



# 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

Jaquetta M Reeves <sup>1</sup>, Edem Yaw Zigah,<sup>2</sup> Osman W Shamrock,<sup>2</sup> Gloria Aidoo-Frimpong,<sup>3</sup> Debbie Dada,<sup>4,5</sup> Janene Batten,<sup>6</sup> Gamji R Abu-Ba'are,<sup>7,8</sup> LaRon E Nelson,<sup>4,5</sup> Pascal Djiadeu <sup>9,10</sup>

**To cite:** Reeves JM, Zigah EY, Shamrock OW, *et al*. 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. *BMJ Open* 2023;**13**:e069574. doi:10.1136/bmjopen-2022-069574

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2022-069574>).

Received 27 October 2022  
Accepted 01 February 2023



© Author(s) (or their employer(s)) 2023. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

For numbered affiliations see end of article.

## Correspondence to

Dr Jaquetta M Reeves;  
[jaquetta.reeves@uta.edu](mailto:jaquetta.reeves@uta.edu)

## 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).<sup>1–3</sup> 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.<sup>4 5</sup> 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.<sup>6</sup> 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.<sup>6</sup> 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.<sup>7 8</sup> 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.<sup>7 9</sup>

Risky sexual behaviours can lead to negative outcomes including the occurrence of STIs, HIV and unplanned pregnancies.<sup>7 9 10</sup> Risky sexual behaviours are defined as: (1) early sexual debut, before the age of 18 years old,<sup>10 11</sup> (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.<sup>9 10 12</sup> Sexually active young adults should get tested at least once for HIV.<sup>10</sup> 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.<sup>13</sup> Most young adults do not receive many of the recommended sexual healthcare services, including STI and HIV screenings or counselling services.<sup>6 14</sup> 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.<sup>15–17</sup> 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.<sup>18 19</sup> 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.<sup>15 20</sup> 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.*<sup>21</sup> 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.<sup>22 23</sup> 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.<sup>24</sup> 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).<sup>25</sup> 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.<sup>25–27</sup>

### 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.<sup>25</sup> 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.<sup>28</sup> 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.<sup>25</sup> 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.<sup>29</sup> 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.<sup>18 19</sup> 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.<sup>15 20</sup> 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.

#### Author affiliations

<sup>1</sup>College of Nursing and Health Innovation, The University of Texas Arlington, Arlington, Texas, USA

<sup>2</sup>School of Nursing, University of Rochester, Rochester, New York, USA

<sup>3</sup>Center Interdisciplinary Research on AIDS, Yale University School of Public Health, New Haven, Connecticut, USA, New Haven, Connecticut, USA

<sup>4</sup>School of Nursing, Yale University, New Haven, Connecticut, USA

<sup>5</sup>MAP Centre for Urban Health Solutions, St. Michael's Hospital, Unity Health Toronto, Toronto, Ontario, Canada

<sup>6</sup>Medical Library, Yale University, Harvey Cushing/John Hay Whitney Medical Library, New Haven, Connecticut, USA

<sup>7</sup>Center for Interdisciplinary Research on AIDS, Yale University School of Public Health, New Haven, Connecticut, USA

<sup>8</sup>School of Nursing, Behavioral, Sexual, and Global Health Lab, University of Rochester, Rochester, New York, USA

<sup>9</sup>Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada

<sup>10</sup>Health Research Methods Evidence and Impact, McMaster University, Faculty of Health Sciences, Hamilton, Ontario, Canada

**Twitter** Jaquetta M Reeves @jadamariereeves and Pascal Djiaudeau @DDjiaudeau

**Acknowledgements** This publication was also made possible through core services and support from the Yale University Center for Interdisciplinary Research on AIDS (P30 MH062294) and the Yale AIDS Prevention Training Program (T32MH020031).

**Contributors** JMR is the first and corresponding author; JMR, PD, DD, JB and LEN conceived the study; JMR, PD, DD, JB and GA-F conducted the initial review, finalised the focus of the study and designed the study; PD and JB established the search strategy; JB conducted the search strategy; all authors contributed to drafting the manuscript; GRA, EYZ and OWS performed critical revisions of the manuscript. All authors approved the final version of the manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not applicable.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Supplemental material** This content has been supplied by the author(s). It has not been vetted by BMJ Publishing Group Limited (BMJ) and may not have been peer-reviewed. Any opinions or recommendations discussed are solely those

of the author(s) and are not endorsed by BMJ. BMJ disclaims all liability and responsibility arising from any reliance placed on the content. Where the content includes any translated material, BMJ does not warrant the accuracy and reliability of the translations (including but not limited to local regulations, clinical guidelines, terminology, drug names and drug dosages), and is not responsible for any error and/or omissions arising from translation and adaptation or otherwise.

**Open access** This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

#### ORCID iDs

Jaquetta M Reeves <http://orcid.org/0000-0002-3075-8061>

Pascal Djiaudeau <http://orcid.org/0000-0001-9708-6530>

#### REFERENCES

- 1 Linley *et al.* Estimated HIV incidence and prevalence in the united states 2010–2015. 2018.
- 2 A J, Brooks JJ. Sexually transmitted infections among college students. *Microbiol Infect Dis* 2021;5.
- 3 CDC. Reported stds reach all-time high for 6th consecutive year; 2021. *Centers for disease control and prevention* Available: <https://www.cdc.gov/media/releases/2021/p0413-stds.html> [Accessed 14 Oct 2022].
- 4 CDC. HIV in the united states by age; 2022. *Centers for disease control and prevention* Available: <https://www.cdc.gov/hiv/group/age/youth/status-knowledge.html>
- 5 CDC. National youth HIV & AIDS awareness day; 2022. *Centers for disease control and prevention* Available: [https://www.cdc.gov/healthyyouth/youth\\_hiv/resources.htm](https://www.cdc.gov/healthyyouth/youth_hiv/resources.htm)
- 6 CDC. Adolescents and stds. centers for disease control and prevention; 2022. Available: <https://www.cdc.gov/std/life-stages-populations/stdfact-teens.htm> [Accessed 14 Oct 2022].
- 7 CDC. Sexual risk behaviors can lead to HIV, stds, & teen pregnancy. Centers for Disease Control and Prevention 2021; Available: <https://www.cdc.gov/healthyyouth/sexualbehaviors/index.htm> [Accessed 14 Oct 2022].
- 8 CDC. Special focus profiles. centers for disease control and prevention. 2021. Available: <https://www.cdc.gov/hiv/library/reports/hiv-surveillance/vol-26-no-2/content/special-focus-profiles.html> [Accessed 14 Oct 2022].
- 9 NIAID. Sexually transmitted diseases. national institute of allergy and infectious diseases; 2015. *U.S. department of health and human services* Available: <https://www.niaid.nih.gov/diseases-conditions/sexually-transmitted-diseases> [Accessed 11 Oct 2022].
- 10 Kann *et al.* MMWR. CDC surveillance summaries: morbidity and mortality weekly report. CDC surveillance summaries. *US National Library of Medicine* 1999;70:271–85.
- 11 Lowry R, Dunville R, Robin L, *et al.* Early sexual debut and associated risk behaviors among sexual minority youth. *Am J Prev Med* 2017;52:379–84.
- 12 Kieran E, H DP. Sexually transmitted infections - stis(internet). HIV. gov. Available: <https://www.hiv.gov/hiv-basics/staying-in-hiv-care/other-related-health-issues/sexually-transmitted-diseases> [Accessed 14 Oct 2022].
- 13 CDC. Which STD tests should I get? centers for disease control and prevention. 2021. Available: <https://www.cdc.gov/std/prevention/screeningreccs.htm> [Accessed 1 Oct 2022].
- 14 Hull S, Kelley S, Clarke JL. Sexually transmitted infections: compelling case for an improved screening strategy. *Population Health Management* 2017;20:S–1
- 15 Cuffe KM, Newton-Levinson A, Gift TL, *et al.* Sexually transmitted infection testing among adolescents and young adults in the united states. *J Adolesc Health* 2016;58:512–9.
- 16 Shannon CL, Klausner JD. The growing epidemic of sexually transmitted infections in adolescents: a neglected population. *Curr Opin Pediatr* 2018;30:137–43.
- 17 WHO. Global progress report on HIV, viral hepatitis and sexually transmitted infections; 2021. *World health organization* Available: <https://www.who.int/publications/i/item/9789240027077> [Accessed 14 Oct 2022].
- 18 Moilanen KL, Crockett LJ, Raffaelli M, *et al.* Trajectories of sexual risk from middle adolescence to early adulthood. *J Res Adolesc* 2010;20:114–39.

- 19 Cassidy C, Bishop A, Steenbeek A, *et al.* Barriers and enablers to sexual health service use among university students: a qualitative descriptive study using the theoretical domains framework and COM-B model. *BMC Health Serv Res* 2018;18:581.
- 20 Griner SB, Reeves JM, Webb NJ, *et al.* Consumer-based sexually transmitted infection screening among young adult women: the negative influence of the social system. *Sex Transm Dis* 2022;49:596–600.
- 21 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology* 2005;8:19–32.
- 22 Colquhoun HL, Levac D, O'Brien KK, *et al.* Scoping reviews: time for clarity in definition, methods, and reporting. *J Clin Epidemiol* 2014;67:1291–4.
- 23 Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci* 2010;5:69.
- 24 Peterson J, Pearce PF, Ferguson LA, *et al.* Understanding scoping reviews: definition, purpose, and process. *J Am Assoc Nurse Pract* 2017;29:12–6.
- 25 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA extension for scoping reviews (PRISMA-scr): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
- 26 Abubakari GM, Dada D, Nur J, *et al.* Intersectional stigma and its impact on HIV prevention and care among MSM and WSW in sub-Saharan African countries: a protocol for a scoping review. *BMJ Open* 2021;11:e047280.
- 27 Djiadeu P, Nguemo J, Mukandoli C, *et al.* Barriers to HIV care among francophone African, Caribbean and black immigrant people living with HIV in Canada: a protocol for a scoping systematic review. *BMJ Open* 2019;9:e027440.
- 28 McHugh ML. Interrater reliability: the kappa statistic. *Biochem Med (Zagreb)* 2012;22:276–82.
- 29 Corbin J, Strauss A. *Basics of qualitative research: techniques and procedures for developing grounded theory*. Sage publications, 2014.