

BMJ Open Investigating the impact of stigma, accessibility and confidentiality on STI/STD/HIV self-testing among college students in the USA: protocol for a scoping review

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ABSTRACT

Introduction In 2019, there were 2.5 million reported cases of chlamydia, gonorrhoea and syphilis. The Centers for Disease Control and Prevention reported in the USA, young people aged 15–24 made up 61% and 42% of chlamydia and gonorrhoea cases, respectively. Moreover, the highest rates of sexually transmitted infections (STIs) were reported among college-aged students. In this paper, we outline our protocol to systematically review the published literature on, the use of STI/HIV self-test kits, increasing STI/HIV testing uptake, and stigma, access and confidentiality issues, among young adult college students in the USA.

Methods and analysis This scoping review will be conducted and reported according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews. We will search electronic databases, OVID Medline, OVID Embase, Web of Science, Cochrane Library, PubMed and CINAHL, for articles published in English from inception to the present. We will search other alternative sources such as ProQuest, Google Scholar and Google to identify grey literature. A two-step process will be used to identify eligible studies based on the defined inclusion criteria. First, the title and abstract of identified articles will be screened for possible inclusion. Second, full-text articles of relevant studies will be retrieved and screened for inclusion. Both screening steps will be done by two people independently. Finally, data will be extracted by two researchers working independently. Any arising disagreements will be resolved by consensus or by a third author.

Ethics and dissemination This study is a scoping review of the literature. Therefore, ethics approval is not required. Our plan for the dissemination of findings includes peer-reviewed manuscripts, conferences and webinars.

INTRODUCTION

Sexually transmitted infections (STIs) and HIV infections remain a significant global and public health problem in the USA (CDC,

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ A strength of the study is that it will employ a robust search strategy conducted by an expert medical librarian and supplemented with grey literature, for comprehensive coverage of existing literature.
- ⇒ Another strength of the study is that it will provide up-to-date insights and directions for research and interventions to increase HIV/sexually transmitted infection self-testing uptake among youth and young adults.
- ⇒ Limitations of this review include its focus on the USA only and the inclusion only of articles published in English.
- ⇒ Another limitation is the focus on only one relevant population (college students).

2021).^{1–3} The Centers for Disease Control and Prevention (CDC) report that from 2015 through 2019, HIV diagnoses increased among people aged 13–24 years old (CDC, 2021), and approximately 51% of youth living with HIV were unaware that they are infected.^{4,5} It is more alarming that surveillance systems in the USA have recently found that more than one in five new HIV diagnoses were among youth between the age of 13 and 24 years old.⁶ Moreover, many of these STIs do not show symptoms for a long time, therefore an individual could be transmitting an infection without even knowing it.⁶ Although treatment is available for all STIs, not all are curable. There is no cure for viral STIs, such as genital herpes and HIV, but antiviral medication may be used for viral suppression and to treat symptoms.^{7,8} Without proper treatment, STIs can cause serious complications such as infertility, pregnancy complications, and increased risk of organ damage, potentially serious or deadly diseases, and cancer.^{7,9}

Risky sexual behaviours can lead to negative outcomes including the occurrence of STIs, HIV and unplanned pregnancies.^{7 9 10} Risky sexual behaviours are defined as: (1) early sexual debut, before the age of 18 years old,^{10 11} (2) having oral, vaginal or anal sex without a condom (male, female or dental dam) or inconsistent condom use and (3) having multiple sex partners or a high-risk partner, such as one who engages in intravenous drug use.^{9 10 12} Sexually active young adults should get tested at least once for HIV.¹⁰ However, depending on their sexual behaviours, individuals who are at a higher risk of acquiring HIV should be tested annually. The CDC recommends that all sexually active young adult women under the age of 25 should be tested yearly for gonorrhoea and chlamydia.¹³ Most young adults do not receive many of the recommended sexual healthcare services, including STI and HIV screenings or counselling services.^{6 14} According to other studies, national guidelines for STI and HIV testing among youth aged 15–25 are not regularly followed and STI testing is suboptimal.^{15–17} In addition, young adults face multiple barriers to accessing proper sexual health and STI preventative services, such as a lack of health insurance, employment and transportation.^{18 19} Also, due to concerns of confidentiality, costs, embarrassment or shame, and other social factors, many young adults do not seek STI and HIV testing with their primary medical provider.^{15 20} Although there seems to be a burgeoning interest in understanding the role of self-testing kits in increasing STI/sexually transmitted disease (STD)/HIV testing, knowledge remains limited on acceptance and uptake of self-testing among young adults, especially among young adults on college campuses. In this paper, we outline our scoping review protocol to systematically review published literature specific to the use of STI/STD/HIV self-test kits, increasing testing uptake and reducing barriers of stigmas, lack of access and confidentiality among young adult college students in the USA. Findings of the scoping review will provide insights on the state of science around HIV and STI self-testing acceptance and uptake. It will also explain the factors that facilitate or hinder access, acceptance and uptake of self-testing for STI and HIV among young adults on college campuses.

METHODS AND ANALYSIS

We will adopt the scoping review framework approach proposed by Arksey and O'Malley and later advanced by Levac *et al.*²¹ The framework consists of five iterative steps: identifying the review topic, identifying relevant studies, selecting the studies, charting the data, and compiling, summarising, and reporting the results.^{22 23} The review will also follow recommendations from Peterson *et al* to ensure that the review is executed such that it can inform practice, policy, education and research.²⁴ The protocol is drafted according to the reporting guidance provided in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping

Reviews (PRISMA-ScR).²⁵ We also compared the protocol with already published protocols using the same guidelines and incorporating other expectations of *BMJ*. The protocol, when reviewed and published, will ensure transparency, and sharing of the process with the wider scholarly society to prevent duplication of efforts.^{25–27}

Identifying the research question

In this scoping review, defining the research question is an essential first step that provides the rationale for decision-making in the scoping review design, conduct and reporting.²⁵ For this study we developed the following research questions:

- Does STI/HIV self-test kits have the potential to increase testing rates among college students?
- Does offering STI/HIV self-test kits improve testing rates among college students?
- How do stigmas, lack of access and confidentiality negatively impact STI/HIV testing rates among college students?

Criteria for study inclusion

For an article to be included in this scoping review, it must (1) discuss STI/STD/HIV kit and self-testing, (2) be in English, (3) talk about college students, (4) include participants at or beyond the age of 18 and (5) be set in the USA. Review papers (scoping, systematic), book chapters, reports, opinions, commentaries, conference abstracts and papers not published in English will be excluded from this review.

Types of studies

We will consider experimental (randomised or non-randomised), observational studies (longitudinal, cross-sectional) and qualitative or mixed-methods studies.

Search strategy

This scoping review's search strategy is formulated by an expert medical librarian (JB) from the Harvey Cushing/John Hay Whitney Medical Library at Yale University in consultation with the research team. The search of studies published in English will be conducted in multiple databases using appropriate syntax and keywords for each database. The search strategies for all databases can be found in online supplemental file 1.

Electronic database searching

Sources for relevant documents will include OVID Medline, OVIDSP Embase, Web of Science, Cochrane Library, PubMed and CINAHL from inception to present. Citations will be imported into and de-duplicated using EndNote20 (Clarivate, Philadelphia, PA, USA) and then imported for screening into Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia). Using the references from studies that are relevant to the final inclusion set forwards and backward citation chasing will be manually performed.

Grey literature searching

For other relevant works such as reports and data not found within databases or references of published articles,

we will search other alternative sources such as ProQuest for dissertations and thesis and conference papers. We will also search for possible reports from organisations such as NIH, CDC and other identified HIV organisations. We will also use GoogleScholar and Google to identify any other sources that report HIV testing among young adults on college campuses.

Data screening

A two-step process will be used to identify eligible studies. First, each citation title and abstract will be screened to identify those that are relevant. Next, the full text of relevant articles will be retrieved and screened for inclusion. Reviewers (PD, JMR) will pilot screening with a sample of 100 abstracts to ensure consistency of use and clarity of the inclusion and exclusion criteria. A Cohen's kappa statistic will measure inter-rater reliability and screening will begin when more than 70% agreement is achieved.²⁸ In duplicate, the authors EYZ, OWS, GA-F and GRA will conduct all screening, data extraction and quality assessment procedures. Disagreements will be resolved by consensus. Consensus that cannot be reached will be resolved by a third author who will arbitrate (PD, JMR).

Data extraction

Content

The extraction of data will comprise various stages. The first will include extracting data on the publication information. This stage will involve extracting author names, year of publication, journal source and funding sources. The second will comprise extracting data on the conceptualisations and the third extracting data on the methodology and results. This stage will include the research question(s), the hypothesis, concepts and theoretical frameworks, and the variable studied. The final extraction stage will include sorting for information on study design, recruitment and sampling techniques, and data collection methods. Furthermore, attempts will be made to extract findings from the study on self-testing among college students, stigma and accessibility options.

Process

To ensure a systematic and coordinated data extraction process, we will use a Google Form containing questions for each extractor to answer. At least two authors will extract data from each publication. Disagreements will be resolved by consensus. If the two authors are unable to reach a consensus, a third reviewer will resolve the disagreement. The authors will independently extract data on author names, publication years, journal of publication and funding sources if applicable. We will also extract information on the research questions, theoretical or conceptual frameworks used, variables of interest (STI testing, HIV testing), the study design, method of data collection and analytical techniques. For results, we will also extract the study population characteristics, the number of participants, main thematic areas and statistical findings.

Analyses and reporting

Our findings will be reported according to the PRISMA-ScR guidelines.²⁵ We will be summarising our findings narratively and using tables. Data will be grouped by outcomes, with the number of studies, their design and their methodological quality. The key findings of each study will also be summarised using tables. Although we will be screening experimental studies, we will not be performing any quantitative data analysis. However, frequency and range will be used to narrate the results. We will conduct thematic analysis using grounded theory.²⁹ A list of codes related to the research question and outcomes will be identified in duplicate by authors (EYZ, OWS, GA-F and GRA) who participated to data extraction of the articles. The team will review all the codes as a group until consensus is achieved on a single set of codes. The codes will then be used to create themes for narrative synthesis of the extracted data and identify knowledge gap.

Outcomes

The primary outcome of this study will look into facilitators and barriers to STI/STD/HIV self-testing uptake among college students. Facilitators could include access, education, social support, etc that encourage young adults to pick up testing kits and test for STI/STD/HIV. Barriers could include stigma, lack of confidentiality and other factors that prevent access to testing kits and ultimately uptake of testing. The secondary outcome of this scoping review is to assess the state of science on STI/STD/HIV self-testing kits' potential to increase the rate of testing among college students in the USA.

Patient and public involvement

We will not engage college students in the process of conducting this scoping review. However, we foresee findings to be made public to people involved in STI/STD/HIV studies and practices to aid in decision-making in healthcare practice and policies.

Ethics and dissemination

This study is a scoping review of the literature and therefore does not require ethics approval.

Our dissemination plans include publishing scoping review results in a scientific, peer-reviewed journal. Findings will also be presented at scholarly conferences and webinars. Findings could also be made available for relevant stakeholders to use in understanding ways to engage young adults on college campuses with HIV/STI self-testing.

DISCUSSION

Multiple challenges and roadblocks to proper sexual health and STI preventive services for young adults have been an ongoing pressing concern. These barriers range from the lack of health insurance and coverage to the lack of employment opportunities and transportation

services.^{18 19} Social factors related to cost, embarrassment and shame, and confidentiality have been attributed to poor testing habits among young adults when seeking STI/STD/HIV knowledge from health providers.^{15 20} Despite researchers showing increasing interest in understanding the role of self-testing kits, knowledge on acceptance and uptake of self-testing remains limited among young college students in the USA. In this scoping review, scholarly insight on the state of science around HIV/STI self-testing will be enhanced around acceptance and uptake. The findings of this scoping review will elucidate factors that facilitate or prevent access, acceptance and uptake of self-testing among young college adults in the USA.

One limitation of this review is its focus on the USA and articles published in English. Therefore, it could not be generalised globally and studies in other languages will be missed (eg, articles in Spanish). Furthermore, the fact that the study is limited to college students will limit access to potential studies in the USA. However, the study could be replicated for college students beyond the USA.

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Patient consent for publication Not applicable.

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Supplement 1: Scoping review protocol's Search Strategies.

“Investigating the impact of stigma, accessibility and confidentiality on STI/STD/HIV self-testing among college students in the United States: A protocol for a scoping review”

OVID Medline.

#	Query
1	exp HIV Infections/ or exp HIV/
2	(hiv* or hiv infect* or human immunodeficiency virus or human immunodeficiency virus or human immune deficiency virus or human immune deficiency virus or acquired immunodeficiency syndrome or acquired immunodeficiency syndrome or acquired immune deficiency syndrome or acquired immune deficiency syndrome).ti,ab.
3	1 or 2
4	exp sexually transmitted infections/ or exp hepatitis b/ or exp herpes genitalis/ or exp syphilis/ or exp gonorrhea/ or exp chlamydia trachomatis/ or exp calymmatobacterium/ or exp trichomonas vaginitis/ or exp Alhpapillomavirus/ or exp Human papillomavirus 6/ or exp Human papillomavirus 11/ or exp Human papillomavirus 16/ or exp Human papillomavirus 18/ or exp Human papillomavirus 31/ or exp Betapapillomavirus/ or exp Gammapapillomavirus/ or exp granuloma Inguinale/
5	(sexually transmitted disease* or sexually transmissible disease* or sexually transmitted infection* or sexually transmissible infection* or sexually transmitted infectious disease* or sexually transmissible infectious disease* or sexually transmitted disorder* or sexually transmissible disorder* or STI or STIs or STD or STIs or venereal disease* or venereal infection* or venereal disorder* or genital herpes or herpes genitalis or genital infection* or genital disorder* or herpes simplex or herpes virus or HSV*).ti,ab. or chancroid/ or chancroid*.ti,ab. or haemophilus ducreyi.ti,ab. or chlamydia infection*.ti,ab. or chlamydia trachomatis.ti,ab. or gonorrhoea*.ti,ab. or gonorrhea*.ti,ab. or syphilis.ti,ab. or syphilis.ti,ab. or condylomata lata.ti,ab. or chancre*.ti,ab. or lymphogranuloma venereum.ti,ab. or lymphogranuloma venereum.ti,ab. or granuloma inguinale.ti,ab. or donovania.ti,ab. or donovanosis.ti,ab. or calymmatobacterium granulomatis.ti,ab. or klebsiella granulomatis.ti,ab. or klebsiella granulomatis.ti,ab. or treponema pallidum.ti,ab. or treponema pallidum.ti,ab. or genital wart*.ti,ab. or venereal wart*.ti,ab. or condylomata acuminata.ti,ab. or human papillomavirus 6.ti,ab. or hpv*.ti,ab. or hpv6.ti,ab. or human papillomavirus.ti,ab. or hepatitis b.ti,ab. or trichomonas vaginitis.ti,ab. or genital ulcer*.ti,ab. or anogenital ulcer*.ti,ab. or anorectal ulcer*.ti,ab. or anorectal ulcer*.ti,ab. or penile ulcer*.ti,ab. or human papillomavirus*.ti,ab. or hpv.ti,ab. or recurrent respiratory papillomatosis.ti,ab. or condyloma*.ti,ab.
6	4 or 5
7	3 or 6
8	exp Self-Testing/
9	((home adj testing) or self test* or self sample or self sampling or rapid diagnostic test*).tw,kf.
10	(self collect* or home-based HIV test* or home-based STI test* or home-based STD test* or ((community-based or community-led or community-driven) adj3 test*)).tw,kf.
11	8 or 9 or 10
12	7 and 11

13	exp Students/ or exp Universities/
14	exp Young Adult/ or exp Adolescent/
15	(college student* or higher education or teen* or adolescen*).tw,kf.
16	13 or 14 or 15
17	12 and 16

OVID EMBASE.

#	Query
1	exp Human immunodeficiency virus/ or exp Human immunodeficiency virus infection/
2	(hiv* or hiv infect* or human immunodeficiency virus or human immunodeficiency virus or human immune deficiency virus or human immune deficiency virus or acquired immunodeficiency syndrome or acquired immunodeficiency syndrome or acquired immune deficiency syndrome or acquired immune deficiency syndrome).ti,ab.
3	1 or 2
4	exp sexually transmitted disease/ or exp hepatitis B/ or exp genital herpes/ or exp syphilis/ or exp gonorrhea/ or exp Chlamydia trachomatis/ or exp Klebsiella/ or exp vaginal trichomoniasis/ or exp Alphapapillomavirus/ or exp Wart virus/ or exp granuloma inguinale/ or exp Gammapapillomavirus/ or exp betapapillomavirus/
5	(sexually transmitted disease* or sexually transmissible disease* or sexually transmitted infection* or sexually transmissible infection* or sexually transmitted infectious disease* or sexually transmissible infectious disease* or sexually transmitted disorder* or sexually transmissible disorder* or STI or STIs or STD or STDs or venereal disease* or venereal infection* or venereal disorder* or genital herpes or herpes genitalis or genital infection* or genital disorder* or herpes simplex or herpes virus or HSV* or chancroid or chancroid* or haemophilus ducreyi or chlamydia infection* or chlamydia trachomatis or gonorrhoea* or gonorrhea* or syphilis or syphilis or condylomata lata or chancre*).ti,ab. or lymphogranuloma venereum/ or lymphogranuloma venereum.ti,ab. or granuloma inguinale.ti,ab. or donovania.ti,ab. or donovanosis.ti,ab. or calymmatobacterium granulomatis.ti,ab. or klebsiella granulomatis.ti,ab. or klebsiella granulomatis.ti,ab. or treponema pallidum.ti,ab. or treponema pallidum.ti,ab. or genital wart*.ti,ab. or venereal wart*.ti,ab. or condylomata acuminata.ti,ab. or human papillomavirus 6.ti,ab. or hpv*.ti,ab. or hpv6.ti,ab. or human papillomavirus.ti,ab. or hepatitis b.ti,ab. or trichomonas vaginitis.ti,ab. or genital ulcer*.ti,ab. or anogenital ulcer*.ti,ab. or anorectal ulcer*.ti,ab. or anorectal ulcer*.ti,ab. or penile ulcer*.ti,ab. or human papillomavirus*.ti,ab. or hpv.ti,ab. or recurrent respiratory papillomatosis.ti,ab. or condyloma*.ti,ab.
6	4 or 5
7	3 or 6
8	exp self-testing/
9	((home adj testing) or self test* or self sample or self sampling or rapid diagnostic test*).tw,kf.
10	(self collect* or home-based HIV test* or home-based STI test* or home-based STD test* or ((community-based or community-led or community-driven) adj3 test*)).tw,kf.
11	8 or 9 or 10
12	exp student/ or exp university/ or exp university student/ or exp young adult/ or exp adolescent/
13	(college student* or university student* or higher education or teen* or adolescen*).tw,kf.
14	12 or 13
15	7 and 11 and 14

CINAHL Complete

#	Query
S11	S4 AND S7 AND S10
S10	S8 OR S9
S9	"college student*" OR "university student*" OR higher education" OR "teen*" OR "adolescen*"
S8	(MH "student+") or (MH "university+") OR (MH "university student+") OR (MH "young adult+") or (MH "adolescent+")
S7	S5 OR S6
S6	"home test*" OR "self test*" OR "self sample" OR "self sampling" OR "rapid diagnostic test*" OR "self collect*" OR "home-based HIV test*" OR "home-based STI test*" OR "home-based STD test*" OR "community-based test*" OR "community-led test" OR "community-driven test"
S5	(MH "self-testing+")
S4	S1 OR S2 OR S3
S3	"hiv"OR "hiv infection"OR "human immunodeficiency virus"OR "human immunodeficiency virus"OR "human immune deficiency virus"OR "acquired immunodeficiency syndrome"OR "acquired immunodeficiency syndrome"OR "acquired immune deficiency syndrome"
S2	"sexually transmitted disease" OR "sexually transmissible disease" OR "sexually transmitted infection" OR "sexually transmissible infection" OR "sexually transmitted infectious disease" OR "sexually transmissible infectious disease" OR "sexually transmitted disorder" OR "sexually transmissible disorder" OR "STI" OR "STIs" OR "STD" OR "STDs" OR "venereal disease*" OR "venereal infection" OR "venereal disorder" OR "genital herpes" OR "herpes genitalis" OR "genital infection" OR "genital disorder*" OR "herpes simplex" OR "herpes virus" OR "HSV" OR "chancroid" OR "chancroid" OR "haemophilus ducreyi" OR "chlamydia infection" OR "chlamydia trachomatis" OR "gonorrhoea" OR "gonorrhea" OR "syphilis" OR "syphillis" OR "condylomata lata" OR "chancres" OR "lymphogranuloma venereum" OR "lymphogranuloma venereum" OR "granuloma inguinale" OR "donovania" OR "donovanosis" OR "calymmatobacterium granulomatis" OR "klebsiella granulomatis" OR "klebsiella granulomatis" OR "treponema pallidum" OR "treponema pallidum" OR "genital wart" OR "venereal wart" OR "condylomata acuminata" OR "human papillomavirus 6" OR "hpv" OR "hpv6" OR "human papillomavirus" OR "hepatitis b" OR "trichomonas vaginitis" OR "genital ulcer" OR "anogenital ulcer" OR "anorectal ulcer" OR "anorectal ulcer" OR "penile ulcer" OR "human papillomavirus" OR "hpv" OR "recurrent respiratory papillomatosis" OR "condyloma"
S1	(MH "HIV Infections+") OR (MH "Human Immunodeficiency Virus+")

Web of Science Core Collection.

4	1 AND 2 AND 3
3	TS: hiv* OR hiv infect* OR human immunodeficiency virus OR human immunodeficiency virus OR human immune deficiency virus OR human immune deficiency virus OR acquired immunodeficiency syndrome OR acquired immunodeficiency syndrome OR acquired immune deficiency syndrome OR acquired immune deficiency syndrome OR sexually transmitted disease* OR sexually transmissible disease* OR sexually transmitted infection* OR sexually transmissible infection* OR sexually transmitted infectious disease* OR sexually transmissible infectious disease* OR sexually transmitted disorder* OR sexually transmissible disorder* OR STI OR STIs OR STD OR STIs OR venereal disease* OR venereal infection* OR venereal disorder* OR genital herpes OR herpes genitalis OR genital infection* OR genital disorder* OR herpes simplex OR herpes virus OR HSV* OR chancroid OR chancroid* OR haemophilus ducreyi OR chlamydia infection* OR chlamydia trachomatis OR gonorrhoea* OR gonorrhea* OR syphilis OR syphilis OR condylomata lata OR chancre* OR lymphogranuloma venereum OR lymphogranuloma venereum OR granuloma inguinale OR donovania OR donovanosis OR calymmatobacterium granulomatis OR klebsiella granulomatis OR klebsiella granulomatis OR treponema pallidum OR treponema pallidum OR genital wart* OR venereal wart* OR condylomata acuminata OR human papillomavirus 6 OR hpv* OR hpv6 OR human papillomavirus OR hepatitis b OR trichomonas vaginitis OR genital ulcer* OR anogenital ulcer* OR anorectal ulcer* OR anorectal ulcer* OR penile ulcer* OR human papillomavirus* or hpv or recurrent respiratory papillomatosis or condyloma*
2	TS: self collect* or home-based HIV test* or home-based STI test* or home-based STD test* or community-based test* or community-led test* or community-driven test* OR home-based test
1	TS: college student* OR higher education OR teen* OR adolescen* OR university* OR university student*

Cochrane Database

#	Query
4	1 AND 2 AND 3
3	Title Abstract Keyword: hiv* OR hiv infect* OR human immunodeficiency virus OR human immunodeficiency virus OR human immune deficiency virus OR acquired immunodeficiency syndrome OR acquired immunodeficiency syndrome OR acquired immune deficiency syndrome OR sexually transmitted disease* OR sexually transmissible disease* OR sexually transmitted infection* OR sexually transmissible infection* OR sexually transmitted infectious disease* OR sexually transmissible infectious disease* OR sexually transmitted disorder* OR sexually transmissible disorder* OR STI OR STIs OR STD OR STIs OR venereal disease* OR venereal infection* OR venereal disorder* OR genital herpes OR herpes genitalis OR genital infection* OR genital disorder* OR herpes simplex OR herpes virus OR HSV* OR chancroid OR chancroid* OR haemophilus ducreyi OR chlamydia infection* OR chlamydia trachomatis OR gonorrhoea* OR gonorrhea* OR syphilis OR syphilis OR condylomata lata OR chancre* OR lymphogranuloma venereum OR lymphogranuloma venereum OR granuloma inguinale OR donovania OR donovanosis OR calymmatobacterium granulomatis OR klebsiella granulomatis OR klebsiella granulomatis OR treponema pallidum OR treponema pallidum OR genital wart* OR venereal wart* OR condylomata acuminata OR human papillomavirus 6 OR hpv* OR hpv6 OR human papillomavirus OR hepatitis b OR trichomonas vaginitis OR genital ulcer* OR anogenital ulcer* OR anorectal ulcer* OR anorectal ulcer* OR penile ulcer* OR human papillomavirus* or hpv OR recurrent respiratory papillomatosis or condyloma*
2	Title Abstract Keyword: self collect* or home-based HIV test* or home-based STI test* or home-based STD test* or community-based test* or community-led test* or community-driven test* OR home-based test*
1	Title Abstract Keyword: college student* OR higher education OR teen* OR adolescen* OR university* OR university student*

PubMed

#	Query
4	1 AND 2 AND 3
3	((("sexually transmitted disease"[Title/Abstract] OR "sexually transmissible disease"[Title/Abstract] OR "sexually transmitted infection"[Title/Abstract] OR "sexually transmissible infection"[Title/Abstract] OR "sexually transmitted infectious disease"[Title/Abstract] OR "sexually transmissible infectious disease"[Title/Abstract] OR "sexually transmitted disorder"[Title/Abstract] OR "sexually transmissible disorder"[Title/Abstract] OR "STI"[Title/Abstract] OR "STIs"[Title/Abstract] OR "STD"[Title/Abstract] OR "STDs"[Title/Abstract] OR "venereal disease"[Title/Abstract] OR "venereal infection"[Title/Abstract] OR "venereal disorder"[Title/Abstract] OR "genital herpes"[Title/Abstract] OR "herpes genitalis"[Title/Abstract] OR "genital infection"[Title/Abstract] OR "genital disorder"[Title/Abstract] OR "herpes simplex"[Title/Abstract] OR "herpes virus"[Title/Abstract] OR "HSV"[Title/Abstract] OR "chancroid"[Title/Abstract] OR "chancroid"[Title/Abstract] OR "haemophilus ducreyi"[Title/Abstract] OR "chlamydia infection"[Title/Abstract] OR "chlamydia trachomatis"[Title/Abstract] OR "gonorrhoea"[Title/Abstract] OR "gonorrhea"[Title/Abstract] OR "syphilis"[Title/Abstract] OR "syphilis"[Title/Abstract] OR "condylomata lata"[Title/Abstract] OR "chancere"[Title/Abstract] OR "lymphogranuloma venereum"[Title/Abstract] OR "granuloma inguinale"[Title/Abstract] OR "donovania"[Title/Abstract] OR "donovanosis"[Title/Abstract] OR "calymmatobacterium granulomatis"[Title/Abstract] OR "klebsiella granulomatis"[Title/Abstract] OR "treponema pallidum"[Title/Abstract] OR "genital wart"[Title/Abstract] OR "venereal wart"[Title/Abstract] OR "condylomata acuminata"[Title/Abstract] OR "human papillomavirus 6"[Title/Abstract] OR "hpv"[Title/Abstract] OR "hpv6"[Title/Abstract] OR "human papillomavirus"[Title/Abstract] OR "hepatitis b"[Title/Abstract] OR "trichomonas vaginitis"[Title/Abstract] OR "genital ulcer"[Title/Abstract] OR "anogenital ulcer"[Title/Abstract] OR "anorectal ulcer"[Title/Abstract] OR "penile ulcer"[Title/Abstract] OR "recurrent respiratory papillomatosis"[Title/Abstract] OR "condyloma"[Title/Abstract] OR OR[Title/Abstract] OR OR[Title/Abstract] OR OR[Title/Abstract] OR ("sexually transmitted infections"[MeSH Terms] OR "hepatitis b"[MeSH Terms] OR "herpes genitalis"[MeSH Terms] OR "syphilis"[MeSH Terms] OR "gonorrhea"[MeSH Terms] OR "chlamydia trachomatis"[MeSH Terms] OR "calymmatobacterium"[MeSH Terms] OR "trichomonas vaginitis"[MeSH Terms] OR "Alphapapillomavirus"[MeSH Terms] OR "Human papillomavirus 6"[MeSH Terms] OR "Human papillomavirus 11"[MeSH Terms] OR "Human papillomavirus 16"[MeSH Terms] OR "Human papillomavirus 18"[MeSH Terms] OR "Human papillomavirus 31"[MeSH Terms] OR "Betapapillomavirus"[MeSH Terms] OR "Gammapapillomavirus"[MeSH Terms] OR "granuloma Inguinale"[MeSH Terms])) OR ("HIV Infections"[MeSH Terms] OR "HIV"[MeSH Terms] OR "hiv"[Title/Abstract] OR "hiv infection"[Title/Abstract] OR "human immunodeficiency virus"[Title/Abstract] OR "human immunodeficiency virus"[Title/Abstract] OR "human immune deficiency virus"[Title/Abstract] OR "acquired immunodeficiency syndrome"[Title/Abstract] OR "acquired immunodeficiency syndrome"[Title/Abstract] OR "acquired immune deficiency syndrome"[Title/Abstract])) - Saved search
2	((("home testing" OR "self test" OR "self sample" OR "self sampling" OR "rapid diagnostic test" OR "self collect" OR "home-based HIV test" OR "home-based STI test" OR "home-based STD test" OR "community-based test" OR "community-led test" OR "community-driven test") OR (self testing[MeSH Terms])))
1	((("Students"[MeSH Terms] OR "Universities" [MeSH Terms] OR "Young Adult"[MeSH Terms] OR "Adolescent"[MeSH Terms]) OR ("college student"[Title/Abstract] OR "higher education"[Title/Abstract] OR "teen"[Title/Abstract] OR "adolescent"[Title/Abstract] OR "adolescence"[Title/Abstract]))

