant. Adjusted R square = .032

In summary, most respondents expressed support regarding the use of condoms and a strong majority perceived the existence of supportive social norms regarding condom use among their peers. Variations were, however, observed according to respondents' characteristics. Supportive social norms regarding the use of condoms were more pronounced among younger respondents, female respondents, as well as people with lower lifetime numbers of sex partners, including those who had never had sex.

Access-related facilitators of and barriers to using condoms

Extent of access-related facilitators and barriers

Almost all respondents (94.7%) indicated that they knew where to access condoms and condoms were seen as expensive by a third of respondents (33.4%) (Table 10).

Table 10 Access-related facilitators of and barriers to using condoms[§]

	Strongly disagree	Somewhat disagree	Not disagree, not agree	Somewhat agree	Strongly agree
I know where to get condoms	43 (2.3%)	31 (1.7%)	24 (1.3%)	193 (10.5%)	1,546 (84.2%)
Condoms are expensive	314 (17.1%)	398 (21.7%)	512 (27.9%)	459 (25.0%)	154 (8.4%)

Note: [§]Among sexually active and non-sexually active respondents.

Correlates of knowing where to access condoms

In univariate analyses, knowing where to access condoms was positively associated with being aged 22–29 years old, female, and reporting higher lifetime numbers of sex partners (Table 11) and there was a negative association with being non-heterosexual suggesting that heterosexual respondents were more knowledgeable about where to access condoms than non-heterosexual respondents. In multivariate analyses, all four factors remained significantly independently associated and jointly explained 6% of the variance in knowing where to access condoms.

Table 11 Correlates of knowing where to access condoms[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	4.62 (0.87)	Ref.	Ref.
22–29	4.84 (0.64)	.145***	.077**
Gender			
Male	4.68 (0.85)	Ref.	Ref.
Female	4.76 (0.72)	.049*	.058*
Sexual orientation			
Heterosexual	4.75 (0.75)	Ref.	Ref.
Non-heterosexual	4.66 (0.84)	-.056*	-.050*
Lifetime number of sex partners		(.179***)	(.152***)
0	4.37 (1.02)	Ref.	Ref.
1	4.75 (0.72)	.194***	.181***
2 to 4	4.79 (0.71)	.225***	.208***
5 to 9	4.87 (0.56)	.221***	.194***
10 and more	4.83 (0.70)	.252***	.211***

Note: [§]Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, [†] p< .1, [‡]p = non-significant. Adjusted R square = .057.

Correlates of perceiving condoms as expensive

In univariate analyses, perceiving condoms as expensive was positively associated with being female and negatively associated with both being aged 22–29 years old and reporting higher lifetime numbers of sex partners (Table 12). No association was found with sexual orientation. In multivariate analyses, age and gender remained significantly independently associated and jointly explained 2.5% of the variance in perceived cost of condoms.

Table 12 Correlates of perceiving condoms as expensive[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	2.97 (1.16)	Ref.	Ref.
22–29	2.74 (1.25)	-.096***	-.074**
Gender			
Male	2.69 (1.26)	Ref.	Ref.
Female	2.99 (1.16)	.122***	.120***
Sexual orientation			
Heterosexual	2.84 (1.21)	Ref.	Ref.
Non-heterosexual	2.90 (1.20)	.024‡	.029‡
Lifetime number of sex partners		(-.067**)	(-.028‡)
0	2.90 (1.10)	Ref.	Ref.
1	3.04 (1.16)	.045‡	.061‡
2 to 4	2.80 (1.19)	-.035‡	-.016‡
5 to 9	2.86 (1.33)	-.012‡	.017‡
10 and more	2.73 (1.32)	-.062*	-.015‡

Note: §Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡p = non-significant. Adjusted R square = .025.

In summary, almost all respondents knew where to access condoms. A third of respondents perceived condoms as expensive and this perception was more frequent among younger respondents and female respondents compared to other respondents.

Overall use of condoms

Extent of overall condom use

Respondents who had one or more sex partners in the 12 months prior to the survey were asked how frequently condoms were used during sexual intercourse. Of these respondents, a small percentage (3.3%) did not actually engage in sexual intercourse in the past 12 months, a fifth (21.6%) always used condoms during sexual intercourse in that time, half (51.8%) used condoms sometimes and a quarter (23.3%) never used condoms (Table 13). Overall, three quarters (75.1%) of the respondents who had sex partner/s in the past 12 months engaged at least once in condomless sexual intercourse in that time.

Table 13 Frequency of condom use during sexual intercourse, with any partner, in the past 12 months[§]

	n (%)
No sexual intercourse	43 (3.3)
Condoms always used	280 (21.6)
Condoms used sometimes	672 (51.8)
Condoms never used	303 (23.3)

Note: [§]Among participants who had sex partner/s in the past 12 months.

Socio-demographic and lifestyle correlates of having had condomless sexual intercourse

In univariate analyses, having had condomless sexual intercourse, with any partner, in the past 12 months was associated with being 22–29 years old, being female and having had five and more sex partners in the past 12 months (Table 14). No association was found with sexual orientation. In multivariate analyses, older age, female gender as well as having had numbers of sex partners above one in the past 12 months were significantly associated and jointly explained 8% of the variance in condomless sexual intercourse.

Table 14 Socio-demographic and lifestyle correlates of having had condomless sexual intercourse with any sex partner in the past 12 months[§]

	%	OR	Adjusted OR
Age groups			
15–21	66.1	Ref.	Ref.
22–29	82.4	2.41***	2.37***
Gender			
Male	71.5	Ref.	Ref.
Female	77.7	1.39*	1.56*
Sexual orientation			
Heterosexual	74.2	Ref.	Ref.
Non-heterosexual	77.2	1.17[‡]	1.15[‡]
Number of sex partners (past 12 months)			
1	71.3	Ref.	Ref.
2-4	76.2	1.28[†]	1.85***
5 and more	85.5	2.37**	2.18***

Note: [§]Among respondents who had sex partner/s in the past 12 months. * p<.05, ** p<.01, *** p<.001, [†] p< .1, [‡] p = non-significant. Nagelkerke R square = .080.

Individual, social and access-related correlates of having had condomless sexual intercourse

In univariate analyses, having had condomless sexual intercourse in the past 12 months was associated with being more knowledgeable about STIs, knowing where to access condoms; and there was a marginal association with perceiving oneself at risk of contracting an STI (Table 15). There were also significant negative associations between condomless sexual intercourse and perceived severity of STIs as well as supportive social norms regarding the use of condoms. These negative associations suggest that young people who perceived STIs as severe and those who expressed or perceived support regarding the use of

condoms less often had condomless sexual intercourse in the past 12 months. No significant association was found between having had condomless sexual intercourse and considering that condoms are expensive. In multivariate analyses, having had condomless sexual intercourse was independently associated with being more knowledgeable about STIs, perceiving oneself at risk of contracting an STI and knowing where to access condoms and people who expressed or perceived support towards using condoms had condomless sexual intercourse less often. The variables associated with condomless sexual intercourse in multivariate analyses jointly explained 13% of the variance in the behaviour.

Table 15 : Individual, social and access-related correlates of having had condomless sexual intercourse, with any partner, in the past 12 months[§]

	OR	Adjusted OR
Knowledge of STIs	1.34***	1.33***
Perceived severity of STIs	.82*	.92‡
Perceived risk of contracting an STI	1.12†	1.18*
Supportive social norms regarding the use of condoms	.42***	.38***
Access-related facilitators and barriers		
Knowing where to access condoms	1.21*	1.49***
Seeing condoms as expensive	1.03‡	1.01‡

Note: §Among respondents who ever had oral, vaginal or anal sex. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. Nagelkerke R square for the multivariate model = .130.

Condom use with regular partners

Of the respondents who had been sexually active in the past 12 months, most (88.7%) reported regular sex partner/s in that time, including 71.7% one regular partner and 17.0% more than one regular partners.

Extent of condom use with regular partners

The proportion of respondents who engaged in condomless sexual intercourse with at least one regular sex partner was estimated a) among all respondents who were sexually active in the past 12 months and b) among respondents who had one or more regular sex partners in the past 12 months (Table 16). Of all respondents who were sexually active in the past 12 months, 69.3% engaged at least once in condomless sexual intercourse with a regular partner in that time. This percentage reached 78.2% when calculated among respondents who had one or more regular sex partners in the past 12 months.

Table 16 Frequency of condom use during sexual intercourse with regular sex partner/s in the past 12 months[§]

	Among all respondents who had sex in the past 12 months	Among respondents who had regular sex partners in the past 12 months
	n (%)	n (%)
No regular partner (RP)	145 (11.3)	---
No sexual intercourse with RP	23 (1.8)	23 (2.0)
Condoms always used with RP	224 (17.5)	224 (19.8)
Condoms used sometimes with RP	512 (40.0)	512 (45.1)
Condoms never used with RP	375 (29.3)	375 (33.1)

Correlates of engaging in condomless sexual intercourse with regular partners

In univariate analyses, having had at least once condomless sexual intercourse with a regular sex partner in the past 12 months was associated with being aged 22–29 years old and with having had 5 and more sex partners in the past 12 months (Table 17). No significant association was found with gender or sexual orientation. In multivariate analyses, being aged 22–29 years old and having had 5 and more sex partners remained independently associated with reporting condomless sexual intercourse with a regular partner and 10% of the variance in the behaviour was explained by the model.

Table 17 Socio-demographic and lifestyle correlates of having had condomless sexual intercourse with regular sex partner/s in the past 12 months[§]

	%	OR	Adjusted OR
Age groups			
15–21	67.5	Ref.	Ref.
22–29	86.6	3.11***	3.06***
Gender			
Male	77.7	Ref.	Ref.
Female	78.6	1.05‡	1.20‡
Sexual orientation			
Heterosexual	77.1	Ref.	Ref.
Non-heterosexual	81.1	1.27‡	1.25‡
Number of sex partners (past 12 months)			
1	74.9	Ref.	Ref.
2–4	79.1	1.27‡	1.31‡
5 and more	88.0	2.44***	2.04***

Note: §Among sexually active respondents who reported one or more regular sex partners in the past 12 months. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡p = non-significant. Nagelkerke R square = .097.

Condom use with casual partners

Less than half (46.0%) of respondents who were sexually active in the past 12 months had sex with one or more casual partners in that time. The numbers of casual partners generally reported, however, remained limited (Table 18).

Table 18 Reported numbers of casual sex partner/s in the past 12 months

	Among all respondents who had sex in the past 12 months	Among respondents who had regular sex partners in the past 12 months
	n (%)	n (%)
1	215 (17.0)	215 (36.9)
2	143 (11.3)	143 (24.6)
3	71 (5.6)	71 (12.2)
4	38 (3.0)	38 (6.5)
5	37 (2.9)	37 (6.4)
More than 5	78 (6.2)	78 (13.4)

Extent of condom use with casual partners

The proportion of respondents who engaged at least once in condomless sexual intercourse with a casual sex partner was estimated a) among all respondents who were sexually active in the past 12 months and b) among respondents who had one or more casual sex partners in the past 12 months (see Table 19). Of all respondents who were sexually active in the past 12 months, 24.1% engaged at least once in condomless sexual intercourse with a casual partner in that time. This percentage reached 53.1% when calculated among respondents who had one or more casual sex partners in the past 12 months.

Table 19 : Frequency of condom use during sexual intercourse with casual sex partner/s in the past 12 months[§]

	Among all respondents who had sex in the past 12 months	Among respondents who had regular sex partners in the past 12 months
	n (%)	n (%)
No regular partner (CP)	684 (54.5)	---
No sexual intercourse with CP	24 (1.9)	24 (4.2)
Condoms always used with CP	243 (19.4)	243 (42.6)
Condoms used sometimes with CP	206 (16.4)	206 (36.1)
Condoms never used with CP	97 (7.7)	97 (17.0)

Correlates of engaging in condomless sexual intercourse with casual partners

In univariate analyses, having had at least once condomless sexual intercourse with a casual sex partner in the past 12 months was positively associated with having had 5 and more sex partners in that time (Table 20). No significant association was observed with age, gender or sexual orientation. In multivariate analyses, having had 5 and more sex partners in the past 12 months remained significantly associated with having had condomless sexual intercourse with a casual partner and 5% of the variance in the behaviour was explained.

Table 20 Socio-demographic and lifestyle correlates of having had condomless sexual intercourse with casual sex partner/s in the past 12 months[§]

	%	OR	Adjusted OR
Age groups			
15–21	51.5	Ref.	Ref.
22–29	54.4	1.13‡	.97‡
Gender			
Male	54.3	Ref.	Ref.
Female	52.0	.91‡	.99‡
Sexual orientation			
Heterosexual	53.8	Ref.	Ref.
Non-heterosexual	52.1	.93‡	.86‡
Number of sex partners (past 12 months)			
1	50.6	Ref.	Ref.
2–4	44.9	.79‡	.80‡
5 and more	66.5	1.94*	1.99*

Note: [§]Among sexually active respondents who had casual sex partners in the past 12 months. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. Nagelkerke R square = .054.

In summary, of the respondents who had sex partners in the past 12 months, 75.1% reported to have engaged at least once in sexual intercourse without condoms with a partner in that time, including 69.3% who had condomless sexual intercourse with regular partner/s and 24.1% who had condomless sexual intercourse with casual partner/s. Reporting condomless sexual intercourse in the past 12 months was strongly associated with numbers of partners. Of the respondents with 5 and more sex partners in the past 12 months, 88.0% reported condomless sexual intercourse with regular partner/s and 65.5% reported condomless sexual intercourse with casual partner/s in that time.

The respondents who reported condomless sexual intercourse with any partner in the past 12 months were generally older, slightly more often female, and they expressed or perceived less support towards the use of condoms. They were also more knowledgeable about STIs; they perceived themselves at higher risk of contracting an STI and they knew more often than other respondents where to access condoms. No association was observed between engaging in condomless sexual intercourse and perceiving condoms as expensive.

Social norms regarding testing for STIs

Extent of supportive social norms regarding testing for STIs

Most respondents (93.2%) considered that people their age should test for STIs (Table 21). The percentage of respondents who believed that their friends would support their testing was, however, lower (36.5%), as was the percentage of respondents (35.5%) who considered that testing for STIs was common among people their age. As a result, the overall score indicative of the extent of supportive social norms regarding testing for STIs was only moderate (Mean = 3.64, SD = 0.80, range: 1–5).

Table 21 Social norms regarding testing for STIs[§]

	Strongly disagree	Somewhat disagree	Not disagree, not agree	Somewhat agree	Strongly agree
People my age should test for STIs	14 (0.9%)	19 (1.3%)	70 (4.6%)	393 (26.1%)	1,010 (67.1%)
My best friends believe I should test for STIs	305 (20.3%)	156 (10.4%)	495 (32.9%)	241 (16.0%)	309 (20.5%)
Testing for STIs is common among people my age	146 (9.7%)	413 (27.4%)	412 (27.4%)	381 (25.3%)	154 (10.2%)

Note: [§]Among sexually active and non-sexually active respondents.

Correlates of supportive social norms regarding testing for STIs

In univariate analyses, supportive social norms regarding testing for STIs were positively associated with being aged 22–29 years, being female, non-heterosexual, and reporting higher lifetime numbers of sex partners (Table 22). In multivariate analyses, all factors remained significantly independently associated and jointly explained 23% of the variance in supportive social norms regarding testing for STIs.

Table 22 Correlates of supportive social norms regarding STI testing[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	3.31 (0.76)	Ref.	Ref.
22–29	3.78 (0.78)	.289***	.100***
Gender			
Male	3.43 (0.82)	Ref.	Ref.
Female	3.61 (0.78)	.108***	.135***
Sexual orientation			
Heterosexual	3.46 (0.80)	Ref.	Ref.
Non-heterosexual	3.73 (0.78)	.153***	.121***
Lifetime number of sex partners		(.435***)	(.378***)
0	3.10 (0.67)	Ref.	Ref.
1	3.25 (0.71)	.074*	.086*
2 to 4	3.48 (0.75)	.194***	.178***
5 to 9	3.73 (0.78)	.273***	.242***
10 and more	4.06 (0.71)	.510***	.544***

Note: [§]Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, [†] p< .1, [‡] p = non-significant. Adjusted R square = .226.

In summary, most respondents expressed support regarding testing for STIs but their perception of the existence of supportive social norms regarding STI testing among their peers was only moderate. Supportive social norms regarding testing for STIs were, however, stronger among older respondents, females, non-heterosexuals and respondents with higher lifetime numbers of sex partners compared to other respondents.

Access-related facilitators of and barriers to testing for STIs

Extent of access-related facilitators and barriers

Three quarters of respondents (73.9%) indicated that they knew where to test for STIs and 16.9% considered testing for STIs as expensive (Table 23).

Table 23 Access-related facilitators of and barriers to testing for STIs[§]

	Strongly disagree	Somewhat disagree	Not disagree, not agree	Somewhat agree	Strongly agree
I know where to go if I want to get tested for STIs	107 (7.3%)	205 (14.0%)	70 (4.8%)	343 (23.4%)	739 (50.5%)
STI testing is expensive	359 (24.5%)	244 (16.7%)	614 (41.9%)	196 (13.4%)	51 (3.5%)

Note: [§]Among sexually active and non-sexually active respondents.

Correlates of knowing where to access STI testing

In univariate analyses, knowing where to test for STIs was positively associated with being aged 22–29 years old, being female, and reporting higher lifetime numbers of sex partners (Table 24). No association was observed with sexual orientation. In multivariate analyses, older age, female gender and higher numbers of sex partners remained significantly independently associated and together explained 16.5% of the variance in knowing where to test.

Table 24 Correlates of knowing where to test for STIs[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	3.58 (1.41)	Ref.	Ref.
22–29	4.35 (1.11)	.292***	.145***
Gender			
Male	3.84 (1.37)	Ref.	Ref.
Female	4.03 (1.30)	.069**	.097***
Sexual orientation			
Heterosexual	3.94 (1.33)	Ref.	Ref.
Non-heterosexual	3.99 (1.33)	.017‡	.000‡
Lifetime number of sex partners		(.375***)	(.309***)
0	3.16 (1.42)	Ref.	Ref.
1	3.59 (1.40)	.131***	.121***
2 to 4	4.10 (1.24)	.293***	.266***
5 to 9	4.28 (1.12)	.295***	.246***
10 and more	4.56 (0.93)	.454***	.374***

Note: [§]Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. Adjusted R square = .165.

Correlates of perceiving STI testing as expensive

In univariate analyses, perceiving STI testing as expensive was significantly negatively associated with being aged 22–29 years old, being non-heterosexual, and reporting higher lifetime numbers of sex partners (Table 25). No association was found with gender. In multivariate analyses, only age and lifetime number of sex partners remained significantly independently associated and jointly explained 12% of the variance in perceiving STI testing as expensive.

Table 25 Correlates of perceiving testing for STIs as expensive[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	2.83 (0.99)	Ref.	Ref.
22–29	2.25 (1.13)	-.264***	-.123***
Gender			
Male	2.52 (1.08)	Ref.	Ref.
Female	2.56 (1.12)	.019[‡]	-.004[‡]
Sexual orientation			
Heterosexual	2.59 (1.08)	Ref.	Ref.
Non-heterosexual	2.45 (1.15)	-.056*	-.037[‡]
Lifetime number of sex partners		(-.339***)	(-.270***)
0	3.01 (0.71)	Ref.	Ref.
1	2.86 (0.92)	-.056[†]	-.048[†]
2 to 4	2.61 (1.07)	-.151***	-.124***
5 to 9	2.33 (1.23)	-.215***	-.172***
10 and more	2.00 (1.18)	-.395***	-.318***

Note: [§]Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, [†] p< .1, [‡] p = non-significant. Adjusted R square = .124.

In summary, a quarter of the respondents (26.1%) did not know where to test for STIs and 16.9% perceived STI testing as expensive. Not knowing where to test was more frequent among younger respondents, females, and people with lower lifetime numbers of sex partners. Perceiving testing as expensive was more frequent among younger respondents, heterosexuals, and people with lower lifetime numbers of sex partners.

Having ever tested for STIs and/or HIV

Extent of testing

Of the respondents who ever had oral, vaginal or anal sex, 58.0% had ever tested for STIs and/or HIV, including 21.9% who tested once and 36.1% who tested several times (Table 26).

Table 26 Extent of testing for STIs and/or HIV[§]

	n (%)
Untested	489 (41.2)
Tested once	260 (21.9)
Tested several times	428 (36.1)
Don't know	9 (0.8)

Note: [§]Among respondents who ever had oral, vaginal or anal sex.

Correlates of having ever tested

Socio-demographic and lifestyle correlates

In univariate analyses, having ever tested for STIs and/or HIV was positively associated with being aged 22–29 years old, being female, non-heterosexual, and reporting higher lifetime numbers of sex partners (Table 27, Model 1). In multivariate analyses, older age, female gender and higher lifetime numbers of sex partners remained independently associated with having ever tested while the association with sexual orientation disappeared. Overall, 39% of the variance in having ever tested for STIs and/or HIV was explained by the variables included in the multivariate model #1.

Risk-related correlates

In univariate analyses, having ever tested for STIs and/or HIV was positively associated with having ever experienced symptoms indicative of STIs or HIV and having had condomless sexual intercourse in the past 12 months (Table 27, Model 2). Both factors remained independently associated in multivariate analyses and jointly explained 25% of the variance in having ever tested for STIs and/or HIV.

Facilitators of and barriers to testing for STIs

In univariate analyses, having tested for STIs and/or HIV was positively associated with knowledge of STIs, perceived risk of contracting an STI, and supportive social norms regarding testing for STIs, and there was a negative association with perceived severity of STIs (Table 27, Model 3). Having tested was also positively associated with knowing where to test, and negatively associated with considering that testing is expensive. In multivariate analyses, all variables except for perceived risk remained independently associated (Table 26, Model 3) and jointly explained 39% of the variance in having ever tested for STIs and/or HIV.

Table 27 Correlates of having ever tested for STIs and/or HIV[§]

	%	OR	Adjusted OR
Model 1: Socio-demographic and lifestyle correlates (R^2 = .393)			
Age groups			
15–21	36.7	Ref.	Ref.
22–29	74.2	4.95***	2.70***
Gender			
Male	51.3	Ref.	Ref.
Female	62.6	1.59***	2.18***
Sexual orientation			
Heterosexual	54.9	Ref.	Ref.
Non-heterosexual	65.5	1.56***	1.30‡
Lifetime number of sex partners		(2.92***)	(2.54***)
1	22.3	Ref.	Ref.
2 to 4	48.8	3.31***	3.02***
5 to 9	72.1	8.99***	6.91***
10 and more	88.0	25.48***	16.94***

Model 2: Risk-related correlates (R^2 = .253)			
Symptoms indicative of STIs or HIV (ever)			
No	39.1	Ref.	Ref.
Yes	79.4	5.98***	5.48***
Condomless sexual intercourse (past 12 months)			
No	38.3	Ref.	Ref.
Yes	66.8	3.24***	2.79***
Model 3: Facilitators of and barriers to STI testing (R^2 = .387)			
Knowledge of STIs		1.77***	1.41***
Perceived severity of STIs		.78**	.75**
Perceived risk of contracting an STI		1.35***	1.11‡
Social norms regarding testing for STIs		3.64***	2.47***
Access-related facilitator and barriers			
Knowing where to go to get tested		2.02***	1.60***
Seeing STI testing as expensive		.53***	.69***

Note: §Among respondents who ever had sex. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. R^2 = Nagelkerke R square.

In summary, of the respondents who ever had oral, vaginal or anal sex, 58.0% had ever tested for STIs and/or HIV, including 36.1% who had tested several times. Having ever tested was found to be independently associated with older age, female gender, and higher lifetime numbers of sex partners reaching 88.0% among participants with a lifetime number of sex partners of 10 and more. Having ever experienced symptoms indicative of STIs or HIV and having had condomless sexual intercourse in the past 12 months were strongly correlated with having ever tested for STIs and/or HIV. Compared to participants who had never tested, those who had were more knowledgeable about STIs; they perceived STIs as a more severe condition and they perceived more social support towards testing for STIs. Lastly, having ever tested for STIs and/or HIV was positively associated with knowing where to test, and negatively associated with considering that testing is expensive. This last association suggests that the perceived cost of testing may prevent some young people from testing.

Having tested for STIs and/or HIV in the past 12 months

Extent of testing in the past 12 months

More than a third (36.0%) of the respondents who ever had oral, vaginal or anal sex reported that they had tested for STIs and/or HIV in the past 12 months.

Correlates of having tested in the past 12 months

Socio-demographic and lifestyle correlates

In univariate analyses conducted among respondents who ever had sex, having tested for STIs and/or HIV in the past 12 months was positively associated with being 22–29 years old, being female, non-heterosexual, and reporting higher lifetime numbers of sex partners (Table 28, Model 1). In multivariate analyses, gender, sexual orientation and lifetime numbers of sex partners remained independently associated with having tested in the past 12 months and jointly explained 18% of the variance in the behaviour.

Risk-related correlates

In univariate analyses, having tested for STIs and/or HIV in the past 12 months was positively associated with having ever experienced symptoms indicative of STIs or HIV and having had condomless sexual intercourse in the past 12 months (Table 28, Model 2). In multivariate analyses, both factors remained significantly associated and jointly explained 13% of the variance in having tested for STIs and/or HIV in the past 12 months.

Facilitators of and barriers to STI testing

In univariate analyses having tested for STIs and/or HIV in the past 12 months was significantly positively associated with STI knowledge, perceived risk of contracting an STI, supportive social norms regarding testing for STIs, and significantly negatively associated with perceived severity of STIs (Table 28, Model 3). There were also significant positive associations between having tested in the past 12 months and knowing where to get tested, and a negative association with seeing testing as expensive. Except for knowledge of STIs, all variables remained significantly associated in multivariate analyses and jointly explained 28% of the variance in having tested for STIs and/or HIV in the past 12 months.

Table 28 Correlates of having tested for STIs and/or HIV in the past 12 months§

	%	OR	Adjusted OR
Model 1: Socio-demographic and lifestyle correlates (R^2 = 183)			
Age groups			
15–21	28.3	Ref.	Ref.
22–29	41.9	1.83***	1.01‡
Gender			
Male	30.7	Ref.	Ref.
Female	39.7	1.48**	1.64***
Sexual orientation			
Heterosexual	31.1	Ref.	Ref.
Non-heterosexual	48.1	2.05***	1.74***
Lifetime number of sex partners		(1.91***)	(1.89***)
1	15.0	Ref.	Ref.
2 to 4	29.6	2.38***	2.20***
5 to 9	39.8	3.75***	3.54***
10 and more	57.5	7.66***	7.22***
Model 2: Risk related correlates (R^2 = 131)			
Symptoms indicative of STIs or HIV (ever)			
No	29.1	Ref.	Ref.
Yes	64.5	4.42***	3.98***
Condomless sexual intercourse (past 12 months)			
No	23.9	Ref.	Ref.
Yes	42.5	2.35***	2.12***
Model 3: Facilitators of and barriers to STI testing (R^2 = 280)			
Knowledge of STIs		1.47***	1.13†
Perceived severity of STIs		.80**	.82*
Perceived risk of contracting an STI		1.53***	1.32***
Social norms regarding testing for STIs		3.11***	2.19***
Access-related facilitators and barriers			
Knowing where to go to get tested		1.93***	1.58***
Seeing STI testing as expensive		.62***	.84**

Note: §Among respondents who ever had sex. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. R^2 = Nagelkerke R square.

In summary, of the respondents who ever had oral, vaginal or anal sex, 36.0% tested for STIs and/or HIV in the past 12 months. Having tested in that time was found to be independently associated with female gender, being non-heterosexual, and reporting higher lifetime numbers of sex partners reaching 57.5% among participants with a lifetime number of sex partners of 10 and more. Having experienced symptoms indicative of STIs or HIV and having had condomless sexual intercourse in the past 12 months were strongly correlated with having tested in the past 12 months. Compared to participants who had not tested in the past 12 months, those who tested in that time perceived having an STI as a less severe condition, they perceived themselves at higher risk of contracting an STI, and they perceived more social support towards testing for STIs. Lastly, having tested in the past 12 months was positively associated with knowing where to get tested, and negatively associated with considering that testing is expensive.

Characteristics of last test for STI and/or HIV

Service provider at last test

Most (75.0%) of respondents were last tested for STI and/or HIV through a general practitioner (GP) or at a sexual health or STI clinic (20.7%) (Table 29).

Table 29 Service provider at the last test for STI and/or HIV[§]

Last tested...	n (%)
Through participant's regular GP	397 (57.5)
Through another GP	121 (17.5)
At a sexual health or STI clinic	143 (20.7)
At a mobile clinic in the community	1 (0.1)
At an event where testing was offered	3 (0.4)
Other	25 (3.6)

Note: [§]Among sexually active respondents ever tested for STIs and/or HIV.

Comprehensive testing at the last check-up

More than half (53.8%) of respondents who ever had a sexual health check-up were last tested for both STIs and HIV; 28.4% were tested for STIs only; a few (2.6%) were tested for HIV only, and 15.2% were unsure or did not know whether they had been tested for STIs or HIV (Table 30).

Table 30 STIs and/or HIV testing at the last sexual health check-up[§]

Last tested for...	n (%)
Both STIs and HIV	371 (53.8)
Other STIs only, not HIV	196 (28.4)
HIV only	18 (2.6)
Unsure/ I don't know	105 (15.2)

Note: [§]Among sexually active respondents ever tested for STIs and/or HIV.

Of the respondents who had been tested for STIs at their last check-up, 76.0% reported to have been tested for Chlamydia, 68.6% for gonorrhoea, 56.6% for Syphilis, and 12.7% for other STIs. A fifth of the respondents (21.0%) did not remember for which STI they had been tested.

In univariate analyses, having been tested for both STIs and HIV at the last check-up was positively associated with being non-heterosexual and having higher numbers of lifetime sex partners. There was also a negative association with being female which indicates that females were less often tested for both STIs

and HIV than males (Table 31). No significant association was observed with age. In multivariate analyses, male gender, being non-heterosexual, and reporting higher lifetime numbers of sex partners remained independently associated with having had comprehensive testing at the last check-up and jointly explained 10% of the variance in comprehensive testing.

Table 31 Socio-demographic and lifestyle correlates of having been tested for both STIs and HIV at the last check-up[§]

	%	OR	Adjusted OR
Age groups			
15–21	49.7	Ref.	Ref.
22–29	55.3	1.25‡	.85‡
Gender			
Male	64.0	Ref.	Ref.
Female	47.8	.52***	.56**
Sexual orientation			
Heterosexual	49.6	Ref.	Ref.
Non-heterosexual	62.4	1.67**	1.53*
Number of sex partners (past 12 months)		(1.60***)	(1.58***)
1	33.3	Ref.	Ref.
2–4	40.8	1.38‡	1.25‡
5–9	52.3	2.20**	2.08*
10 and more	65.4	3.78***	3.47***

Note: §Among sexually active respondents who ever tested for STIs and/or HIV. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. Nagelkerke R square = .100.

Result of last test

Of the respondents who had ever tested for STIs or HIV, 7.8% reported that they were diagnosed with an STI or HIV at their last test, including 7.4% who were diagnosed with an STI only and 0.4% who were diagnosed with HIV (Table 32). No participant was diagnosed with both an STI and HIV at their last test.

Table 32 Result of last test for STIs and/or HIV[§]

	n (%)
No STIs, nor HIV	609 (88.3)
STI only	51 (7.4)
HIV only	3 (0.4)
Both STI and HIV	0 (0.0)
I don't know the test result	27 (3.9)

Note: §Among sexually active respondents ever tested for STIs and/or HIV.

No significant associations were observed between having received an STI or HIV diagnosis at the last test and age, gender, sexual orientation or lifetime numbers of sex partners (Table 33) but number of respondents were low in most compared categories.

Table 33 Correlates of having received an STI or HIV diagnosis at the last test§

	%	OR	Adjusted OR
Age groups			
15-21	4.8	Ref.	Ref.
22-29	9.0	1.97‡	1.66‡
Gender			
Male	7.6	Ref.	Ref.
Female	8.0	1.05‡	1.14‡
Sexual orientation			
Heterosexual	8.0	Ref.	Ref.
Non-heterosexual	7.5	.94‡	.91‡
Number of sex partners (past 12 months)		(1.31†)	(1.23‡)
1	4.3	Ref.	Ref.
2-4	7.0	1.66‡	1.66‡
5-9	5.4	1.25‡	1.15‡
10 and more	10.2	2.49‡	2.16‡

Note: §Among sexually active respondents tested for STIs and/or HIV. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. Nagelkerke R square = .025.

In summary, three quarters (75%) of respondents had last tested for STIs and/or HIV at a GP. More than half (53.8%) of respondents who ever had a sexual health check-up were last tested for both STIs and HIV. Being non-heterosexual and reporting higher lifetime numbers of sex partners remained independently associated with comprehensive testing for both STIs and HIV at the last check-up. Of the respondents who had ever tested for STIs and/or HIV, 7.8% reported that they were diagnosed with an STI or HIV at their last test.

Exposure to and appreciation of sexual health promotion messages

Extent of exposure to sexual health promotion messages

The percentage of respondents who had, at least once in the past 12 months, noticed sexual health promotion messages for people their age was high (88.7%). Three quarters (73.8%) of the respondents had in that time noticed messages encouraging talking about sexual health and STIs, 79.3% had noticed messages promoting condom use and 68.9% had noticed messages promoting testing for STIs or HIV (Table 34). Most of the time, sexual health promotion messages were, however, only rarely or occasionally noticed by respondents. As a consequence, when calculated with responses provided to the three questions, the overall score indicative of the frequency of exposure to sexual health promotion messages was only moderate (M = 2.31, SD = 0.83, range: 1–4).

Table 34 Frequency of exposure to sexual health promotion messages in the past 12 months§

Exposure to messages promoting…	Never	Rarely	Occasionally	Often
Talking about sexual health and STIs	337 (26.2%)	447 (31.0%)	436 (30.3%)	181 (12.6%)
Condom use	298 (20.7%)	415 (28.8%)	451 (31.3%)	277 (19.2%)
Testing for STIs or HIV	448 (31.1%)	473 (32.8%)	370 (25.7%)	150 (10.4%)

Note: §Among sexually active and non-sexually active respondents.

Correlates of exposure to sexual health promotion messages

In univariate analyses, reporting a higher level of exposure to sexual health promotion messages was positively associated with being non-heterosexual and negatively associated with being aged 22–29 years (Table 35). No significant association was observed with gender or lifetime numbers of sex partners in univariate analyses. In multivariate analyses, a higher level of exposure to sexual health promotion messages was positively associated with being non-heterosexual and reporting higher lifetime numbers of sex partners and there was a negative association with being aged 22–29 years old. The variables included in the multivariate model jointly explained 2% of the variance in exposure to sexual health promotion messages.

Table 35 Correlates of reporting higher level of exposure to sexual health messages in the past 12 months§

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	2.38	Ref.	Ref.
22–29	2.24	-.079***	-.120***
Gender			
Male	2.31	Ref.	Ref.
Female	2.31	-.001‡	-.001‡
Sexual orientation			
Heterosexual	2.26	Ref.	Ref.
Non-heterosexual	2.44	.098***	.091**
Lifetime number of sex partners		**(.031‡)**	**(.090**)**
0	2.23 (0.77)	Ref.	Ref.
1	2.33 (0.78)	.048‡	.075*
2 to 4	2.36 (0.81)	.063†	.091**
5 to 9	2.24 (0.88)	.002‡	.049‡
10 and more	2.36 (0.91)	.065†	.136**

Note: §Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. Adjusted R square = .020.

Level of appreciation of sexual health promotion messages

Of the respondents who had noticed sexual health promotion messages for people their age in the past 12 months, 40.9% believed that these messages were relevant to them; 32.0% considered that the messages increased their knowledge about sexual health and 24.1% believed that the messages increased their confidence (Table 36). When calculated with responses provided to the three questions, the overall score of appreciation of sexual health promotion messages was only moderate (M= 2.91, SD = 0.88, range: 1–5).

Table 36 Appreciation of sexual health promotion messages noticed in the past 12 months§

	Strongly disagree	Somewhat disagree	Not disagree, not agree	Somewhat agree	Strongly agree
Messages were relevant to you	134 (10.8%)	278 (22.4%)	322 (25.9%)	415 (33.4%)	93 (7.5%)
Messages increased your knowledge about sexual health	162 (13.0%)	316 (25.4%)	366 (29.5%)	326 (26.2%)	72 (5.8%)
Increased your confidence	166 (13.4%)	234 (18.8%)	543 (43.7%)	227 (18.3%)	72 (5.8%)

Note: §Among sexually active and non-sexually active respondents who noticed sexual health promotion messages in the past 12 months.

Correlates of appreciating sexual health promotion messages

In univariate analyses, being more appreciative of sexual health promotion messages was positively associated with being non-heterosexual and negatively associated with being aged 22–29 years old (Table 37). No univariate association was observed with gender or lifetime numbers of sex partners. In multivariate analyses, both younger age, being non-heterosexual and reporting higher lifetime numbers of sex partners remained independently associated with being more appreciative of sexual health promotion messages. The variables included in the multivariate model jointly explained 2% of the variance in appreciation of sexual health promotion messages.

Table 37 Correlates of appreciating sexual health messages[§]

	M (SD)	Univariate Beta	Multivariate Beta
Age groups			
15–21	3.01 (0.90)	Ref.	Ref.
22–29	2.81 (0.84)	-.113***	-.169***
Gender			
Male	2.93 (0.93)	Ref.	Ref.
Female	2.90 (0.85)	-.018‡	-.021‡
Sexual orientation			
Heterosexual	2.87 (0.87)	Ref.	Ref.
Non-heterosexual	3.03 (0.89)	.082**	.066*
Lifetime number of sex partners		**(.027†)**	**(.110**)**
0	2.89 (0.87)	Ref.	Ref.
1	2.89 (0.88)	-.001‡	.028‡
2 to 4	2.91 (0.90)	.013‡	.047‡
5 to 9	2.92 (0.88)	.012‡	.071*
10 and more	2.97 (0.88)	.037‡	.132**

Note: §Among sexually active and non-sexually active respondents. * p<.05, ** p<.01, *** p<.001, † p< .1, ‡ p = non-significant. Adjusted R square = .023.

In summary, the percentage of respondents who had, at least once in the past 12 months, noticed sexual health promotion messages for people their age was high (88.7%). However, most of the time, sexual health promotion messages had been noticed only rarely or occasionally by respondents and their level of appreciation of sexual health promotion messages remained limited. Only 40.9% of the respondents who had seen sexual health promotion messages in the past 12 months considered these messages as relevant to them, and 32.0% considered the messages as contributing to increasing their knowledge about sexual health.

Discussion

The Debrief Survey establishes the basis for a national behavioural surveillance system on sexual health among young people aged 15–29 years in Australia providing data on 18 indicator variables relating to STI-related knowledge, attitudes and practices, as well as exposure to and appreciation of sexual health promotion messages.

Between December 2017 and April 2018, the survey recruited 2,303 respondents (mean age = 21.8 years, range: 15–29 years) living in Australia. All states and territories were represented with most respondents originating from New South Wales (30.3%), Victoria (26.8%), Queensland (18.5%) and Western Australia (10.2%). The sample included 70.1% of respondents who self-identified as heterosexual and 29.9% of respondents who reported a non-heterosexual sexual orientation, including bisexual, lesbian, gay, and queer. Most respondents (81.5%) reported to have had oral, vaginal or anal sex, including 76.5% in the past 12 months. Of the sexually active respondents, 31% reported a lifetime number of sex partners of 10 and more.

On average, respondents provided correct answers to 3.9 of the 5 questions on STI knowledge (SD = 1.08, range: 0–5). While knowledge of STIs was satisfactory for most topics covered by the survey, 31.2% of the respondents did not know that STIs often have no symptoms. Older respondents, females, and people with a higher number of lifetime sex partners were generally more knowledgeable about STIs compared to other respondents.

Perceived severity of STIs was high among respondents (M = 4.36, SD = 0.73, range: 1–5) with 92.2% of them agreeing that contracting an STI could seriously affect their health. Perceived risk of contracting an STI was moderately low (M = 2.73, SD = 1.06, range: 1–5) with 66.4% of respondents agreeing that they felt they were unlikely to get an STI. After controlling for potential socio-demographic confounders, perceived risk was found to be lower among older respondents and higher among both non-heterosexual respondents and people with higher lifetime numbers of sex partners compared to other respondents.

An assessment of additional factors that can influence condom use found moderately strong supportive social norms regarding the use of condoms among respondents (M = 4.02, SD = 0.74, range: 1–5). Most of them (92.9%) considered that people their age should use condoms with any new partner and a lower percentage of respondents (61.7%) believed that their best friends would expect them to use condoms. Supportive social norms regarding the use of condoms were more pronounced among younger respondents, females as well as people with lower numbers of lifetime sex partners, including those who had never had sex.

Potential access-related facilitators of and barriers to using condoms were also investigated, including knowing where to access condoms and perceiving condoms as expensive. Almost all respondents (94.7%) indicated that they knew where to obtain condoms and condoms were seen as expensive by a third (33.4%) of respondents. Perceiving condoms as expensive was more frequent among younger respondents and females compared to other respondents.

Respondents who had been sexually active in the past 12 months were asked about their overall use of condoms during sexual intercourse with any partner as well as their condom usage with regular partner/s and with casual partner/s. Of all respondents who had sex in the past 12 months, 75.1% engaged at least once in sexual intercourse without condoms in that time, including 69.3% with regular partner/s and 24.1% with casual partner/s. The correlates of reporting condomless sexual intercourse in the past 12 months were explored. Findings indicate that condomless sexual intercourse was strongly associated with numbers of partners. Of the respondents with 5 and more sex partners in the past 12 months, 88.0% reported condomless sexual

intercourse with regular partner/s and 65.5% reported condomless sexual intercourse with casual partner/s in that time. Other individual, social and access-related factors were also found to shape young people's condom use. Compared to other respondents, those who had condomless sexual intercourse in the past 12 months were generally older; they perceived less social support regarding the use of condoms; they were more knowledgeable about STIs; they perceived themselves at higher risk of contracting an STI, and they knew more often where to get condoms. No association was observed between having engaged in condomless sexual intercourse and perceiving condoms as expensive.

An assessment of the factors that can influence testing for STIs found moderate supportive social norms regarding STI testing among respondents (M = 3.64, SD = 0.80, range: 1–5). While most (93.2%) considered that people their age should test for STIs, only 36.5% believed that their best friends would expect them to test for STIs. Supportive social norms regarding STI testing were more pronounced among older respondents, females, as well as people with higher lifetime numbers of sex partners.

In terms of potential access-related facilitators of and barriers to testing for STIs, findings indicate that 73.9% of all respondents knew where to test and that 16.9% of them perceived testing for STIs as expensive. Not knowing where to test was more frequent among younger respondents, females, and people with lower lifetime numbers of sex partners, including respondents who had never had sex. Similarly, perceiving testing as expensive was more frequent among younger respondents, females, and people with lower lifetime numbers of sex partners.

Of the respondents who ever had oral, vaginal or anal sex, 58.0% had ever tested for STIs and/or HIV, including 36.0% who had tested in the past 12 months. Among respondents who ever had sex, having ever tested for STIs and/or HIV was found to be more frequent in older than in younger respondents (74.2% versus 36.7%, $p<.001$), in female than in male respondents (62.6% versus 51.3%, $p<.001$), in non-heterosexual than in heterosexual respondents (65.5% versus 54.9%, $p<.001$) and the proportion of respondents ever tested increased strongly with lifetime numbers of sex partners. The association between having ever tested and being non-heterosexual, however, disappeared after control by other confounders, including lifetime numbers of sex partners. Numbers of lifetime sex partners was a strong correlate of having ever tested for STIs and/or HIV with the percentage of respondents ever tested reaching 88% among those with a lifetime number of partners of 10 and more. Having ever experienced symptoms indicative of STIs or HIV and having had condomless sexual intercourse in the past 12 months were also strongly correlated with having ever tested for STIs and/or HIV. Compared to participants who had never tested, those who had were more knowledgeable about STIs; they perceived STIs as a more severe condition and they perceived more support towards testing for STIs. Lastly, having ever tested was positively associated with knowing where to test, and negatively associated with considering that testing is expensive. This last association suggests that perceived cost is a barrier to testing in some young people.

Analyses were replicated to identify the correlates of having tested for STIs and/or HIV in the past 12 months. Among respondents who ever had sex, having tested in the past 12 months was found to be higher in female than male respondents (39.7% versus 30.7%, $p<.001$), in non-heterosexual than in heterosexual respondents (48.1% versus 31.1%, $p<.001$) and the percentage of young people tested in the past 12 months increased significantly with lifetime numbers of sex partners to reach 57.5% among respondents who had 10 and more lifetime partners.

Looking at the characteristics of respondents who ever had a sexual health check-up, we found that half (53.8%) of them were last tested for both STIs and HIV, with males, non-heterosexuals, and respondents with higher numbers of sex partners being more often comprehensively tested than other respondents. Of the respondents with a lifetime number of partners of 10 and more, 65.4% had been comprehensively tested at their last test. Among male respondents with a lifetime number of partners of 10 and more, the percentage of those who had been comprehensively tested was 44.6% among heterosexuals and 69.2% among non-heterosexuals. Of the respondents who had ever tested for STIs and/or HIV, 7.8% reported that they had been diagnosed with an STI or HIV at their last test. This included 7.4% of respondents who were diagnosed with an STI only and 0.4% that were diagnosed with HIV only. No participant was diagnosed with both an STI and HIV at their last test.

The survey also contributed to estimating the extent of exposure to sexual health promotion messages among young people in Australia. The percentage of respondents who had, at least once in the past 12 months, noticed sexual health promotion messages for people their age was high (88.7%). Three quarters (73.8%) of the respondents had noticed messages encouraging talking about sexual health and STIs; 79.3% had noticed messages promoting condom use and 68.9% had noticed messages promoting testing for STIs or HIV. The frequency of exposure to sexual health promotion messages in the past 12 months was higher among younger respondents, non-heterosexuals, and people with a higher lifetime number of sex partners, compared to other respondents. However, most of the time, sexual health promotion messages had been noticed only rarely or occasionally by respondents and their level of appreciation of sexual health promotion messages was limited. Only 40.9% of the respondents who had seen sexual health promotion messages in the past 12 months considered these messages as relevant to them; 32.0% considered the messages as contributing to increasing their knowledge about sexual health and 24.1% as contributing to increasing their confidence. While younger respondents, non-heterosexuals, and people with higher lifetime numbers of sex partners were more appreciative of the sexual health promotion messages they had seen than other respondents, appreciation remained limited in all subgroups.

The study presented limitations. Self-reported data can be affected by declaration bias and the sample recruited cannot be considered as representative of the population of young people who use social media nor of the population of young people aged 15–29 years old living in Australia. Also, as we wanted to limit the questionnaire length in order to reduce attrition, we did not include all factors that could potentially influence condom use and testing for STIs and HIV in the survey scales. Instead, we limited the data collection and the empirical assessment to factors that were found to be the most important in previous surveys.

Despite these limitations, the survey findings contribute to expanding the current knowledge on the STI-prevention needs of young people in Australia, also considering that our previous surveys were mostly focused on heterosexual young people in NSW. The findings presented in this report provide new national estimates of STI-knowledge, attitudes and practices among young people aged 15–29 years old in Australia and contribute to better assessing the needs of various sub-groups defined by age, gender, sexual orientation, and numbers of sex partners.

Previous surveys documented important differences in STI-related knowledge, attitudes and practices according to age and gender that were confirmed by the Debrief study. Age was found to be independently associated with 14 of the 18 indicator variables. The study also corroborated the existence of a 'gender gap' in sexual health. Gender was associated with 10 of the 18 indicator variables with younger men scoring less favourably than young women on a range of sexual health-related indicators, including STI knowledge and testing for STIs. No gender difference was observed in the extent of condomless sexual intercourse with regular/s or casual partner/s. However, when asked about their overall use of condoms with any partner, women reported slightly more often than men having had condomless sex in the past 12 months. This may not, however, reflect actual differences in practices but rather the fact that women reported their sexual health-related behaviours more accurately than men.

Another contribution of the Debrief Survey was to provide a unique understanding of differences according to sexual orientation. Sexual orientation was found to be independently associated with no more than 8 of the 18 indicator variables investigated, which suggests that heterosexual and non-heterosexual young people may not be as systematically different as generally assumed. Beyond sexual orientation, the number of sex partners was found to be a major correlate independently associated with 16 of the 18 indicator variables. Our previous surveys compared non-sexually active and sexually active respondents on a range of indicators but did not document differences in STI prevention and testing needs according to people's lifetime or yearly numbers of sex partners. The present study filled this gap in knowledge and shows that there is a diversity of situations to consider in terms of potential risk of contracting an STI and STI prevention and testing needs. As observed in previous surveys, the average lifetime number of sex partners in this sample was relatively limited which suggests that the risk of contracting an STI was relatively low for a substantial proportion of young people. However, about three sexually active respondents out of 10 reported lifetime numbers of sex partners of 10 and more. Most of these young people had engaged in condomless sexual intercourse in the past 12 months, with either regular or casual partners, and 10.2% of them were diagnosed with an STI or HIV at their

last test. In addition to being more knowledgeable about STIs, most respondents with a lifetime number of sex partners of 10 and more had tested at least once for STIs and/or HIV. The extent of testing for STIs and/or HIV in the past 12 months was however limited among heterosexual young people with higher numbers of sex partners.

The survey also provides valuable insights into a range of factors that shape young people's condom use and testing for STIs. The approach used to identify these factors was developed over a decade of research on sexual health among young people and applied to the Debrief Survey framework. Results demonstrate the value of using an eclectic theorizing approach to appraise potential determinants of STI-related knowledge, attitudes and practices. Our approach contributes to reducing causal density and provides sexual health programs with clear insights into the main individual, social and access-related factors that shape behaviours and that can be addressed by sexual health promotion. The survey findings illustrate the importance of social norms in relation to sexual health and indicate that supportive social norms towards testing for STIs could be further strengthened to motivate a larger proportion of young people to test. It is also important to alleviate some perceived access-related barriers, including the perceived cost of testing, that prevent some young people from being tested. Contrary to what is often assumed in sexual health promotion practice, no association was observed at a population level between engaging in condomless sex and perceiving condoms as expensive.

Recommendations

The survey findings provide guidance for the strengthening and tailoring of sexual health promotion campaigns and other initiatives conducted among young people in Australia. Further promoting sexual health among young people in Australia necessitates strengthening supportive norms around condom use and STI testing; alleviating access-related barriers; reducing the 'gender gap' in sexual health related knowledge, attitudes and practices; promoting regular comprehensive testing for both STIs and HIV among people with the highest numbers of sex partners, regardless of their sexual orientation; and ensuring more frequent exposure to sexual health promotion messages that are perceived as relevant and contributing to increased knowledge by a larger group of young people.

References

Adam, P., de Wit, J., Hermans, J., Story, L., Edwards, B., Murray. C., & Bourne C. (2011). *Understanding barriers to STI testing among young people: results from the online survey 'Getting Down To It'* (Monograph 2/2011). Sydney: National Centre in HIV Social Research, The University of New South Wales.

Adam, P. C. G., de Wit, J. B. F., Schippers, M., Schmidt, H. M., Modderman, K., Murray, C., Estoesta, J., Slattery, C., Janssen, M., Botfield, J., Ketsuwan, I., Welsby, D. (2018). *2017 It's Your Love Life periodic survey on sexual health among young people in NSW: Report on heterosexually-identified participants*. Sydney: Centre for Social Research in Health, UNSW Sydney. http://doi.org/10.26190/5bd79b0b94974

Adam, P. C. G., de Wit, J. B. F., Treloar, C., Shepherd, B., Duck, T., Byron, P., Bourne, C., Murray, C., Welsby, D., & Holden, J. (2014). *Towards an online periodic survey of sexual health among young people in Australia* (Monograph 8/2014). Sydney: Centre for Social Research in Health, UNSW Australia.

Adam, P. C. G., Schippers, M., Schmidt, H., Modderman, K., Slattery, C., Estoesta, J., Murray, C., Hearnshaw, G., Murphy, D., & de Wit, J. B. F. (2017). *It's Your Love Life: a new periodic survey on sexual health among young people in NSW*. Sydney: Centre for Social Research in Health, UNSW Sydney. http://doi.org/10.4225/53/5971450a427b9

Kirby Institute (2018). *HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report 2018.* Sydney: Kirby Institute, UNSW Sydney.